

COMMITTEE ON CAPITAL MARKETS REGULATION

FINANCIAL REGULATION, SYSTEMIC RISK, AND THE AUDIT OF FINANCIAL CONTAGION

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In the aftermath of the global financial crisis of 2007–2009, systemic risk has emerged as the overarching problem of financial regulation and policy.¹ The project of this Study is to survey and critique the major public and private regulatory strategies that have been devised to address the most important element of systemic risk in the financial system—the problem of contagion.

Contagion is the spread of run behavior principally among short-term creditors of financial institutions and intermediaries as well others, like commercial paper issuers. The financial system is uniquely vulnerable to contagion because it depends pervasively on short-term borrowing to finance long-term investment. Financial institutions obtain short-term borrowing from both traditional depository sources and increasingly through the short-term capital markets. Unless its effects are contained, the impact of contagion within the financial system on the non-financial sector of the economy can be socially costly because solvent financial institutions (and markets for short-term borrowing that they depend on) can fail or freeze, curtailing lending activity and isolating business from access to capital. Regulation that is effective against financial contagion must overcome the central dilemma of all systemic risk regulation: how to (1) internalize the systemic costs of financial intermediation that are created by contagion to the financial system, to reduce moral hazard, without (2) amplifying the systemic risk of contagion in the process of doing so. The central contention of this Study is that though many of the strategies devised to deal with contagion, including capital requirements, liquidity requirements, and various resolution procedures, competently tackle the first prong of this dilemma through the imposition of losses on shareholders and creditors of financial institutions, few strategies directly address both. It concludes with the suggestion that the only permanent solution to the problem of contagion is an ironclad public guarantee of short-term debt holders in the financial system.

The analysis developed in this Study is organized in five parts. Part I distinguishes the problem of contagion from other forms of systemic risk to the financial system, identifies its causes, and orients it within U.S. financial history. The conclusion of Part I is that contagion is the direct consequence of the structural dependency on short-term borrowing incurred by bank and non-bank financial institutions to profitably fund long-term investment. Part II scrutinizes

¹ Hal S. Scott, *The Reduction of Systemic Risk in the United States Financial System*, 33 HARVARD JOURNAL OF LAW & PUBLIC POLICY 671, 672-79 (2010) (discussing the centrality of the problem of systemic risk to modern financial systems regulation).

the extension of contagion to non-bank financial intermediaries and short-term capital markets due to the growth of these sectors over the past thirty years. It presents evidence of significant contagion effects throughout segments of the non-depository financial system after the failure of Lehman Brothers in late 2008. The conclusion of Part II is that contagion in this context is the result of the extension of the same structural dependency on short-term borrowing beyond traditional depository banking. In areas of the short-term capital markets that supply the non-financial economy with a direct source of short-term financing, such as the corporate commercial paper market, contagion can be especially problematic since its effects can migrate directly over to industrial companies. Part III considers the diverse catalogue of *private* strategies for regulatory reform that have been proposed for reducing systemic risk. The most important of these are (1) enhanced institutional capital requirements, (2) new private liquidity requirements, and (3) loss imposing resolution procedures. The basic critique developed in Part III is that all three of these strategies prioritize imposing losses on private actors in the financial system (the first prong of the dilemma of systemic risk regulation) but neglect to resolve the systemic dependency of financial institutions and intermediaries on short-term borrowing, so none is a comprehensive solution to the problem of contagion. Part IV considers the principal alternative *public* strategies, including (1) unlimited public liquidity support for, or (2) an explicit guarantee of, short-term non-deposit liabilities issued by financial institutions, deployed either in the form of a central bank lender-of-last-resort or as a publicly administered insurance regime modeled on deposit insurance. Part V offers some concluding reflections for ongoing reform of the U.S. financial system after Dodd-Frank.

If the description that is developed in this Study of the contemporary financial system, the problem of financial contagion, and the relation that both bear to the dependency of financial institutions on short-term borrowing is correct, then the failure of one or more major financial institutions in the future could be inevitable. Some of these institutions are likely to be “too big to fail,” requiring public bailout, as some industry experts continue to predict.² Regulation that promotes loss imposition, whether it is effectuated through capital and liquidity requirements,

² See Andrew Frye, *Buffett Tells FCIC It's Powerless to Stop 'Too Big to Fail'*, BLOOMBERG, Feb. 11, 2011, available at <http://www.bloomberg.com/news/2011-02-11/buffett-tells-fcic-it-s-powerless-to-stop-too-big-to-fail-.html> (reporting testimony of Warren Buffett, chairman of Berkshire Hathaway, noting that “[y]ou will always have institutions that are too big to fail, and sometimes they will fail...[w]e still have them now. We’ll have them after your commission report...I do think that if you ran into a similar situation today the government would guarantee commercial paper again. They’d have to”).

resolution procedures, or both, may diminish but will not eliminate the probability of a future contagious episode. Rather than deny the reality of the periodic necessity of providing public support for the financial system, regulators should formalize the provision of public support through the use of public guarantees, so that contagion can be contained and its systemic costs controlled and imposed on financial institutions ahead of time. Guaranteeing short-term creditors (at a specified charge) abolishes the risk of the failure of an important financial institution mutating into a market-wide panic. Once institutions can be permitted to fail without incident, losses can be imposed on long-term capital suppliers through any number of resolution channels without sparking a contagious run. Alleviated of the risk that the liquidity of the financial system is vulnerable to being overwhelmed by contagion at any time, providers of new private capital will have less hesitation investing in institutions that are emerging from restructuring. Under this regime, the only appreciable risk to taxpayers would instead emanate from public losses associated with guaranteeing the short-term borrowing of the financial system. In principle, this risk is identical to the type of exposure that is already being assumed by taxpayers through the use of government-backed deposit insurance, and, like deposit insurance, could be internalized to financial institutions through any number of mechanisms, including insurance premia extracted ex ante or ex post cleanup assessments (or both) that could be imposed on functioning institutions. Though it is true that such cost recovery measures might fail to perfectly offset the government's loss exposures, they can impose sufficient costs to reduce moral hazard if the charges are appropriately calibrated to match institutional risk-taking. Implementing the regulatory structure and optimal pricing of a public guarantee will form the subject of future research by the Committee on Capital Markets Regulation (CCMR).

The plan for regulatory reform sketched above is the opposite of the approach adopted by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank), which through its mandate “to end ‘too big to fail’ [and] protect the American taxpayer by ending bailouts” is largely intended to excise government guarantees from the lexicon of federal regulation and policy.³ But, as this Study argues, properly instituted (and optimally funded) public guarantees are the only foolproof way for regulators to negate the need for outright

³ Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 [hereinafter Dodd-Frank Act] [Cite to Act title/preamble]; see also Edward Wyatt, *With Issa Leading, Oversight Panel Eagerly Begins Its Work*, N.Y. TIMES, Jan. 26, 2011, available at <http://www.nytimes.com/2011/01/27/us/politics/27issa.html> (illustrating political ambivalence and hostility among legislators to “too-big-to-fail” and federal bailouts).

bailouts by eliminating the threat of contagion. Conversely, Dodd-Frank's policy of eliminating bailouts probably will *not* negate the need for guarantees in the future.⁴ Instead, by channeling regulatory resources toward capital adequacy, activity-based restrictions,⁵ and resolution-based loss imposition, while erecting statutory obstacles to future government bailouts of the financial system including sweeping new restrictions imposed on emergency Federal Reserve assistance, Dodd-Frank leaves reform of this area dangerously incomplete and increases latent risk to the U.S. financial system.

This Study is part of a broader review of issues in financial regulatory reform conducted by the CCMR, beginning with its May 2009 report.⁶ The CCMR is an independent, nonpartisan research organization founded in 2005 to improve the regulation of United States capital markets.⁷ "Thirty-one leaders from the investor community, business, finance, law, accounting and academia comprise the Committee's membership."⁸ Its "co-chairs are Glenn Hubbard, Dean of Columbia Business School, and John L. Thornton, Chairman of the Brookings Institution."⁹ Its Director is Hal S. Scott, Nomura Professor and Director of the Program on International Financial Systems at Harvard Law School.

I. FINANCIAL CONTAGION: OVERVIEW AND HISTORY

The problem of contagion is longstanding in the regulation of financial institutions and design of stable financial systems.¹⁰ Today, it is again commanding the attentions of regulators,

⁴ See, e.g., Jeffrey N. Gordon & Christopher Muller, *Confronting Financial Crisis: Dodd-Frank's Dangers and the Case for a Systemic Emergency Insurance Fund* (Columbia Law and Economics, Working Paper No. 374, Aug. 18, 2010) (arguing that "mak[ing]...receivership the only route for assistance of a troubled firm" under Dodd-Frank in order to suppress moral hazard is "potentially destabilizing [and] could well hasten a slide from financial instability into financial emergency").

⁵ E.g., restrictions placed on proprietary trading and the operation of hedge funds and private equity businesses embodied in the so-called "Volcker Rule". See Dodd-Frank, § 619. See also *Implications of the 'Volcker Rules' For Financial Stability: Hearing Before the S. Comm. on Banking, Housing, & Urban Affairs*, 111th Cong. 2, 5 (Feb. 4, 2010) (statement of Hal S. Scott).

⁶ See COMM. ON CAPITAL MKTS. REGULATION, *THE GLOBAL FINANCIAL CRISIS: A PLAN FOR REGULATORY REFORM* (2009) [hereinafter CCMR PLAN FOR REGULATORY REFORM].

⁷ Committee on Capital Markets Regulation, Welcome, <http://www.capmksreg.org> (last visited Jan. 2, 2011).

⁸ *Id.*

⁹ *Id.*

¹⁰ See, e.g., MILTON FRIEDMAN & ANNA J. SCHWARTZ, *A MONETARY HISTORY OF THE UNITED STATES 1867-1960* 299-419 (Princeton University Press 1963) (discussing the role of contagion in U.S. banking crises of the early 1930s); MILTON FRIEDMAN & ANNA J. SCHWARTZ, *THE GREAT CONTRACTION 1929-1933* (Princeton University Press 1963); Alan Greenspan, Chairman, Fed. Res. Bd., Remarks at the VIIIth Frankfurt International Banking Evening (May 7, 1996), *available at*

policymakers, central bankers, and market participants.¹¹ The term “contagion” denotes the spread of run-like behavior from one financial institution to an expanding number of other (not necessarily interconnected or even related) financial institutions, causing an across-the-board reduction in the aggregate amount of funding available to the financial system.¹² This behavior can also spread to short-term capital markets that fund the complex and growing assortment of non-depository financial institutions in the financial system. The effects of “market contagion” were displayed prominently during the financial crisis of 2007–2009 in asset-backed commercial paper (ABCP) markets, interbank unsecured borrowing markets, secured repo markets, among prime money market mutual funds (MMMFs), and to a limited extent within areas of the non-financial U.S. and international economy that had direct financial linkages to commercial paper markets. The special feature that distinguishes contagion (in any format, market segment, or economic arena) from other major causes of systemic instability in the financial system is the possibility for contagious runs to propagate among institutions and in markets *indiscriminately*. Contagion is indiscriminate when it afflicts healthy, solvent institutions and markets rather than just dysfunctional or insolvent ones.¹³ Financial institutions (including even prime MMMFs) are vulnerable to contagion because they depend on short-term borrowing to fund their longer-term investment activity, e.g. loans in the case of banks and finance companies. If investors in short-term debt instruments suddenly become unwilling to extend funding continuously to the financial system, these institutions might fail. This dependency is discussed in detail in Parts I and II below.

Although contagion is closely linked with, and usually culminates in, run behavior by short-term creditors, the two phenomena are distinct. Importantly, not all runs involve indiscriminate contagion.. Under certain circumstances, a run by short-term creditors can be informed, rational, and targeted to a single or limited number of financial institutions, for

http://fraser.stlouisfed.org/historicaldocs/852/download/28572/Greenspan_19960507.pdf (warning of the consequences to the contemporary financial system of a contagious “chain reaction” of institutional failures in a period of financial crisis).

¹¹ See, e.g., Press Release, Bank for International Settlements, Committee on Payment and Settlement Systems, Central bankers call for action to tackle potential contagion in the global financial infrastructure (Jun. 4, 2008), available at <http://www.bis.org/press/p080604.htm>; Bank for International Settlements, *The interdependencies of payment and settlement systems* (June 2008), available at <http://www.bis.org/publ/cpss84.pdf>.

¹² See George Kaufman, *Bank Contagion: Theory and Evidence*, 1 Federal Reserve Bank of Chicago, Jun. 1992, available at http://www.chicagofed.org/digital_assets/publications/working_papers/1992/WP-92-12.pdf.

¹³ See Ted Temzelides, *Are Bank Runs Contagious?*, 3 Federal Reserve Bank of Philadelphia 3-14 (Nov. 1997), available at <http://www.philadelphiafed.org/research-and-data/publications/business-review/1997/november-december/brnd97tt.pdf>.

example, ones that become known to have incurred significant losses.¹⁴ During a run that acquires contagious attributes, however, investors might also choose to withdraw funding from *multiple* institutions or markets that are *not* already the subject of runs and are *not* facing grave business distress. In this environment, the decision to exit is not made on the basis of specific information, but because investors possess insufficient information to differentiate their risks from those that others are, or appear to be, facing. This dynamic, one central banker has warned, may “lead to failures of other financial intermediaries, even when [they] have not invested in the same risks and are not subject to the same original shocks.”¹⁵ If these intermediaries fund themselves using short-term capital instruments, the manifestation of contagion effects may spread to the markets where these instruments trade. Sudden demand for liquidity by investors in intermediaries like MMMFs that normally hold these instruments, e.g. commercial paper, or a refusal on the part of interbank lenders to renew their funding, can trigger liquidations or freeze-ups in these markets that induce fire sales, cripple asset prices, and halt lending activity.

Contagion is not the only form of systemic risk in the financial system. As Litan and Rauch (1998)¹⁶ and Scott (2011)¹⁷ document, systemic risk can assume at least three different forms. Scott has called these the “three Cs” of systemic risk: correlation, connectedness, and contagion.¹⁸ First, institutions can experience large-scale “mass” insolvency when an economic downturn impairs the value of assets that are widely held, prompting investors to withdraw money from these institutions and causing them to fail.¹⁹ A downturn that is severe enough to bring down a number of systemically important institutions represents a systemic risk.²⁰ Failures of this kind are linked to the *correlation* among collapsing asset prices during an external shock.²¹ They are not, however, the result of contagious forces. The savings and loan crisis of the 1980s exemplifies the far-reaching impact that an asset shock can exert on exposed financial

¹⁴ *Id.* at 4-6.

¹⁵ Jean-Claude Trichet, President, European Central Bank, Text of the Clare Distinguished Lecture in Economics and Public Policy (December 10, 2009), *available at* http://www.ecb.int/press/key/date/2009/html/sp091210_1.en.html (analyzing the linkage between systemic risk and contagion).

¹⁶ ROBERT E. LITAN & JONATHAN RAUCH, AMERICAN FINANCE FOR THE 21ST CENTURY 98-112 (The Brookings Institution 1998) (cited in Carnell, et al., THE LAW OF BANKING AND FINANCIAL INSTITUTIONS, *infra* note 62 at 732).

¹⁷ Hal S. Scott, *How to Improve Five Important Areas of Financial Regulation*, in **BOOK TITLE [pp.]** (Kaufman ed., 2011) (defining the “Three Cs” of systemic risk, connectedness, contagion, and correlation).

¹⁸ *Id.*

¹⁹ Litan & Rauch, *supra* note 16 at 130.

²⁰ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 673.

²¹ Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at **[4]**.

institutions.²² The bubble in housing prices that preceded the financial crisis of 2007–2009 was a source of correlation risk that caused the collapse (or forced the rescue) of several major banks, including Wachovia and Washington Mutual, which were exposed to U.S. real estate, including through collateralized debt obligation (CDO) portfolios.²³ Second, an institution can fail when another institution that it is *connected* to (for example, as a creditor, counterparty, or through some other financial claim) becomes insolvent or fails.²⁴ If the interconnectedness of the financial system is significant enough, the potential for the failure of a single institution to trigger a chain of domino-like failures creates a systemic risk.²⁵ Interconnectedness can arise through a variety of discrete channels.²⁶ Financial institutions can be linked through (1) interbank deposits,²⁷ either in the form of loans or correspondent accounts, as illustrated by the case of Continental Illinois Bank in the mid-1980s,²⁸ (2) payment and settlement systems,²⁹ and (3) derivative contracts.³⁰ Fear about the level of interconnectedness among systemically important financial institutions setting off a chain of insolvencies during the financial crisis has caused some, including the CCMR,³¹ to call for enhanced regulation of over-the-counter derivatives contracts. Both correlation and connectedness can be thought of as forms of “business cycle risk,” since both involve one or many financial institutions failing as a result of an exogenous shock to the asset side of the balance sheet that is caused by a downturn in asset values or the insolvency of a peer institution. Runs can exacerbate these risks, however, either by provoking fire sales that depress market prices, bringing down interconnected institutions, or both.

²² Litan & Rauch, *supra* note 16 at 131.

²³ Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [4].

²⁴ Litan & Rauch, *supra* note 16 at 119; Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [1-3].

²⁵ Litan & Rauch, *supra* note 16 at 119.

²⁶ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 673-76. A fourth linkage among financial institutions identified by Scott as a potential source of “chain reaction” is imitative runs by depositors in one institution in response to the failure of an adjacent institution. This is contagion. *Id.* at 674-75; Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [1-3].

²⁷ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 673-74. See also Craig H. Furfine, *Interbank Exposures: Quantifying the Risk of Contagion*, 35 J. MONEY CREDIT & BANKING 111, 125 (2003); Simon Wells, *Financial Interlinkages in the United Kingdom’s Interbank Market and the Risk of Contagion* 5-7 (Bank of Eng., Working Paper No. 230, 2004).

²⁸ HAL S. SCOTT, *INTERNATIONAL FINANCE: TRANSACTIONS, POLICY, AND REGULATION* 32 (17th ed. 2010).

²⁹ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 674.

³⁰ *Id.* at 675.

³¹ Letter from the Comm. on Capital Mkts. Regulation to Christopher Dodd, Chairman, Richard Shelby, Ranking Member, S. Comm. on Banking, Hous. & Urban Affairs and Barney Frank, Chairman, Spencer Bachus, Ranking Member, H. Comm. on Fin. Servs. (Mar. 4, 2010) (proposing a comprehensive approach to reducing systemic risk from over-the-counter derivatives).

Third, institutions can fail because of a *contagious* run that develops when, in response to a failure or disruption elsewhere in the marketplace (that may be related or unrelated), short-term investors exit from institutions that are dependent on uninterrupted access to the funding they normally provide to the financial system. The institutions that do fail may, *but equally may not*, have preexisting financial exposures to the same disruption, as is the case with an asset shock, or to other institutions that are exposed to the disruption, as is contemplated by the problem of interconnectedness. Actual (or prospective) exposure to financial loss (other than loss due to the contagion effect itself) is not a necessary predicate of contagion, nor is a background downturn in asset prices or a high level of systemic interconnectedness. All that is required is for short-term investors, faced with “a lack of accurate and timely information,” or who are risk-averse, to decide that “it is better to be safe than sorry” and liquidate their exposures in reaction.³² Indeed, though in the majority of such cases this decision might result from insufficient information,³³ even those investors who *do* possess credible information attesting to the soundness of their institution may panic and choose to withdraw anyway, as occurred after the collapse of Lehman Brothers in MMMFs with no exposure to Lehman’s debt. This episode is analyzed in Part II. The two major strategies that regulators have historically deployed to counteract the effects of contagion (other than bailout) are (1) emergency access to replacement funding from the central bank lender-of-last-resort and (2) insurance (but only for depository accounts).³⁴ Both strategies are discussed in Part IV.

Severe economic downturns in the industrial sector can result from business correlations or interconnections among non-financial companies and their customers, suppliers, and competitors. By contrast, it is generally only financial institutions that rely on short-term funding to perform maturity transformation in the economy, which may be uniquely susceptible to contagion, as is discussed at length below.³⁵ Despite analytic convergence on the salient features of financial contagion outlined above,³⁶ opinions differ over the frequency of past

³² Litan & Rauch, *supra* note 16 at 125.

³³ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 674-75; Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 33.

³⁴ Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [3].

³⁵ See Kaufman, *Bank Contagion: Theory and Evidence*, *supra* note 12 (evaluating the quality of evidence in support of the special vulnerability of financial companies to contagious runs, noting that, while the problem of contagion may have been frequently overstated by commentators, it does present a serious threat to the stability of the financial system relative to other sectors of the industrial economy). See also Temzelides, *supra* note 13 at 10 fn. 10.

³⁶ See, e.g., Temzelides, *supra* note 13.

contagious runs on the financial system, the role that contagion played in the financial crisis of 2007–2009, and to what degree it presents a significant threat to financial, monetary, and economic stability for the future. Some argue that its prevalence is overstated, urging that asset shocks, correlation, and connectedness, not contagion, are the dominant risks confronting the modern financial system. Disagreements among historians of past financial panics and in accounts of the recent crisis may reflect the practical difficulties of distinguishing the first two classes of systemic risk (correlation and connectedness) from patterns of true contagion effects, despite the pronounced conceptual differences that divide them. Since contemporary approaches to managing contagion are rooted in historical responses to it, it is useful to first evaluate its prevalence in recent financial history and to define its basic contours more sharply.

The two sections that follow elaborate on the overarching distinction between systemic risk that is linked to the business cycle (due both to correlation and connectedness risk), on the one hand, and to contagion, on the other. After surveying the impact that business cycle risk can exert on financial institutions (Section A), this Study then considers the distinctive structural attributes shared between classic depository banking activity and contemporary financial intermediation, most notably the joint dependency of both activities on short-term borrowing, which render them equally susceptible to contagious runs to which the non-financial, non-short-term-funded economy is substantially invulnerable (Section B). Part II next discusses the extension of contagion during the financial crisis of 2007–2009 to non-depository financial intermediaries and the short-term capital markets, before turning to consideration of strategies for counteracting it in Parts III and IV.

A. *Non-Contagious Failure: Correlation, Connectedness, and the Business Cycle Theory*

Financial historians divide over how much responsibility to assign to contagion effects for the periodic disruption to the U.S. financial system recorded over the past two centuries. One prominent view traces the majority of past episodes of mass insolvency to economic downturns that exacerbated latent correlations in the performance of loans and other financial assets held by banks and similar financial institutions. In the paradigmatic case articulated by Gorton (1988),³⁷

³⁷ Gary Gorton, *Banking Panics and Business Cycles*, 40, Oxford Economic Papers 751, 752 (1988), available at <http://www.som.yale.edu/faculty/gbg24/Banking%20Panics%20and%20Business%20Cycles.pdf> (tracing bank

as markets absorb the impact of a downturn and underappreciated correlations come into clearer relief, investors with the most to lose make a collective but proportionate decision to transfer funds out from financial institutions that are publicly known to be of poor quality and into others with lower exposure to the general decline in price levels. Historically these institutions were primarily deposit-taking banks, but today they also include a complex and diverse array of non-bank financial institutions, credit intermediaries, and short-term financial markets. Proponents of this model attempt to demystify the behavioral dynamics behind most major institutional failures of the past, contending that correlation, not contagion, is the principal cause of disruption to the financial system. To the extent that withdrawals by investors at one institution propel withdrawals from other institutions, the behavior is rational because it reflects recognition of prior balance sheet impairments linked to correlation or connectedness, which would have caused these institutions to fail sooner or later.³⁸ The causality of the prototypical financial crisis is represented as vulnerable institutions falling prey to mass withdrawals after (1) a preceding economic shock places them in the zone of insolvency and then (2) information about their condition is disseminated to investors, including uninsured depositors.” The result is a net neutral transfer of funding from unhealthy institutions into healthy ones,³⁹ initiated in the face of credible leading recessionary indicators.⁴⁰

The U.S. commercial bank JPMorgan Chase (JPMorgan) was a prime beneficiary of this kind of funding transfer during the financial crisis of 2007–2009, as retail customer deposits⁴¹ and prime brokerage assets⁴² flowed out of weakened commercial and investment banking institutions and into JPMorgan’s insured deposit and prime brokerage accounts. Writing in his annual letter in 2009, Jamie Dimon, JPMorgan’s chief executive officer, advised shareholders that JPMorgan received a net *inflow* of depositor funds as investors fled lower-quality institutions during the crisis. “As we entered the most tumultuous financial markets since the

failures to “systematic responses by [bank] depositors to changing perceptions of risk, based on the arrival of new information rather than random events”).

³⁸ *Id.* at 751-52; see also Temzelides, *supra* note 13 at 9.

³⁹ Gorton, *supra* note 37 at 752; Temzelides, *supra* note 13 at 9.

⁴⁰ Gorton, *supra* note 37 at 751-753, 755.

⁴¹ See JPMorgan Chase, Letter to Shareholders, Annual Report, at 28 (2009), available at http://files.shareholder.com/downloads/ONE/1017247059x0x362440/1ce6e503-25c6-4b7b-8c2e-8cb1df167411/2009AR_Letter_to_shareholders.pdf.

⁴² *The run on Morgan Stanley*, FT.COM/ALPHAVILLE, Sept. 18, 2008, available at <http://ftalphaville.ft.com/blog/2008/09/18/16082/the-run-on-morgan-stanley/> (reporting that JPMorgan “[was] thought” to have received \$40 billion in prime brokerage inflows in the two days following the bankruptcy of Lehman Brothers).

Great Depression,” Dimon wrote, “we experienced the opposite of a ‘run on the bank’ as deposits flowed in (in a two-month period, \$150 billion flowed in – we barely knew what to do with it).”⁴³ Similarly, some (though not all) episodes of mass withdrawal by bank depositors during the Depression systematically concentrated on accounts at weakened banking institutions while bypassing stronger ones, with withdrawn funds immediately re-deposited into risk-free accounts. Importantly, however, many of these transfers shifted funds from non-guaranteed accounts into guaranteed instruments. For example, a large portion of the deposits pulled from weakened institutions during the Chicago Banking Panic of 1932 were ultimately placed into risk-free postal savings accounts issued by the government’s Postal Savings Department, rather than with other non-guaranteed accounts at retail banks.⁴⁴ To the extent transfers of funding during a market panic represent a shift from non-guaranteed to guaranteed accounts, rather than from weak to strong institutions, the causality of Gorton’s model may be inaccurate. Assuming that some portion of these withdrawals follow the course predicted by the model, however, the transfers can be expected to favor and strengthen sound financial institutions (for example, ones that are better capitalized or less correlated to a general decline in price levels) like JPMorgan,⁴⁵ which benefit from the influx of liquidity, while the system as a whole emerges intact from the realignment. The reassessment by investors that triggers the transfer may be nearly simultaneous across many financial institutions, but it is not contagious.⁴⁶ Instead, mass insolvencies among financial institutions, it is argued, are an expected and intermittent manifestation within the financial sector of ordinary economic fluctuation in the business cycle.⁴⁷ In this respect, financial institutions are not fundamentally different, despite their dependency on short-term borrowing, from non-financial industrial companies, all of which share a common vulnerability to an economic downturn. To the contrary, banks, for the same reasons as “other firms, tend to fail during recessions.”⁴⁸ The description presented by what might be called the “business cycle theory” of financial institution failure is important to consider since, if it accurately characterizes

⁴³ JPMorgan Chase, Letter to Shareholders, *supra* note 41.

⁴⁴ Calomiris & Mason, *infra* note 54 at 864-65, 68; *see also* Friedman & Schwartz, *supra* note 10 at 308 fn. 8 (reporting an increase in postal savings deposits from \$190 million in October 1930 to \$1.1 billion in March 1933, which the authors characterize as a “measure of the spread of distrust of banks”).

⁴⁵ JPMorgan Chase, Letter to Shareholders, *supra* note 41.

⁴⁶ Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [3].

⁴⁷ Gorton, *supra* note 37 at 778 (“[P]anics are systematic...events linked to the business cycle [that] turn out not to be mysterious events after all. The evidence favors the conclusion that panics were a manifestation of consumption smoothing behavior on the part of cash-in-advance constrained agents”).

⁴⁸ *Id.* at 752.

a major portion of financial disruptions during recent U.S. history, counsels against mobilizing a customized regulatory architecture tailored to the peculiar nature and perceived special vulnerabilities of banks, other financial institutions, and markets.⁴⁹

The history of financial panics in the U.S. is replete with episodes that historians have persuasively associated with this theory. To take one early example, there were seven discrete banking panics between 1863 and 1914, the period today known as the National Banking Era.⁵⁰ Five of these were severe enough to entail the suspension of the convertibility of bank deposits to cash.⁵¹ Some researchers nevertheless question if any can convincingly be attributed to the effects of contagion.⁵² Analyzing the banks that failed in the course of these panics, Gorton concludes that all were foreseeable outcomes that were tied to the business cycle, even if the proximate cause of their failure was mass withdrawal by depositors. Gorton contends that these failures were not self-generating by showing that they could be predicted in advance: without exception during this period, “every time a variable predicting a recession reached a threshold level, a panic occurred.”⁵³ A study of the Chicago Banking Panic of 1932 by Calomiris and Mason (1997) arrives at similar conclusions, showing that most bank failures were the result of homogenous balance sheets impairments caused by the collapse in asset prices after the onset of the Depression.⁵⁴ This finding is striking given the tight geographic focus of the panic and its feverish atmosphere, in which some 40 Chicago-area banks failed, including 26 in only seven days during June 1932.⁵⁵ Although these characteristics appear to resemble a classic bank run, the authors reject this interpretation insisting instead that most of the banks that did succumb were “distinguishable months before the panic,”⁵⁶ the evidence of their preexisting mass insolvency “reflected in stock prices, failure probabilities, the opinions of bank examiners, debt

⁴⁹ See Jeffrey A. Miron, “The Case for Doing Nothing,” REASON, Aug.-Sept. 2009, *available at* <http://reason.com/archives/2009/07/09/the-case-for-doing-nothing> (questioning the direction of causality running between bank failures and recessions and suggesting the role of contagion in driving both is exaggerated).

⁵⁰ Gorton, *supra* note 37 at 753, fn 1.

⁵¹ *Id.* at 753, fn 1.

⁵² Temzelides, *supra* note 13 at 9.

⁵³ Gorton, *supra* note 37 at 753, fn 1.

⁵⁴ Charles Calomiris & Joseph Mason, *Contagion and Bank Failures During the Great Depression: The June 1932 Chicago Banking Panic*, 87 *The American Economic Review*, 863, 881 (December 1997), *available at* <http://www.jstor.org.ezp-prod1.hul.harvard.edu/stable/pdfplus/2951329.pdf> (finding “failures during the [Chicago] panic reflected relative weakness of failing banks in the face of a common asset value shock rather than contagion”).

⁵⁵ *Id.* at 865. In total there were 49 bank failures in Illinois in June 1932. *Id.* at 865.

⁵⁶ *Id.* at 881.

composition, and interest rates.”⁵⁷ By contrast, Calomiris and Mason find that solvent banks did not fail during the Chicago Panic.⁵⁸ Part of the explanation for the sharply differentiated performance of solvent banks may be that these healthy banks were able to coordinate private interbank lending facilities to supplement lost deposits, to which insolvent institutions did not have access.⁵⁹ The systematically different experiences of solvent and insolvent banks is held to illustrate that the wave of failures in Chicago, and in certain other instances⁶⁰ during the Depression, was driven by an exogenous shock to asset prices in the context of an adverse economy. The effect of this shock brought about a system-wide adjustment in the allocation of funding that destabilized insolvent institutions, yet contagion effects for the most part were not implicated.

Going beyond the basic link to the business cycle, some historians trace the frequency of bank failures in U.S. history to an abnormally high level of concentration risk that historically was promoted by the decentralized structure of the U.S. banking system. This was a product of a restructuring of the American banking industry during the National Banking Era stimulated by distinctive legislative changes in the U.S. that were not duplicated in other national economies.⁶¹ According to this account, branching restrictions embodied in the National Bank Act of 1864 propelled a thirteen-fold increase in the total number of U.S. banks over the next fifty years. By 1914, the unprecedented expansion and decentralization of banking institutions in the U.S. had culminated in a unit banking system comprising 22,030 institutions nationally.⁶² The massive proliferation of small banks managing localized loan portfolios created concentration risks that may have rendered many acutely sensitive to the impact of an economic downturn, exacerbating the overall failure rate within the system (it is also plausible however that in other circumstances

⁵⁷ *Id.* at 881.

⁵⁸ *Id.* at 864.

⁵⁹ *Id.* at 864, 68-69 (noting that “at least one solvent bank” was saved from failing through the assistance of the Chicago clearing house banks).

⁶⁰ Charles Calomiris, *Bank Failures in Theory and History: The Great Depression and Other “Contagious” Events* [25] (Nat’l Bureau of Econ. Research, Working Paper No. 13597, Nov. 2007), available at <http://www.nber.org/papers/w13597> (arguing that “panics played a small-role in [1930s] Depression-era distress”). [Review copy].

⁶¹ Stephen Williamson, *Bank Failures, Financial Restrictions, and Aggregate Fluctuations: Canada and the United States, 1870–1913*, Federal Reserve Bank of Minneapolis, Quarterly Review (Summer 1989), available at http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=218.

⁶² RICHARD S. CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* 11 (Aspen Publishers 2009).

localization could lower correlation to generalized economic effects).⁶³ These small banks may also have suffered from poorer management relative to their more sophisticated large peers. Countries in which the banking system did not develop pervasive decentralized characteristics did not face repeated waves of financial panic. In Canada, for example, where banking activity assumed a more consolidated format, bank failures were rare events, even though the Canadian macroeconomic environment tracked the U.S. experience:⁶⁴ between 1870 and 1913, Canadian banks underwent 23 liquidations, compared with 3,208 recorded in the United States in the same 40-year period. No banks failed in Canada between 1923 and 1985, but between 1930 and 1933 alone, 9,000 U.S. banks suspended operations.⁶⁵ Such discrepancies are not attributable to the variance in the performance of the Canadian and U.S. economies, but may trace to the dramatic differences in the shape of industry consolidation across the two systems.⁶⁶ On the other hand, the different bank failure rates across the two systems might also be the result of any number of other political, regulatory, and social factors distinguishing the Canadian and U.S. environments from each other during the Depression. The link drawn to industry consolidation is provisional only.

Asset shocks and concentration risk continue to exercise disruptive effects on the banking system from time to time. Studies of selected bank failures in the 1970s and 1980s, for example, yield at best only mixed evidence attesting to the presence of contagion effects.⁶⁷ More recently, some scholars and finance professionals have aligned themselves with this hypothesis to interpret the unfolding of the financial crisis of 2007–2009. Wolf (2008), while not neglecting the effects of contagion, assigns primary blame for the crisis to asset shocks and macroeconomic instabilities linked to long-term international imbalances in global trade, savings rates, and investment.⁶⁸ At the microeconomic level, Dumontaux and Pop (2010) scrutinized the impact on financial institutions of the bankruptcy of Lehman Brothers on September 15, 2008, determining that contagion effects, to the extent any existed at all, were “firm-specific, rational and

⁶³ Williamson, *supra* note 61 at 3 (finding that banks subject to a unit banking restriction are less diversified, “more sensitive to idiosyncratic shocks, and...experience runs and fail with higher probability.”)

⁶⁴ *Id.* at 3-6; 13-19.

⁶⁵ *Id.* at 5; see also Friedman & Schwartz, *supra* note 10 at 352-53 (discussing absence of runs on Canadian banks during the Depression and its impact on the money supply).

⁶⁶ *Id.* at 19 (noting that “Canada had a branch banking system, with few banks compared to the U.S. unit banking system”); see also Temzelides, *supra* note 13 at 8 (discussing Williamson’s findings).

⁶⁷ Joseph Aharony & Itzhak Swary, *Contagion Effects of Bank Failures: Evidence from Capital Markets*, 56 *The Journal of Business*, 305, available at <http://www.jstor.org.ezp-prod1.hul.harvard.edu/stable/pdfplus/2352800.pdf>.

⁶⁸ See generally MARTIN WOLF, *FIXING GLOBAL FINANCE* (The Johns Hopkins University Press 2008).

discriminating rather than industry-wide-specific, ‘pure’ panic-driven or undifferentiated.”⁶⁹ Like the bank failures in the 1932 Chicago panic,⁷⁰ firms that were affected the most by the collapse of Lehman, the authors argue, possessed comparable core business characteristics, operating fundamentals, and a performance record that was measurably correlated with Lehman’s. Appraising the totality of the evidence, Dumontaux and Pop conclude that the effects of Lehman’s failure on financial institutions were neither indiscriminate nor contagious.⁷¹ As is discussed in more detail below, however, several important U.S. financial firms that arguably possessed considerably stronger business models, such as Morgan Stanley and Goldman Sachs, do appear to have been affected by some degree of run behavior after the failure of Lehman, an apparent qualification attached to these findings. Scott (2011) notes that, though “[s]ignificant bank runs were not a feature of the financial crisis,” important *non*-bank financial institutions, beginning with the investment bank Bear Stearns, and later spreading to critical segments of the short-term capital markets, did undergo serious runs.⁷² Further, though no significant financial institution sharing Lehman’s basic business attributes collapsed as a result of Lehman’s failure, quite importantly, this may reflect the bailout signal transmitted by the federal government’s subsequent intervention to preempt the disorderly unwinding of the insurance conglomerate American International Group (AIG) as well as by the multifaceted public support programs instituted by the U.S. Treasury and the Federal Reserve⁷³ (described below), not the absence of contagion. In fact, analysis in Part II finds evidence of substantial contagion effects on display elsewhere in the financial system at the “market” level. These effects were transmitted initially through the Reserve Primary Fund to other prime MMMFs, among certain segments of the asset-backed, financial, and even corporate commercial paper markets, and to unsecured interbank lending markets and secured repo borrowing markets. Ultimately, they resulted in serious runs on other investment banks (for example, through the prime brokerage units of Goldman Sachs, Morgan Stanley, and Merrill Lynch) as investor confidence in the vitality of the independent

⁶⁹ Nicolas Dumontaux & Adrian Pop, *Contagion Effects in the Aftermath of Lehman’s Collapse: Measuring the Collateral Damage* [ii], available at http://gdre_mbf_2010.u-bordeaux4.fr/sites/gdre_mbf_2010/IMG/pdf/dumontaux_pop.pdf.

⁷⁰ *Id.* at 15.

⁷¹ *Id.* at 15-16 (calling the “market reaction to Lehman’s failure...selective and well-informed, rather than random and indiscriminate”).

⁷² Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [3].

⁷³ See summary in Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 654-64.

investment banking business model deteriorated. These findings, which are reviewed below, collectively represent a challenge to Dumontaux and Pop's conclusions.

Managers of financial institutions that survived the crisis continue to urge that their firms were safely positioned and would not have become subject to the type of run that contributed to the dismantling of Bear Stearns and Lehman Brothers. Top executives at Goldman Sachs, for example, have repeatedly emphasized that Goldman was adequately capitalized to withstand the failure of major counterparties, including AIG. This claim, however, relates more to the nature of Goldman's interconnectedness to its counterparties and the adequacy of the collateral it held against its positions with AIG, than to its vulnerability to a generalized financial panic.⁷⁴ Absent additional evidence to support the claim, it is equally plausible that the bailout signal established by rescuing AIG forestalled broader panic in markets to which Goldman was and would have been exposed. As described more fully above, JPMorgan experienced substantial net inflows of guaranteed retail deposits and non-guaranteed prime brokerage assets during the crisis, emerging from the collapse of Lehman Brothers with strengthened liquidity reserves and enhanced share and competitive positioning in the retail, commercial, and investment banking markets. Finance professionals at Goldman Sachs, JPMorgan, and other financial institutions perhaps have a rational incentive to understate the degree to which their firms are susceptible to contagious market forces outside their control and overstate the role played by defective risk management policies and exposure to low-quality assets in the prominent institutional failures of the crisis. This incentive is illustrated by Alan Schwartz, formerly chief executive officer of Bear Stearns, in his televised assurances to the marketplace in March 2008 that market rumors about Bear's decaying liquidity were untrue, even though a "cash crunch" appears already to have been underway when he made these remarks.⁷⁵

Considered collectively, the evidence and lines of argumentation supporting the business cycle theory command the allegiance of a varied set of constituencies that includes the academic and public sectors as well as financial sector professionals. Their endorsement is qualified by two considerations, however. First, the evidence describing the linkage between the business cycle and the failure of certain financial institutions is not exhaustive. As discussed in the next section, evidence also exists of significant contagion effects visible in the same periods,

⁷⁴ [Goldman Sachs Group, Inc., *Transcript* (March 20, 2009).] [Citation form.]

⁷⁵ Andrew Fisher, *Bear Stearns CEO: No Liquidity Crisis for Firm*, CNBC, Mar. 12, 2008, available at http://www.cnbc.com/id/23590249/Bear_Stearns_CEO_%C2%A0_No_Liquidity_Crisis_for_Firm.

especially during the financial crisis of 2007–2009. Second, the potential for asset shocks and risk related to correlation, concentration, and connectedness to bring down financial institutions in no event rules out the possibility for contagion to do the same thing both to institutions that have been exposed to an asset shock and those that have not. The remainder of this Study is devoted to the problem of contagion.

B. *Contagious Failure: The Run-Panic Theory*

The best-developed (and to some degree competing) theory of systemic risk attributes the prototypical financial panic to run behavior by short-term creditors that spreads across multiple institutions in the financial system. Applied to classic banking activity, this theory historically focused on contagious runs by uninsured depositors to explain the wave of bank failures of the 1930s and elsewhere in modern financial history. The underlying economic explanation for a contagious run extends, however, to the behavior of non-deposit short-term creditors too, as is described in Part II.⁷⁶ A contagious run of any composition threatens the financial system in a way that is fundamentally different from the risks presented by an asset shock or interconnectedness. Contagion can spread indiscriminately to solvent institutions, causing “real economic problems because even ‘healthy’ banks can fail.”⁷⁷ Financial institutions that succumb to contagion may be solvent immediately beforehand and may not display characteristic warning signs of distress, for example a decline in operating performance or deterioration in balance sheet quality, for regulators to detect in advance.⁷⁸ Importantly, contagion in the financial system and runs on individual financial institutions within it are two different phenomena, though they are closely related to each other. An isolated run by short-term investors on a single financial institution is not an example of contagion. Contagion only occurs when a run at one institution induces short-term creditors of multiple other institutions to run too, even from institutions that are adequately capitalized and may have no financial linkage to the same set of problematic risk

⁷⁶ See, e.g., Morgan Ricks, *Shadow Banking and Financial Regulation*, 13 (Columbia Law and Economics, Working Paper No. 370, Aug. 30, 2010) (extending the economic explanation for run behavior to the so-called “shadow banking system”).

⁷⁷ Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 *The Journal of Political Economy*, 401, 402 (June 1983), available at <http://www.jstor.org.ezp-prod1.hul.harvard.edu/stable/pdfplus/1837095.pdf>.

⁷⁸ *Id.* at 410.

exposures.⁷⁹ Nonetheless, the two phenomena are linked because under certain circumstances individual runs can generate systemic contagion effects that are then translated into series of further runs. Crucially, runs that mutate into contagious panics are not always, and do not need to be, preceded by the actual failure of one or more distressed or insolvent financial institutions in the financial system. On the contrary, contagion can develop from a generalized fear of failure on the part of short-term creditors as much as it can represent an overt reaction to specific cases of real distress. Financial institutions are susceptible to contagion since they, but in general not non-financial companies, can be brought down by runs of this kind.

The basic economic explanation for contagion is rooted in classic bank run behavior, articulated in the model of bank runs developed by Diamond and Dybvig (1983). This model establishes that banks, but equally, any other financial institution that serves as an intermediary to a maturity transforming transaction by issuing short-term debt, exist at “multiple equilibria.” Because maturity transformation requires the intermediary to finance long-term illiquid assets (such as mortgages with maturities spanning multiple decades)⁸⁰ with short-term or demand liabilities that are redeemable at par, one of these equilibria is a run:

Banks are able to transform illiquid assets by offering liabilities with a different, smoother pattern of returns over time than the illiquid assets offer. These contracts have multiple equilibria. If confidence is maintained, there can be efficient risk sharing, because in that equilibrium a withdrawal will indicate that a depositor should withdraw under optimal risk sharing. If agents panic, there is a bank run and incentives are distorted. In that equilibrium, everyone rushes in to withdraw their deposits before the bank gives out all of its assets. The bank must liquidate all its assets, even if not all depositors withdraw, because liquidated assets are sold at a loss.⁸¹

The core of this account is constructed around a collective action problem:⁸² short-term creditors of a maturity transforming firm that is suspected to be verging on insolvency develop a rational motive to withdraw funding before the firm’s supply of liquid reserves is drained by others who

⁷⁹ See definition in Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [3].

⁸⁰ Markus K. Brunnermeier, *Deciphering the Liquidity and Credit Crunch 2007–2008*, 23 *Journal of Economic Perspectives*, 77–100, 79 (Winter 2009).

⁸¹ Diamond & Dybvig, *supra* note 77 at 403. See also Gerald Corrigan, *Are Banks Special*, Federal Reserve Bank of Minneapolis (Jan. 1982), available at <http://www.minneapolisfed.org/pubs/ar/ar1982a.cfm> (noting that “[o]nly banks issue transaction accounts; that is, they incur liabilities payable on demand at par and are readily transferable by the owner to third parties”).

⁸² Carnell, et al., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS*, *supra* note 62 at 310 (characterizing uninsured depositors as “fac[ing] a collective action problem of the sort game theorists call the *prisoner’s dilemma*”); see also Ricks, *supra* note 76 at 13.

are responding to the same pattern of incentives. Generating enough liquidity to redeem exiting creditors at par forces the firm into monetizing long-term assets at non-economic valuations. In the ensuing fire sale, the bank incurs the losses that caused creditors to panic in the first place. A downward spiral at one firm becomes contagious when it induces short-term creditors of one or multiple other firms to develop symmetrical concerns and incentives, initiating a chain reaction of distressed liquidations that ultimately engulfs healthy financial institutions, drives down asset prices below fair market valuations, and causes systemic balance sheet impairment both through forced sales and mark-to-market accounting losses.⁸³

This scenario illuminates three key features distinguishing failures traceable to runs and contagion from those that are linked to the business cycle. First, under the business cycle theory, the failure of a financial institution is a knock-on consequence of an exogenous event, typically an economic downturn. Second, it reflects correlation-, concentration-, and connectedness-related risks to which financial and non-financial firms are jointly susceptible. Third, the nature of these two features ensures that credible information about an impending failure is observable in advance. Failures caused by contagious runs are, by contrast, endogenous phenomena that arise from within (and usually stay largely confined to) financial firms. Runs reflect a failure of collective action by short-term creditors. The collective action problem is the structural result of (1) the distinctive mismatch between long-term financial assets and short-term liabilities held on financial balance sheets, coupled with (2) the bankrupting effect of fire sales initiated to fund the withdrawal of short-term funding. Maturity transforming activity exposes firms that perform it to panics with no warranting basis in an asset shock or prior insufficient capital. Industrial firms that do not conduct maturity transformation by issuing short-term liabilities are immune to these forces, except to the limited extent that they depend on short-term capital markets to finance working capital needs, discussed in Part II.⁸⁴ Non-bank financial firms dependent on short-term non-deposit or otherwise uninsured short-term liabilities, on the other hand, so long as they conduct maturity transformation, serve as intermediaries to maturity transforming transactions, or hold long-term assets that must be refinanced on a periodic basis, are continuously exposed to

⁸³ See, e.g., Temzelides, *supra* note 13 at 5; Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 674-75 (describing the prototypical depositor-initiated contagious run and linking it to the broader problem of systemic risk in the financial system); Shleifer & Robert Vishny, *infra* note 88.

⁸⁴ But see Kaufman, *Bank Contagion: Theory and Evidence*, *supra* note 12.

the threat of a contagious run by panicking short-term creditors.⁸⁵ Runs on bank- and non-bank financial institutions can therefore develop into contagion even if the institutions are initially well-capitalized and display no leading indicators of financial distress. As this begins to occur, however, fire sales initiated by affected institutions to (1) fund withdrawals of liquidity, (2) post margin, or (3) cover defaults by counterparties through the liquidation of collateral⁸⁶ cause asset prices to fall, impairing institutional balance sheets, depleting capital, and driving institutions into the state of insolvency anticipated by short-term creditors when the runs began. As Friedman and Schwartz (1963) observe, at this point the run may become “self-justifying” since the fire sale “force[s] a decline in the market value of...the remaining assets” held on institutional balance sheets, which in the worst cases brings about actual insolvency.⁸⁷ Shleifer and Vishny (2011) point out that collapsing asset prices can also force financial institutions to recognize mark-to-market accounting losses, compounding the insolvency effect of the runs.⁸⁸ Institutions that are initially untouched by contagion can thus be brought down by large mark-to-market accounting losses that wipe out capital even if those institutions have not participated in the fire selling and their balance sheet losses remain unrealized.⁸⁹ Contagious runs can, as a result, become a source of correlation-related systemic risk by depressing market prices and causing institutions with the same risk exposures to fail. The fire sales that accompany a serious run can help to explain why ex ante strategies like capital requirements, which seek to stop the development of contagion by preventing financial institutions from becoming insolvent and failing might fail to overcome the dynamics that initiate and sustain a contagious run that unfolds independently of an institution’s solvency.

Various attempts have been made to explain what factors induce short-term creditors of a previously stable financial institution to initiate a run in the first place. Diamond and Dybvig have suggested that the “shift in [creditor] expectations” can “depend on almost anything.”⁹⁰ Scott (2010) describes contagious run behavior as originating from a lack of timely market

⁸⁵ Ricks, *supra* note 76 at 13-19.

⁸⁶ Shleifer & Vishny, *infra* note 88 at 37 (discussing the impact of margin requirements and collateral liquidations on fire sales).

⁸⁷ Friedman & Schwartz, *supra* note 10 at 355 (reporting that “impairment in the market value of assets held by banks, particularly in their bond portfolios, was the most important source of impairment of capital leading to bank suspensions, rather than the default of specific loans or of specific bond issues [of the early 1930s]”).

⁸⁸ Andrei Shleifer & Robert Vishny, *Fire Sales in Finance and Macroeconomics*, 25 *Journal of Economic Perspectives*, 29-48, 29-30 (Winter 2011).

⁸⁹ *Id.*

⁹⁰ Diamond & Dybvig, *supra* note 77 at 404.

information.⁹¹ Ricks (2010) argues that the marginal utility to short-term creditors of performing expensive fundamental credit analysis on their issuer is low, because fundamentals are not always a predictor of a run, while a single creditor's knowledge of fundamental credit risk cannot be used to forestall a run by other creditors once it is underway. During a run creditors rationally prefer to exit from the institution instead of carefully analyzing its solvency and true credit risk, compounding the run's effects.⁹² Social-psychology models such as Bikhchandani, Hirshleifer and Welch (1992) characterize financial panics as one instance of a more general form of crowd behavior documented in non-financial contexts too. This view imputes contagion effects to "informational cascades" in which individual market participants use the actions of peers as cost-effective surrogates for actual data about an underlying reference entity that might otherwise be prohibitively expensive to obtain.⁹³ All of these explanations recognize that contagion is not preconditioned on prior insolvency. Instead, it is a liquidity-driven phenomenon that reflects the maneuvering of short-term creditors in response to informational constraints, rational incentives, and structural vulnerabilities uniquely characteristic of financial intermediaries dependent on short-term borrowing. These constraints can provoke short-term creditors to withdraw from institutions preemptively even if they are fundamentally well-capitalized and have no exposure to losses connected to an asset shock, such as occurred during the financial crisis of 2007–2009 in MMMFs that did not own debt issued by Lehman Brothers (described in Part II).

Contagion is thus understood to present a systemic risk of a singular nature to financial institutions, going beyond what their industrial counterparts confront.⁹⁴ Even critics such as Kaufman (1992) who urge that contagion is an overstated force in financial markets concede that, relative to other industries, it (1) strikes financial institutions more often, unfolding more rapidly than in other sectors of the economy, (2) spreads among a larger constellation of peer institutions, (3) causes a larger number of failures, and (4) spills over to the real economy where it inflicts collateral damage on industries that depend on the financial sector as a source of long-

⁹¹ Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 33.

⁹² Ricks, *supra* note 76 at 15-17.

⁹³ See, e.g., Sushil Bikhchandani, David Hirshleifer & Ivo Welch, *A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades*, 100 *The Journal of Political Economy* 992, 1012-13 (Oct. 1992) (comparing the initiation of a bank run to "a cascade in which small depositors fear for the solvency of a bank and act by observing the withdrawal behavior of other depositors"); see generally CHARLES P. KINDLEBERGER, *MANIAS, PANICS, AND CRASHES, A HISTORY OF FINANCIAL CRISES* [pp.] (Basic Books 1978) [Full citation].

⁹⁴ Kaufman, *Bank Contagion: Theory and Evidence*, *supra* note 12 at 3.

term capital.⁹⁵ Above all, since contagion is a structural feature of the financial system that is endogenous to the economics of maturity transformation, it is not likely to be resolved through better risk management or improved prudential oversight. Policymakers should not take too much comfort from the fact that past bank failures may have been driven by fluctuation in the business cycle, correlation, concentration, or interconnectedness. Absent affirmative, systemic steps taken to contain it, the problem of contagion will continue to haunt the financial system for the future.

Historical experience supplies evidence that the problem of contagion is not hypothetical. The seminal review of the banking panics of the early 1930s by Friedman and Schwartz concludes that instability during this period exhibited salient hallmarks of contagion.⁹⁶ Saunders and Wilson (1996) present evidence to support their conclusions.⁹⁷ Gorton, while disputing the role of contagion in other eras of financial history,⁹⁸ concurs that the disruptions in the banking system at the outset of the Depression differed in foundational aspects from mass insolvencies during the National Banking Era, and can be attributed to structural weaknesses intrinsic to banking institutions and the banking system.⁹⁹ Senior U.S. policymakers point to the role of contagion in the financial crisis of 2007–2009. Federal Reserve chairman Ben Bernanke, though pointing to “fundamentals” including massive balance sheet impairments linked to losses from residential and commercial mortgage lending “played a critical role in triggering” the crisis, has also reserved room for the decisive effects of what he has called “classic panic” at play among non-bank financial institutions and MMMFs, in interbank unsecured lending markets, as well as in repo and ABCP markets during September and October of 2008.¹⁰⁰

More exacting scrutiny is needed to establish the scale of the problem of contagion in the financial institutional context. The portrait of financial institutions that has been developed here,

⁹⁵ *Id.*

⁹⁶ Friedman & Schwartz, *supra* note 10 at 308-15 (describing a “contagion of fear spread[ing] among depositors” beginning in 1929).

⁹⁷ Anthony Saunders & Berry Wilson, *Contagious Bank Runs: Evidence from the 1929–1933 Period*, 5 *Journal of Financial Intermediation*, 409-423 (1996), available at http://www.sciencedirect.com.ezp-prod1.hul.harvard.edu/science?_ob=MIimg&_imagekey=B6WJD-45MGXTG-4-1&_cdi=6876&_user=209690&_pii=S1042957396900224&_orig=search&_coverDate=10%2F31%2F1996&_sk=99949995&view=c&wchp=dGLzVlz-zSkzk&md5=35d9d5c77f5d3945b1a84c21da68664d&ie=/sdarticle.pdf (researching the 1930-1933 period, the authors found some evidence of contagion, but attributed much of the bank crisis to the impact of economic deterioration).

⁹⁸ Gorton, *supra* note 37 at 11.

⁹⁹ Gorton, *supra* note 37 at 222.

¹⁰⁰ Bernanke, Speech at the Federal Reserve Bank of Kansas City's Annual Economic Symposium, *infra* note 127.

however, indicates that contagious runs are endemic to all issuers of short-term uninsured debt instruments acting as credit intermediaries in the process of maturity transformation. If this portrait is accurate, then strategies to contain financial contagion must go beyond promoting greater loss imposition (e.g., through capital requirements and resolution procedures) and controlling risk-taking by institutions in the financial system and must address the structural source of this recurring hazard facing credit intermediaries. As regulatory reform of the U.S. financial system proceeds to the implementation phase, a thoroughgoing review of institutional contagion is necessary to inform the appraisal of the full spectrum of remedies to the problem of contagion with the full benefit of historical experience.

II. FINANCIAL CONTAGION AS A MARKET PHENOMENON

Until recently the bulk of attention devoted to contagion focused on its effects upon the depository banking system and upon demand deposits, the principal source of short-term credit to that system.¹⁰¹ The evolution of financial linkages in the economy over the past 30 years and growing intermediation of financial markets via derivatives, asset securitization, and structured finance have introduced a new universe of credit intermediaries to the financial system and a new range of short-term credit markets that supply them with non-deposit wholesale funding.¹⁰² Collectively, the non-bank financial institutions and funding markets that compose this system serve largely the same economic role as the conventional banking system, as Gorton (2009) and many others have noted.¹⁰³ Like traditional depository institutions, many of these intermediaries conduct maturity transformation (or intermediate the process of maturity transformation through ownership of short-term liabilities issued by other maturity transforming firms) and are financed on a short-term or demand basis by wholesale sources. Unlike depository institutions, bank deposits are not their prime source of short-term credit. Non-bank financial intermediaries fund themselves in a variety of short-term secured and unsecured borrowing markets, including the

¹⁰¹ Ricks, *supra* note 76 at 3.

¹⁰² For discussion of the increasing complexity in the contemporary financial system and its role in the financial crisis of 2007–2009, see, e.g., Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 625-752 (Chapter 12, titled “Asset Securitization and the Financial Crisis”).

¹⁰³ Gary Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007* (Yale and Nat’l Bureau of Econ. Research, May. 2009), available at <http://www.frbatlanta.org/news/CONFEREN/09fmc/gorton.pdf> (concluding that “[r]eforms to the current system must address the reality of [the] shadow banking system as a banking system”).

markets for commercial paper, ABCP, unsecured interbank lending, and secured repo borrowing. The major buyers of the money market instruments (including ABCP and repo) issued into these markets are 2(a)-7 MMMFs, unregulated investment funds, and various securities lenders.¹⁰⁴ The contemporary collection of non-bank financial institutions, credit intermediaries, and short-term capital and money markets that ultimately provide funding to them are sometimes referred to as the “shadow banking system”¹⁰⁵ (or the “securitized” banking system),¹⁰⁶ but as Scott (2011) observes, this term is imprecise and designates different activities, actors, and markets at different times.¹⁰⁷ The principal intermediaries that make up this system are simply the array of contemporary non-bank financial institutions funded on a wholesale basis, also known as the non-depository financial system. The principal sources of short-term funding to non-depository financial institutions in this system are simply the short-term capital markets, also known as the money markets.

Among the most important attributes distinguishing the system of non-bank institutional intermediaries and the short-term capital markets from traditional depository banking activity is its substantially greater level of intermediation. Classic banking conventionally involves a single intermediary (a bank) that originates long-term loans and issues short-term deposit accounts to fund itself. By contrast, non-bank institutional credit creation often entails multiple layers of intermediation, resulting in the creation of greater amounts of short-term liabilities to finance assets held by intermediaries at each layer.¹⁰⁸ For example, Pozsar (2010) characterizes at least seven representative stages in the process of originating, warehousing, and funding long-term assets. Each stage involves the participation of different categories of non-bank financial institutions, each of which is funded in a number of different wholesale markets.¹⁰⁹ In the first stage, loan origination is conducted by non-bank finance companies funded in the commercial paper markets (and by longer-term notes).¹¹⁰ Loans are subsequently warehoused in a variety of funding conduits financed using ABCP before undergoing securitization through SPVs created

¹⁰⁴ See also Zoltan Pozsar, et al., *Shadow Banking*, [pp. 11-14] Federal Reserve Bank of New York, Jul. 2010.

¹⁰⁵ The term “shadow banking system” is attributed to Paul A. McCulley, managing director at PIMCO. It has since been widely adopted by the financial press. Paul A. McCulley, *Teton Reflections*, PIMCO (Sept. 2007), available at <http://www.pimco.com/Pages/GCBF%20August-%20September%202007.aspx>; see also Pozsar, *supra* note 104.

¹⁰⁶ See Gorton & Metrick, *infra* note 169.

¹⁰⁷ Scott, *How to Improve Five Important Areas of Financial Regulation*, *supra* note 17 at [3].

¹⁰⁸ Hyun Song Shin, *Macprudential Policies Beyond Basel III*, 8 (International Centre for Financial Regulation, Research Price 2010, 2010).

¹⁰⁹ Pozsar, *supra* note 104 at 11.

¹¹⁰ *Id.* at 12.

by broker-dealers (stages 2-3).¹¹¹ Next, the asset-backed securities (ABS) created from the securitization process are warehoused temporarily on broker-dealer trading books funded with short-term secured repo (stage 4) and structured into asset-backed or synthetic CDOs (stage 5).¹¹² They may undergo further intermediation through structured investment vehicles (SIVs), credit hedge funds, and other conduits funded in the repo and ABCP markets and by longer-term bond markets (stage 6).¹¹³ Finally, the collection of commercial paper, ABCP, and repo funding issued to finance various stages in the intermediation process are absorbed by wholesale funding markets through regulated 2(a)-7 MMMFs, unregulated enhanced cash funds, and direct investors in money markets, among other cash investors.¹¹⁴ Longer-term liabilities created in the process may be purchased by mutual funds, pension funds, and other long-term investors.¹¹⁵

Though the actual number of steps in the intermediation of financial assets varies (for example, depending on the quality of the assets being financed at the origination stage),¹¹⁶ the economic outcome of the process is almost the same as in the depository banking context: long-term assets, including residential and commercial mortgages, auto loans, credit card loans, and corporate bank debt, ultimately are converted to short-term debt instruments such as commercial paper. These instruments often incorporate exceptionally short maturities. In 2008, for example, 69% of total outstanding commercial paper was 1-4 days maturity and 75% was 9 days or less.¹¹⁷ As Shin (2010) observes, proliferating shorter liability maturities are the direct result of lengthening intermediation chains, since “[a]t each stage of the intermediation chain, the funding interest rate must be lower than the asset interest rate,” creating demand for “more short-term funding...to support the chain.”¹¹⁸ Apart from the involvement of multiple layers of intermediation and the creation of increasing amounts of short-term liabilities, the primary difference in the non-bank style of credit creation relative to depository banking is that the ultimate sources of financing to the origination process are the capital markets: short-term

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ *Id.* at 12-13; *see also* Scott, INTERNATIONAL FINANCE, *supra* note 28 at 634-38 (describing the steps in the process of creating of a CDO).

¹¹⁴ Pozsar, *supra* note 104 at 13.

¹¹⁵ *Id.* at 13.

¹¹⁶ *Id.* at 14.

¹¹⁷ Richard G. Anderson & Charles S. Gascon, *The Commercial Paper Market, the Fed, and the 2007-2009 Financial Crisis*, Federal Reserve Bank of St. Louis Review 589-612, 590 (Nov.-Dec. 2009), available at <http://research.stlouisfed.org/publications/review/09/11/Anderson.pdf>.

¹¹⁸ Shin, *supra* note [fn 104] at 9.

commercial paper markets including ABCP, unsecured and secured repo borrowing markets, plus the markets for bonds and other long-term capital instruments. MMMFs dominate the buy-side of the market for the shorter maturity instruments (commercial paper, ABCP, and repo) issued through this process.

*Figure 2.1: U.S. Commercial and Investment Banks –
Summary of Assets and Liabilities at Year End 2008 (\$ in Millions)*¹¹⁹

	JPMorgan	Citigroup	Bank of America	Wells Fargo	Goldman Sachs	Morgan Stanley
Balance sheet date	12/31/2008	12/31/2008	12/31/2008	12/31/2008	11/28/2008	11/30/2008
Total assets	\$2,175,052	\$1,945,263	\$1,817,943	\$1,309,639	\$884,547	\$658,812
Liabilities:						
Deposits	\$1,009,277	\$774,185	\$882,997	\$781,402	\$27,643	\$42,755
Secured repo ^(a)	192,546	205,293	206,598	62,203	118,626	129,749
CP and other short-term	37,845	126,691	158,056	45,871	52,658	10,483
Non-deposit short-term	230,391	331,984	364,654	108,074	171,284	140,232
Trading account, derivative, brokerage, and other ^(b)	166,878	238,452	87,996	--	429,815	245,112
Accrued expenses and other ^(c)	187,978	90,275	36,952	53,921	23,216	16,445
Other ^(d)	142,961	--	--	--	--	--
Long-term debt	270,683	359,593	268,292	267,158	168,220	163,437
Total liabilities	2,008,168	1,794,489	1,640,891	1,210,555	820,178	607,981
Shareholders' equity	166,884	150,774	177,052	99,084	64,369	50,831
Total liabilities and equity	\$2,175,052	\$1,945,263	\$1,817,943	\$1,309,639	\$884,547	\$658,812
Non-deposit short-term debt % assets	10.6%	17.1%	20.1%	8.3%	19.4%	21.3%
% as of Year End 2010	14.7%	14.0%	13.5%	4.4%	28.5%	23.6%

(a) Includes federal funds purchased and sold, securities borrowed, loaned, or sold under repurchase agreements, plus other collateralized borrowings.

(b) Includes trading and derivative liabilities, payables to customers, counterparties, brokers, dealers, and clearing services.

(c) Includes reserves for unfunded lending commitments, allowances for credit losses, and other payables.

(d) For JPMorgan includes borrowings associated with the Federal Reserve AML facility.

Unlike traditional bank deposits in the U.S., these liabilities are uninsured, though as Wermers (2010) notes, “some investors seem to believe that implicit guarantees [of MMMFs] exist, either from the management company or from the U.S. Government.”¹²⁰ But since they serve an equivalent function in transforming short-term maturities indirectly into longer-term

¹¹⁹ [Cite to public financials – citation format that does not require exhaustive string citation?]

¹²⁰ Russ Wermers, *Money Fund Runs*, 1 (Sept. 2010) (noting that “[i]n the eyes of some investors, money market funds have become a substitute for bank deposits”); see also Ricks, *supra* note 76 at 4 (noting that “the short-term financing sources on which [the system of MMMFs and other credit intermediaries] relies are the functional equivalent of bank deposits”); see also Gary Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007*, *supra* note 103 at 30 (arguing that “[r]epo is essentially depository banking, built around informationally-insensitive debt”).

capital, they are subject to the identical collective action problems, liquidity issues, and run risks that historically have attached only to uninsured bank deposits.¹²¹ Since the fundamental economic role served by non-depository, non-bank financial intermediaries, including MMMFs, exposes them to periodic runs, they are also vulnerable to contagion. Importantly, this vulnerability extends to major commercial and investment banking institutions that are dependent on uninsured wholesale funding to support their business models. Many of the largest of these institutions also engage in traditional deposit-taking. For example, Bank of America, Citigroup, JPMorgan, Wells Fargo, Goldman Sachs, and Morgan Stanley, among the largest U.S. financial institutions, all rely to some degree on a variety of non-deposit wholesale sources to finance balance sheet activities (see Figure 2.1).

Because short-term instruments including ABCP, other commercial paper, and various forms of repo financing, the byproducts of the process outlined above, are issued into and exchanged within capital markets, they, too, can directly experience, or else provide a conduit for, the systemic spread of contagion effects. The basis for this vulnerability is not that short-term capital markets and their direct participants such as MMMFs unilaterally perform all of the functions of traditional banks, or conduct maturity transformation singlehandedly. MMMFs, in fact, often hold short-term, marketable instruments in the form of assets, such as commercial paper and repo borrowing, incurring little maturity mismatch. But these and other instruments that are commonly traded in the short-term capital markets are ultimately issued to finance, and thus are indirectly backed by, an array of non-bank financial institutions that *collectively* provide traditional banking functions to the economy, including maturity and liquidity transformation and loan origination that is conducted in an intermediated format.¹²² Sudden withdrawals by investors from MMMFs and other short-term capital markets instruments can thus eliminate a vital source of funding to originators positioned further up the intermediation chain, potentially triggering forced liquidations of assets which then depress prices, encourage further fire sales, impede new investment, and, ultimately, damage the overall level and pace of economic activity.

¹²¹ Ricks, *supra* note 76 at 3-6, 9-11; see e.g., Brooke Masters & Jeremy Grant, *Shadow boxes*, FINANCIAL TIMES, Feb. 3, 2011 (defining and describing “shadow banking” and noting that “[s]ome non-banks...engage in what is known as ‘maturity transformation’...[s]ometimes...within a single institution but...also...in long chains that encompass everything from mortgage brokers and packagers of loans into securities, to the money market funds and special-purpose vehicles that hold them”).

¹²² Pozsar, *supra* note 104 at 11-14, 58-59.

The downward spiral in asset prices can become self-reinforcing, if impairment to the creditworthiness of originators situated “upstream” prompts successive waves of withdrawals by investors in MMMFs and short-term instruments positioned “downstream,” whose recoveries are linked to the solvency of the originators (and the value of the assets they have created). As in the traditional banking context, this cycle is provoked through the combination of maturity mismatch (perhaps disguised temporarily through the intermediation of maturity transformation) and fire sales. The link between the short-term capital markets and traditional credit creation means that the problem of contagion is now a market phenomenon. Taken together the size of these markets eclipses the sum of insured deposits outstanding in the U.S. financial system. Estimates of the total amount of non-deposit banking liabilities outstanding within it range from \$11¹²³ to \$16 trillion.¹²⁴ At the end of 2008, money market funds alone managed \$3.8 trillion in assets,¹²⁵ as against \$4.8 trillion of deposits insured by the Federal Deposit Insurance Corporation (FDIC) at traditional U.S. depository institutions.¹²⁶ The broadening of the parameters of the systemic risk presented by contagion is confirmed further by its visible influence on the behavior of ABCP, interbank, and repo borrowing markets and on MMMFs during the financial crisis of 2007–2009, discussed below. For these reasons, the search for strategies to block the spread of contagion in a crisis period must not neglect the market dimension created by the problem.

The influence of contagion on non-depository credit intermediaries and money markets has been succinctly documented by Federal Reserve chairman Ben Bernanke in a speech in 2009 that noted the extension of “classic panic” behavior to the non-deposit taking segment of the financial system during the crisis:

[Classic] [p]anics arose in multiple contexts last year. For example, many financial institutions, notably including the independent investment banks, financed a portion of their assets through short-term repo agreements...As we saw last fall, when a vicious funding spiral of this sort is at work, falling asset prices and the collapse of lender confidence may create financial contagion [in repo markets], even between firms without significant counterparty relationships. In such an environment, the line between insolvency and illiquidity may be quite blurry...Panic-like phenomena occurred in other contexts as well. Structured investment vehicles and other asset-backed programs that relied heavily on the

¹²³ Ricks, *supra* note 76 at 11.

¹²⁴ Pozsar, *supra* note 104 at 5.

¹²⁵ Naohiko Baba et al., *U.S. Dollar Money Market Funds and Non-U.S. Banks*, BANK FOR INT’L STATISTICS Q. REV. (March 2009).

¹²⁶ Federal Deposit Insurance Corporation, *2008 Annual Report*, 12, 53, available at http://www.fdic.gov/about/strategic/report/2008annualreport/index_pdf.html.

commercial paper market began to have difficulty rolling over their short-term funding very early in the crisis, forcing them to look to bank sponsors for liquidity or to sell assets. Following the Lehman collapse, panic gripped the money market mutual funds and the commercial paper market...More generally, during the crisis runs of uninsured creditors have created severe funding problems for a number of financial firms. In some cases, runs by creditors were augmented by other types of “runs”—for example, by prime brokerage customers of investment banks concerned about the funds they held in margin accounts. Overall, the role played by panic helps to explain the remarkably sharp and sudden intensification of the financial crisis last fall, its rapid global spread, and the fact that the abrupt deterioration in financial conditions was largely unforecasted by standard market indicators.¹²⁷

The bankruptcy of Lehman Brothers in September 2008,¹²⁸ though less destructive than some who regarded the firm as “too interconnected to fail”¹²⁹ predicted at the outset,¹³⁰ produced significant contagion effects in the short-term capital markets.¹³¹ As the CCMR’s recent study finds, Lehman’s collapse triggered a major run on U.S. MMMFs and short-term ABCP markets after the \$62.6 billion Reserve Primary Fund (RPF) recorded unprecedented write-downs on \$785 million of unsecured Lehman commercial paper instruments.¹³² The RPF episode bore trademark signs both of a targeted run (on the RPF and other managers with direct exposure to Lehman, such as Wachovia’s investment management business, Evergreen Investments)¹³³ and broader contagion among non-bank financial institutions and markets with no direct exposure to Lehman. Contagion effects spread from the MMMFs to the ABCP market, interbank lending

¹²⁷ Ben S. Bernanke, Chairman, Fed. Res. Bd., Speech at the Federal Reserve Bank of Kansas City’s Annual Economic Symposium, Jackson Hole, Wyoming (August 21, 2009), *available at* <http://www.federalreserve.gov/newsevents/speech/bernanke20090821a.htm>.

¹²⁸ The discussion of market contagion during the financial crisis of 2007–2009 in Part II relies heavily on the findings of a recent study by the CCMR analyzing the effects of the bankruptcy of Lehman Brothers on adjacent financial institutions and markets as a result of interconnectedness and contagion effects. For detailed discussion of this episode, see generally COMM. ON CAPITAL MKTS. REGULATION, *Lehman Look Back: Contagion and Interconnectedness* (2011), *available at* [<http://www.capmktreg.org/pdfs/>] [hereinafter *CCMR Lehman Look Back*].

¹²⁹ See, e.g., RANDALL S. KROSZNER, FIN. CRISIS INQUIRY COMM’N, INTERCONNECTEDNESS, FRAGILITY AND THE FINANCIAL CRISIS: “TOO BIG/INTERCONNECTED TO FAIL” AND MORAL HAZARD 4-5 (Feb. 26-27, 2010).

¹³⁰ CCMR *Lehman Look Back*, *supra* note 128 at [pp]. See also, *Derivatives Market Trades on Sunday to Cut Lehman Risk*, REUTERS, Sept. 14, 2008, *available at* <http://www.reuters.com/article/idUSN1444498020080914> (quoting Bill Gross of Pacific Investment Management Company, LLC (PIMCO) predicting that Lehman’s bankruptcy risk “immediate tsunami” associated with the liquidation of derivatives and CDS positions by counterparties).

¹³¹ CCMR *Lehman Look Back*, *supra* note 128 at [pp].

¹³² Investment Company Inst., *Report of the Money Market Working Group* 59, Mar. 17, 2009.

¹³³ FIN. CRISIS INQUIRY COMM’N, THE FINANCIAL CRISIS INQUIRY REPORT 354 (Jan. 2011), *available at* <http://fcic.gov/report> (noting that “[i]nvestors pulled out of funds with known exposure to that jeopardy, including...Wachovia’s Evergreen Investments.”)

markets including the market for unsecured LIBOR borrowing and secured repo, and to other areas of the non-depository banking system.¹³⁴

On the day Lehman filed in U.S. bankruptcy court, the RPF received redemption requests from investors amounting to approximately \$25 billion in total.¹³⁵ To satisfy these requests the RPF liquidated its portfolio and wrote down its Lehman holdings to zero, momentarily “breaking the buck” as its NAV fell to \$0.97.¹³⁶ Like in a classic bank run, sudden demand for immediate liquidity from investors forced the RPF into a disorderly liquidation of assets, crystallizing losses that prompted investors to rush to exit in the first place. Ultimately, the CCMR study notes, the impact of the drain on the RPF and bankruptcy of Lehman was more far reaching.¹³⁷ By September 19, investors demanded redemptions totaling \$60 billion from the RPF.¹³⁸ Other MMMFs that belonged to the Reserve fund family, for example its “U.S. Government Fund,” experienced significant withdrawals “even though they had not broken the buck and had no investments in Lehman paper.”¹³⁹ Unlike the flood of deposits to risk-free accounts issued by JPMorgan, the RPF’s safest (though not risk-free) funds underwent *outflows*. At least 36 of the largest 100 U.S. prime MMMFs managed by 20 different firms faced a decline below the \$1.00 NAV level and required government support.¹⁴⁰ As of September 18, \$142 billion of institutional investment money had been withdrawn from prime funds (amounting to 16% of prime MMMF holdings).¹⁴¹ Individuals had withdrawn an additional \$27 billion (3% of holdings).¹⁴² As of the end of the week, a total \$300 billion of investment in prime MMMFs had been liquidated by investors.¹⁴³ Although prime MMMFs had already begun to reduce investment in commercial paper prior to Lehman’s failure, shifting funds into risk-free U.S. government securities, they continued to hold “about 40% of their assets in commercial paper and corporate notes, with about 25% of their assets in bank notes and certificates of deposit (CDs). As MMMF investment continued to shift out of commercial paper instruments and into

¹³⁴ CCMR *Lehman Look Back*, *supra* note 128 at [see pages encompassing Section III].

¹³⁵ *Report of the Money Market Working Group*, *supra* note 132.

¹³⁶ *Report of the Money Market Working Group*, *supra* note 132.

¹³⁷ CCMR *Lehman Look Back*, *supra* note 128 at [PP].

¹³⁸ Baba et al., *supra* note 125 at 72.

¹³⁹ CCMR *Lehman Look Back*, *supra* note 128 at [PP]; Baba et al., *supra* note 125 at 72.

¹⁴⁰ Eleanor Laise, ‘Breaking the Buck’ Was Close for Many Money Funds, WALL ST. JOURNAL, Aug. 10, 2010, available at <http://online.wsj.com/article/SB10001424052748703428604575419812292841830.html>.

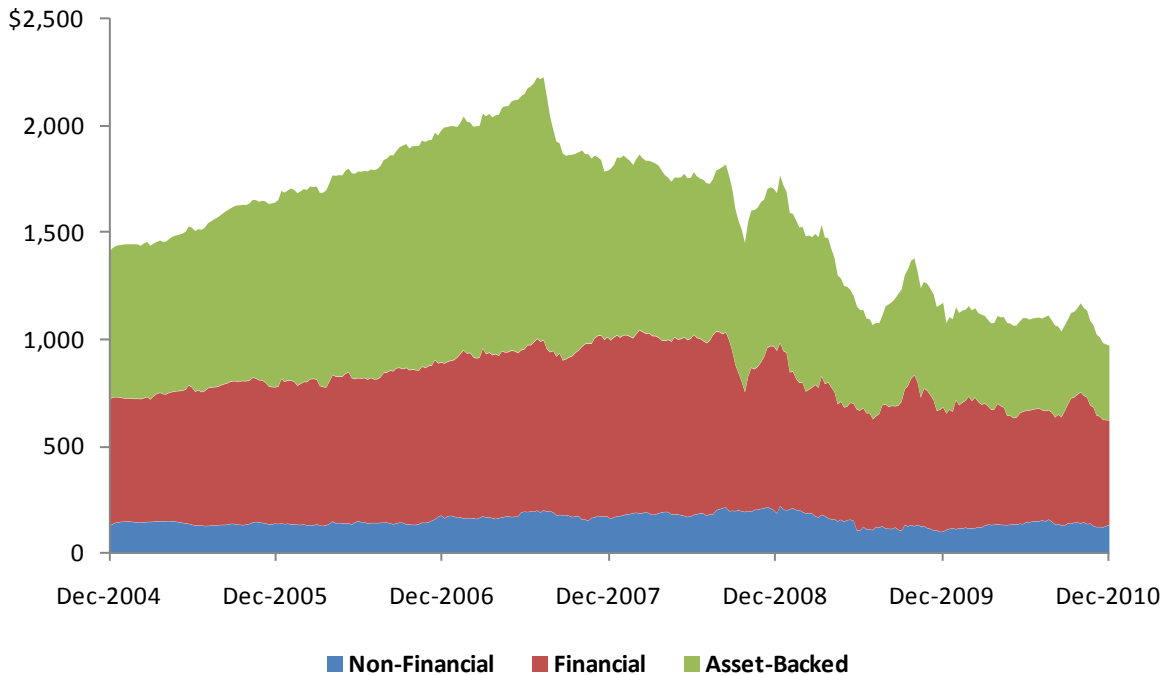
¹⁴¹ Baba et al., *supra* note 125 at 72.

¹⁴² *Id.*

¹⁴³ David Serchuk, *Another Run on Money Market Funds?*, FORBES, Sept. 25, 2009, available at <http://www.forbes.com/2009/09/24/money-market-lehman-intelligent-investing-break-buck.html>.

risk-free government securities, “the flight...stressed commercial paper...markets, causing second-tier thirty-day commercial paper rates to double within two days.”¹⁴⁴

*Figure 2.2: Commercial Paper Outstanding – Seasonally Adjusted (\$ in Billions)*¹⁴⁵



Appetite for commercial paper contracted severely, with annual average daily issuance volume plummeting from approximately \$150 billion per day in 2008 to under \$100 billion in 2009.¹⁴⁶ The contraction in commercial paper was sustained across all segments of the market, with the sharpest declines seen in asset-backed and financial commercial paper outstanding (see Figure 2.2 for seasonally adjusted figures).¹⁴⁷ MMMFs, the largest investors in commercial paper,¹⁴⁸ responded to the Lehman bankruptcy by transferring funds to risk-free instruments,¹⁴⁹

¹⁴⁴ CCMR *Lehman Look Back*, *supra* note 128 at [PP] (emphasis added). Baba et al., *supra* note 125 at 70-72.

¹⁴⁵ *Commercial Paper Outstanding Seasonally Adjusted* [Functions: FCPONCS, FCPOFCS, FCPOAB], Bloomberg Terminal, BLOOMBERG LP (last accessed Feb. 9, 2011).

¹⁴⁶ CCMR *Lehman Look Back*, *supra* note 128; Fed. Reserve Release, *Volume Statistics for Commercial Paper Issuance*, <http://www.federalreserve.gov/releases/CP/volumestats.htm>; Bryan Keogh & Christopher Condon, *Commercial Paper Falls Most Ever as ConEd Sells Bonds*, BLOOMBERG, July 16, 2009, available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ahK_pFZq4Wp4.

¹⁴⁷ Marcin Kacperczyk & Philipp Schnabl, *When Safety Proved Risky: Commercial Paper During the Financial Crisis of 2007–2009*, 24 *Journal of Economic Perspectives*, 29-50, 41 (Winter 2010), available at http://pages.stern.nyu.edu/~sternfin/pschnabl/kacperczyk_schnabl.pdf; Chris Reese, *US asset-backed commercial paper shrinks markedly*, REUTERS, Sept. 18, 2008, available at <http://www.reuters.com/article/idUSN1840345120080918>.

¹⁴⁸ Anderson & Gascon, *supra* note 117 at 596; see also Kacperczyk & Schnabl, *supra* note 147 at 35.

with government securities representing an average 40% of MMMF portfolios by the end of January 2009.¹⁵⁰ The scaling back of investment in commercial paper caused overnight spreads to leap to unprecedented highs.¹⁵¹ The total value of commercial paper outstanding continued to fall even after the U.S. Treasury announced it would guarantee MMMFs.¹⁵² The corporate commercial paper market, an important short-term credit source for non-financial companies distinct from ABCP, suffered much less disruption, though major corporate issuers such as Coca Cola, General Electric, and WellPoint replaced commercial paper financing with higher yielding long-term debt,¹⁵³ and also reacted by drawing on balance sheet cash and reducing overheads including employment.¹⁵⁴ The impact on MMMFs and the partial paralysis of commercial paper markets in the aftermath of the RPF debacle thus began to spill directly into the non-financial economy as contagion effects were transmitted to capital markets for corporate borrowing. Testifying before the Financial Crisis Inquiry Commission (FCIC), Lehman's bankruptcy attorney Harvey Miller observed that "[w]hen the commercial paper market died, the biggest corporations in American thought they were finished."¹⁵⁵

Though most visibly on display in the immediate impact on MMMFs and commercial paper markets, contagion also affected the behavior of short-term interbank lending channels and the market for repurchase agreement (repo) financing. In the interbank London Interbank Offered Rate (LIBOR) market where financial institutions extend unsecured loans to each other for periods ranging from overnight to three months, borrowing costs rose sharply and in unison. One-month U.S. dollar LIBOR rose to 3.43% by September 24, 2008, its highest level since the beginning of the year.¹⁵⁶ Euro- and pound LIBOR rates exhibited similar increases.¹⁵⁷ The

¹⁴⁹ Kacperczyk & Schnabl, *supra* note 147 at 41.

¹⁵⁰ Anderson & Gascon, *supra* note 117 at 604-05.

¹⁵¹ Kacperczyk & Schnabl, *supra* note 147 at 40.

¹⁵² Press Release, U.S. Dep't of the Treasury, Treasury Announces Temporary Guarantee Program for Money Market Funds (Sept. 29, 2008), *available at* <http://www.ustreas.gov/press/releases/hp1161.htm>; Kacperczyk & Schnabl, *supra* note 147 at 30.

¹⁵³ *Id.* at 46.

¹⁵⁴ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 394.

¹⁵⁵ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 355. For discussion of the wider impact of the financial crisis of 2007–2009 on the real (non-financial) economy, *see generally* THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 389-410; Thomas A. Russo & Aaron J. Katze, *The 2008 Financial Crisis and Its Aftermath: Addressing the Next Debt Challenge* 61-62 (Working Draft, Oct. 25, 2010).

¹⁵⁶ Gavin Finch & Kim-Mai Cutle, *Libor Jumps as Banks Seek Cash to Shore Up Finances*, BLOOMBERG, September 24, 2008, *available at* <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aVGxm.ZU.0jM&>.

¹⁵⁷ *Id.*

LIBOR-OIS spread, a measure of interbank credit risk, rose sharply.¹⁵⁸ The TED spread, another important indicator of the cost of interbank borrowing¹⁵⁹ (defined as the difference between the LIBOR rate and the risk-free rate on short-term U.S. government borrowing), widened dramatically, registering an all-time high of 464 basis points on October 10, 13 times its level two years earlier on December 31, 2006 and 6 times its median level through December 31, 2009:¹⁶⁰

*Figure 2.3: TED Spread – Historical Evolution (Bps)*¹⁶¹



Traders and analysts described an effective disappearance of the market for unsecured lending.¹⁶² According to the FCIC's Financial Crisis Inquiry Report, many banks simply discontinued lending to each other altogether.¹⁶³ Inability to obtain financing from crippled interbank borrowing markets exacerbated the decline in bank stock prices underway for over a year.¹⁶⁴

¹⁵⁸ LIBOR-OIS Spread [Functions: **LOIS**], Bloomberg Terminal, BLOOMBERG LP (last accessed Feb. 9, 2011). See also THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 355.

¹⁵⁹ See discussion in Brunnermeier, *supra* note [fn 62] at 85 (noting the utility of the TED spread as a measure of liquidity in the financial system).

¹⁶⁰ Bloomberg.com historical data, BLOOMBERG, available at <http://www.bloomberg.com/apps/quote?ticker=.TEDSP:IND>.

¹⁶¹ TED Spread [Functions: **.TEDSP:INDEX**], Bloomberg Terminal, BLOOMBERG LP (last accessed Feb. 9, 2011).

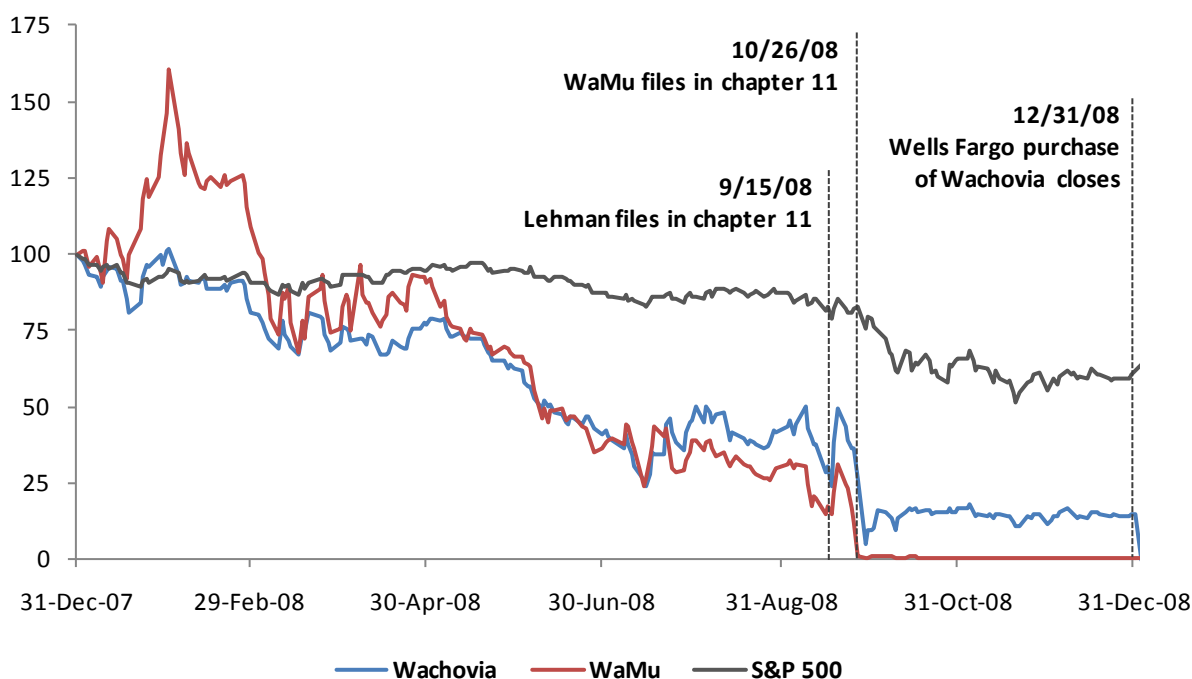
¹⁶² Finch & Cutle, *supra* note 156.

¹⁶³ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 355.

¹⁶⁴ See Figures 3 and 4 below. **[+ Cite.]**

Ordinary depositors of well-known consumer banks including Wachovia and Washington Mutual, the largest U.S. thrift, reacted by initiating so-called “silent runs,” withdrawing funds electronically en masse,¹⁶⁵ compounding the drain on funding. Both institutions ultimately failed and were acquired by Wells Fargo¹⁶⁶ and JPMorgan Chase,¹⁶⁷ respectively (see Figure 2.4).

*Figure 2.4: Wachovia and Washington Mutual – Share Price Evolution*¹⁶⁸



Repo markets were also seized by contagion. Repo borrowing rates increased across the board.¹⁶⁹ The quantity of collateral demanded by lenders in interdealer repo markets (excluding

¹⁶⁵ Rick Rothacker & Kerry Hall, *Wachovia faced a ‘silent’ bank run*, Charlotte Observer, October 2, 2008, available at <http://www.charlotteobserver.com/2008/10/02/226799/wachovia-faced-a-silent-bank-run.html>; Brunnermeier, *supra* note [fn 62] at 90 (noting silent run on Washington Mutual prior to its being placed in receivership and sold to JPMorgan Chase).

¹⁶⁶ Press Release, Wells Fargo & Company, Wells Fargo’s Merger with Wachovia to Proceed as Whole Company Transaction with All of Wachovia’s Banking Operations (Oct. 9, 2008), available at https://www.wellsfargo.com/press/2008/20081009_merger_proceed; Press Release, Wells Fargo & Company, Wells Fargo and Wachovia Merger Completed (Jan. 1, 2009), available at https://www.wellsfargo.com/press/2009/20090101_Wachovia_Merger.

¹⁶⁷ Press Release, Federal Deposit Insurance Corporation, JPMorgan Chase Acquires Banking Operations of Washington Mutual (Sept. 25, 2008), available at <http://www.fdic.gov/news/news/press/2008/pr08085.html>.

¹⁶⁸ *Wachovia and Washington Mutual, Inc. Historical Share Prices* [Functions: WB Equity, WAMUQ Equity], Bloomberg Terminal, BLOOMBERG LP (last accessed Feb. 9, 2011).

¹⁶⁹ Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 27, 50 (Yale ICF Working Paper No. 09-14, Nov. 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1440752 (finding increases in repo spreads and repo haircuts during the financial crisis of 2007–2009 were correlated with uncertainty concerning counterparty risk and collateral values, respectively).

tri-party repo) measured by the haircuts imposed on collateral posted in exchange for funding skyrocketed.¹⁷⁰ An index of haircuts on interdealer repo borrowing constructed by Gorton and Metrick (2010) indicates that haircuts on less liquid collateral (not including U.S. Treasury securities) leapt from an average of 25% to 45% during September 2008, after already having risen from zero in January 2007.¹⁷¹ Study of the tri-party repo market undertaken by the Task Force on Tri-Party Repo Infrastructure has echoed these conclusions, determining that the breakdown in the tri-party repo market was central to the liquidity crisis at securities firms during the crisis.¹⁷² In contrast with interdealer repo markets, however, haircuts in the tri-party repo market rose very little, suggesting that some cash investors (including certain MMMFs, which constituted between a quarter and a third of cash invested in the tri-party repo market)¹⁷³ simply withdrew entirely from investing in tri-party repo instead of demanding more or higher-quality collateral.¹⁷⁴ On balance, however, the tri-party repo market appears to have weathered the post-Lehman aftereffects with more resilience than the interdealer market or the unsecured interbank lending market. Analysis by Copeland, Martin, and Walker (2010) highlights how the targeted run on Lehman caused its tri-party repo borrowing book to decline precipitously (from \$150 billion encompassing 60 investors on September 8 to \$95 billion or 40 investors on September 12, to fewer than 20 investors on September 15)¹⁷⁵ but records only a gradual reduction in the overall amount of tri-party repo collateral across the entire marketplace after the Lehman bankruptcy.¹⁷⁶

¹⁷⁰ *Id.* at 27, 47.

¹⁷¹ Gorton & Metrick, *supra* note 169 at 27, 47. The authors' data set focuses on interdealer repo markets and excludes the tri-party repo market.

¹⁷² Fed. Reserve Bank of N.Y., Task Force on Tri-Party Repo Infrastructure, Progress Report 2, Dec. 22, 2009, available at http://www.ny.frb.org/prc/report_091222.pdf.

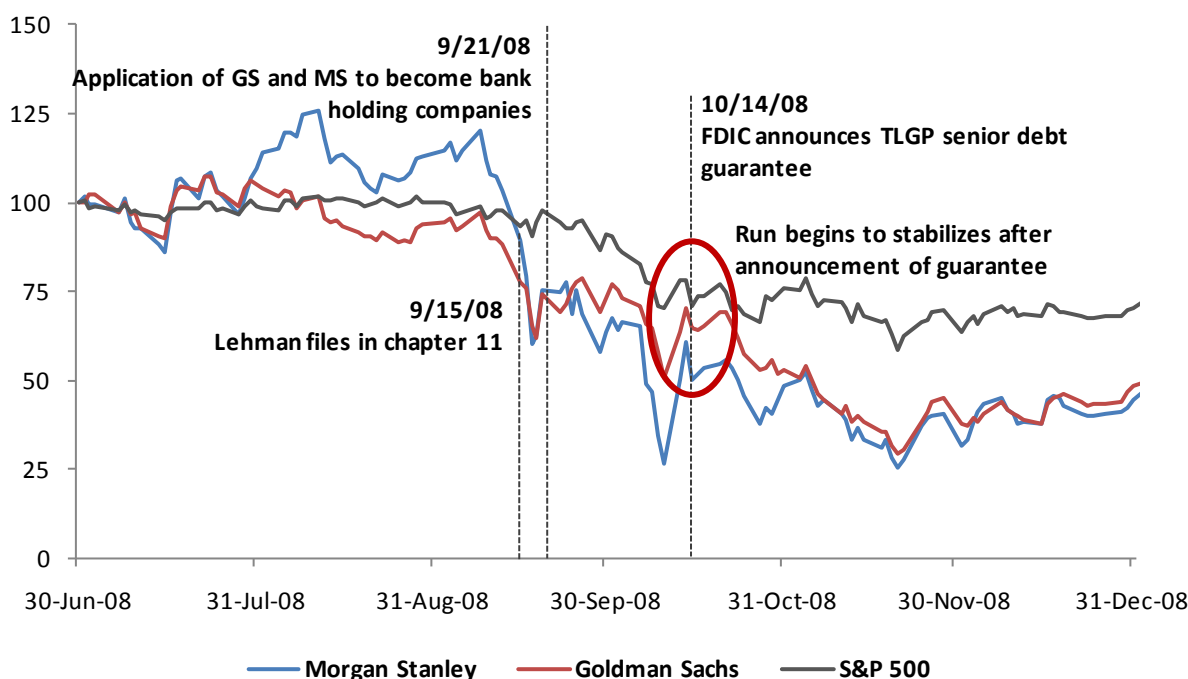
¹⁷³ Adam Copeland, Antoine Martin & Michael Walker, Fed. Reserve Bank of N.Y., *The Tri-Party Repo Market before the 2010 Reforms*, 6 (Staff Report No. 477, Nov. 2010), available at http://www.ny.frb.org/research/staff_reports/sr477.pdf.

¹⁷⁴ *Id.* at 2; Antoine Martin, David Skeie & Ernst-Ludwig von Thadden, Fed. Reserve Bank of N.Y., *Repo Runs*, 5 (Staff Report No. 444, May 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1594895&rec=1&srcabs=1138609 (finding that tri-party repo haircuts exhibited more stability through the crisis suggesting that investors in tri-party repo agreements opted to cut off dealer financing rather than increase haircuts). Collateral securing tri-party repo transactions consists predominantly of U.S. Treasury and agency MBS and debentures, which composed over 80% of the tri-party repo market as of the first quarter of 2010, see Fed. Reserve Bank of N.Y., *Tri-Party Repo Infrastructure Reform*, 8 (White Paper, May 17, 2010), available at http://www.newyorkfed.org/banking/nyfrb_triparty_whitepaper.pdf.

¹⁷⁵ Copeland, Martin & Walker, *supra* note 173 at 56.

¹⁷⁶ *Id.* at 47-48.

Figure 2.5: Morgan Stanley and Goldman Sachs – Share Price Evolution¹⁷⁷



Contagion effects in the short-term capital markets appear to have shaken the confidence of customers and investors in the ability of the surviving investment banks to continue funding themselves. Hedge funds and other prime brokerage customers of Morgan Stanley, Goldman Sachs, and Merrill Lynch reacted by withdrawing assets on deposit and diverting them to JPMorgan, Credit Suisse, and Deutsche Bank.¹⁷⁸ Morgan Stanley may have sustained \$20 to \$120 billion in outflows in the weeks surrounding the bankruptcy of Lehman, some of which flowed into JPMorgan Chase’s prime brokerage business.¹⁷⁹ Interviews with Morgan Stanley executives by the FCIC indicate that hedge funds requested \$10 billion in redemptions on Monday, September 15 and as much as \$32 billion on Wednesday, September 17.¹⁸⁰

¹⁷⁷ Wachovia and Washington Mutual, Inc. Historical Share Prices [Functions: WB Equity, WAMUQ Equity], Bloomberg Terminal, BLOOMBERG LP (last accessed Feb. 9, 2011).

¹⁷⁸ Allan Sloan, *A Year After Lehman, Wall Street's Acting Like Wall Street Again*, THE WASHINGTON POST (Sept. 8, 2009), available at <http://www.washingtonpost.com/wp-dyn/content/article/2009/09/07/AR2009090701798.html>; THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 355 (noting effect of hedge fund withdrawals of assets held by Merrill Lynch prior to the closing of its merger with Bank of America and flows to “large commercial banks with...more diverse sources of liquidity”).

¹⁷⁹ *The run on Morgan Stanley*, FT.COM/ALPHAVILLE, *supra* note 42; Saijel Kishan & Katherine Burton, *Morgan Stanley Loses Hedge-Fund Clients on Stock Drop*, BLOOMBERG (Sept. 18, 2008), available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aFsdjjZ3hSec&refer=home>; Bess Levin, *Running Down Wall Street*, DEALBREAKER.COM (Sept. 18, 2008), available at <http://dealbreaker.com/2008/09/running-down-wall-street/>.

¹⁸⁰ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 361.

Redemptions of prime brokerage assets by hedge funds were partly driven by investor redemptions underway at hedge funds themselves, which averaged 20% of assets in the fourth quarter of 2008 according to a survey conducted by the FCIC.¹⁸¹ Goldman Sachs experienced a similar, albeit less severe, impact to its liquidity position.¹⁸² Morgan Stanley and Goldman Sachs responded by curtailing rehypothecation of prime brokerage and other collateral, causing the value of pledgeable collateral received by each to decline from \$877 billion to \$283 billion and from \$832 billion to \$579 billion respectively between August and November.¹⁸³ This compounded the drawdown of liquidity available to both.¹⁸⁴ The outflows from prime brokerage and mounting skepticism about the future of the independent investment banking business model propelled credit default swap (CDS) spreads on Goldman Sachs and Morgan Stanley upward.¹⁸⁵ For example, the cost of insuring \$10 million of debt issued by Morgan Stanley rose 88% (from \$363,000 to \$682,000 annually) between September 12 and September 15.¹⁸⁶ The share prices of both banks plummeted dramatically, falling 12% and 14% respectively on September 15, a further 2% and 11% on September 16, and continuing to fall 14% and 24% on September 17,¹⁸⁷ prompting speculation that Morgan Stanley would seek a merger with a commercial banking partner.¹⁸⁸ The run on both investment banks continued even after the Federal Reserve approved the conversion of each to a bank holding company on September 21,¹⁸⁹ and was finally averted only after the FDIC issued guarantees of new unsecured senior bank debt the next month through the TLGP program discussed below,¹⁹⁰ after which the share price decline at both banks began to stabilize.

¹⁸¹ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 361, fn. 34 (see note at 621).

¹⁸² *Id.* at 362.

¹⁸³ Manmohan Singh & James Aitken, *Counterparty Risk, Impact on Collateral Flows, and Role for Central Counterparties*, [pp. 7-8] International Monetary Fund (IMF Working Paper No. 09/173, August 2009), available at <http://www.imf.org/external/pubs/ft/wp/2009/wp09173.pdf>.

¹⁸⁴ *Id.*

¹⁸⁵ Christine Harper, *Morgan Stanley Said to Weigh Deal With Wachovia as Shares Sink*, BLOOMBERG (Sept. 17, 2008), available at <http://www.bloomberg.com/apps/news?pid=newsarchive&refer=home&sid=ai1ZDv3cwcL4>; Tiernan Ray, *Goldman Shares Off 33% For Week as CDS Fears Spread*, BARRON'S (Sept. 17, 2008), available at <http://blogs.barrons.com/stockstowatchtoday/2008/09/17/goldman-shares-33-off-this-week-as-cds-fears-spread/>.

¹⁸⁶ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 360.

¹⁸⁷ Christine Harper, *Morgan Stanley, Goldman Plummet After AIG Takeover*, BLOOMBERG (Sept. 17, 2008), available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=arhxN1lPfefY&refer=us>.

¹⁸⁸ Harper, *Morgan Stanley Said to Weigh Deal With Wachovia as Shares Sink*, *supra* note 185.

¹⁸⁹ See Press Release, Bd. of Governors of the Fed. Reserve Sys. (Sept. 21, 2008), available at <http://federalreserve.gov/newsevents/press/bcreg/20080921a.htm>.

¹⁹⁰ See FDIC Announces Plan to Free Up Bank Liquidity, *infra* note 203 and discussion, *infra*.

The multi-pronged federal response to the freeze-up in commercial paper and ABCP markets, interbank unsecured and secured repo borrowing, and in MMMF investment activity in these markets, demonstrates that policymakers recognized the spread of contagion throughout the financial system and the urgent need to contain it.¹⁹¹ The steps taken by the U.S. government to restore liquidity and stabilize the financial markets, some of which predated the bankruptcy of Lehman Brothers, are catalogued at length by Scott (2010).¹⁹² In the commercial paper markets they included extending indirect access to the discount window to MMMFs through the Federal Reserve's \$150 billion Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF),¹⁹³ creating the \$350 billion Commercial Paper Funding Facility (CPFF) to finance commercial paper purchases¹⁹⁴ and the Money Market Investor Funding Facility (MMIFF) to finance purchases of instruments from MMMFs,¹⁹⁵ and perhaps most dramatically providing an effective \$3.2 trillion temporary guarantee of the money market industry through the U.S. Treasury's Exchange Stabilization Fund,¹⁹⁶ the largest single dollar exposure incurred by the government during the crisis.¹⁹⁷ To promote liquidity and limit instability in other segments of the financial system before and after Lehman, the Federal Reserve sponsored the term auction facility (TAF) in December 2007,¹⁹⁸ extended access to the discount window to primary dealers including investment banks through the Primary Dealer Credit Facility (PDCF) in connection with the acquisition of Bear Stearns by JPMorgan on March 16, 2008,¹⁹⁹ and

¹⁹¹ See, e.g., Bernanke, *supra* note [fn 76] (noting the presence of market contagion in the aftermath of Lehman Brothers).

¹⁹² See Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 654-95.

¹⁹³ Press Release, Bd. of Governors of the Fed. Reserve Sys. (Sept. 19, 2008), <http://www.federalreserve.gov/newsevents/press/monetary/20080919a.htm>; Bd. of Governors of the Fed. Reserve Sys., *Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility*, <http://www.federalreserve.gov/monetarypolicy/abcpmmmf.htm>.

¹⁹⁴ Press Release, Bd. of Governors of the Fed. Reserve Sys. (Oct. 7, 2008), <http://www.federalreserve.gov/newsevents/press/monetary/20081007c.htm>.

¹⁹⁵ Press Release, Bd. of Governors of the Fed. Reserve Sys. (Oct. 21, 2008), <http://www.federalreserve.gov/newsevents/press/monetary/20081021a.htm>.

¹⁹⁶ Press Release, U.S. Dep't of the Treasury, Treasury Announces Temporary Guarantee Program for Money Market Funds (Sept. 29, 2008), *available at* <http://www.ustreas.gov/press/releases/hp1161.htm>.

¹⁹⁷ Ricks, *supra* note 76 at 12 (describing the policy measures instituted by the U.S. Treasury and the Federal Reserve in response to the financial crisis and the dislocation in the shadow banking system).

¹⁹⁸ Press Release, Bd. Of Governors of the Fed. Reserve Sys. (Dec. 12, 2007), *available at* <http://www.federalreserve.gov/newsevents/press/monetary/20071212a.htm>.

¹⁹⁹ Press Release, Bd. of Governors of the Fed. Reserve Sys. (Mar. 16, 2008), <http://www.federalreserve.gov/newsevents/press/monetary/20080316a.htm>; Fed. Reserve Bank of N.Y., Primary Dealer Credit Facility: Frequently Asked Questions, http://www.newyorkfed.org/markets/pdcf_faq.html (last visited Jan. 9, 2011); Fed. Reserve Bank of N.Y., Primary Dealer Credit Facility: Program Terms and Conditions, http://www.newyorkfed.org/markets/pdcf_terms.html (last visited Jan. 9, 2011).

created the term securities lending facility (TSLF) in March 2008²⁰⁰ and the term asset-backed securities loan facility (TALF).²⁰¹ In September 2008, the Federal Reserve participated in the rescue of AIG by providing the failing insurer with an \$85 billion two-year loan.²⁰² In October 2008, the FDIC instituted the Temporary Liquidity Guarantee Program (TLGP) to provide limited guarantees of new senior unsecured debt issued by banks and thrifts.²⁰³ Most prominently of all, the Treasury used the Troubled Asset Relief Fund (TARP) to inject equity into failing major financial institutions through the Capital Purchase Program (CPP)²⁰⁴ and to restructure the Federal Reserve's emergency support for AIG.²⁰⁵

The panoply of government-administered guarantees and facilities to restore liquidity halted the run on the financial system and contained the transmission of contagion. But the shockwaves generated through the failure of Lehman Brothers, its immediate effects upon the RPF, and the broad contagious consequences for the capital markets, underline the centrality of non-deposit short-term funding and intermediation by non-bank financial institutions in the U.S. financial system.²⁰⁶ Mainly, though, the intermediation of credit creation by non-bank financial institutions has expanded the scope of the systemic risk presented by contagion because this system forms a novel channel for maturity transformation that is conducted in a securitized

²⁰⁰ Press Release, Fed. Open Mkt. Comm. of the Bd. of Governors of the Fed. Reserve Sys. (Mar. 11, 2008), *available at* <http://www.federalreserve.gov/newsevents/press/monetary/20080311a.htm>; *see also* HAL S. SCOTT, THE GLOBAL FINANCIAL CRISIS 21-32 (2009).

²⁰¹ Press Release, Bd. Of Governors of the Fed. Reserve Sys. (Nov. 25, 2008), *available at* <http://www.federalreserve.gov/newsevents/press/monetary/20081125a.htm>. *See also* Fed. Reserve Bank of N.Y., Term Asset-Backed Securities Loan Facility: Frequently Asked Questions, http://www.newyorkfed.org/markets/talf_faq.html (last visited Jan. 2, 2011).

²⁰² Press Release, Bd. Of Governors of the Fed. Reserve Sys. (Sept. 16, 2008), *available at* <http://www.federalreserve.gov/newsevents/press/other/20080916a.htm>.

²⁰³ Press Release, Federal Deposit Insurance Corporation, FDIC Announces Plan to Free Up Bank Liquidity (Oct. 14, 2008), <http://www.fdic.gov/news/news/press/2008/pr08100.html>; *see also* Federal Deposit Insurance Corporation, Temporary Liquidity Guarantee Program, <http://www.fdic.gov/regulations/resources/tlgp/index.html> (last visited Jan. 9, 2011).

²⁰⁴ U.S. Dep't of the Treasury, Investment Programs: Capital Purchase Program, <http://www.treasury.gov/initiatives/financial-stability/investment-programs/cpp/Pages/capitalpurchaseprogram.aspx> (last visited Mar. 23, 2011); United States Department of the Treasury, Third Tranche Report to Congress, December 2, 2008.

²⁰⁵ Press Release, Bd. of Governors of the Fed. Reserve Sys. & Dep't of the Treasury, U.S. Treasury and Federal Reserve Announce Participation in AIG Restructuring Plan (Mar. 2, 2009), *available at* <http://www.federalreserve.gov/newsevents/press/other/20090302a.htm>; Press Release, Bd. of Governors of the Fed. Reserve Sys. (Nov. 10, 2008), *available at* <http://www.federalreserve.gov/newsevents/press/other/20081110a.htm>.

²⁰⁶ *See, e.g.*, Ben S. Bernanke, Chairman, Fed. Res. Bd., Causes of the Recent Financial Crisis, Testimony Before the Financial Crisis Inquiry Commission, Washington, D.C. (September 2, 2010), *available at* <http://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm> (identifying as a cause of the financial crisis of 2007–2009 the “major role in global finance” served by “financial entities other than regulated depository institutions...dependent on various forms of short term wholesale funding”).

format.²⁰⁷ Like ordinary depositors, investors participating in this process, particularly those invested in MMMFs, regard their funds as money equivalents to which the threat of impairment of any kind is intolerable, and are prone to the same form of run behavior.²⁰⁸ Whether in securitized or traditional form, however, maturity transformation is unquestionably a source of profound surplus value to the economy and its participants, since only by “holding longer term assets than liabilities [in the bank sector can] the non-bank sector...hold shorter term assets than liabilities.”²⁰⁹ Involving the securitized debt markets in this activity ultimately lowers the social cost of capital, to the extent that contagion in these markets can be managed cost-effectively. As such, the size and centrality, but most importantly the economic role, of these market-based credit intermediaries mandate their inclusion within the coverage of any regulatory regime designed to address and contain the problem of contagion comprehensively.

III. CAPITAL REQUIREMENTS, LIQUIDITY REQUIREMENTS, AND RESOLUTION PROCEDURES

As the review in Part II shows, the controlling attribute that unifies the array of bank and non-bank financial institutions, intermediaries, and short-term capital markets that are vulnerable to contagion is that all of them either issue, invest in, or facilitate the exchange of short-term liabilities that are redeemable at par. This dependency is the result of maturity transformation, whether it is performed by a single bank or through a chain of non-bank intermediaries funded on a wholesale basis in the capital markets. It is the feature of the modern financial system that is responsible for the problem of contagion. The best strategies for containment are therefore those that seek to directly abolish the structural instability created by systemic dependency upon short-term debt, including liquidity, informational asymmetry, and collective action. This Study suggests that the only way of doing this effectively is by conferring ironclad guarantees to short-

²⁰⁷ Martin, Skeie & von Thadden, *supra* note 174 at 3-5 (“[a]n overnight repo is a short-term liability that is backed by a long-term asset, in the form of a security”); Ricks, *supra* note 76 at 3-6.

²⁰⁸ Ricks, *supra* note 76 at 10, 19-20 (“[m]any of these short-term instruments make their way to money market mutual funds, where, in a final step of maturity transformation, they serve as the basis for the creation of demand money (transaction accounts) for retail and institutional customers”).

²⁰⁹ FINANCIAL SERVICES AUTHORITY, THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS, at 21 (March 2009), available at http://www.fsa.gov.uk/pubs/other/turner_review.pdf; see also Gary Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007*, *supra* note 103 at 42 (noting that “securitization is a more efficient way to finance loans”).

term creditors in the financial system, an approach that is explored in Part IV. More conservative strategies that only attempt to soothe uncertainty in financial markets indirectly by limiting risk-taking by financial institutions, preserving solvency and access to interim liquidity, and expediting the restructuring of institutions that, having taken too much risk, become insolvent or illiquid, but do not alter the terms of their structural dependency on short-term funds using guarantees, may decrease the risk of but will not eliminate the possibility of contagion.

Apart from guarantees, there are three major strategies that have been developed to defray the social costs of persistent systemic risk to the financial system, including the risk of contagion. Since the financial crisis of 2007–2009, the adequacy of all three has been placed in question, and a complex set of revisions of these strategies have been undertaken. The three strategies are: (1) “ex ante” capital requirements designed to enable financial institutions that are operating as going concerns to incur losses without failing; (2) ex ante private liquidity requirements that ensure continuous access to high-quality assets that can be sold or pledged as collateral to meet sudden withdrawals (allowing institutions to survive without public liquidity support); and (3) “ex post” resolution procedures that impose losses on debt and equity holders of financial institutions that are being wound down. Loss imposition and the avoidance of government support are the basic objectives common to all three strategies. Both are crucial preconditions for limiting moral hazard and minimizing subsidization of uneconomic risk-taking in the financial system. But unless the strategies explored below either incorporate or are mated to mechanisms that directly eliminate the enormous potential costs contemplated by financial contagion, regulatory efforts to enforce strict cost internalization are likely to prove insufficient. Massive worldwide public intervention to backstop financial institutions and markets during the financial crisis of 2007–2009, important elements of which were discussed in Part II, establishes that no government is willing to incur these much greater systemic costs in order to facilitate the private absorption of comparatively small individual losses, no matter the forcefulness of the public backlash against bailouts. Knowing this to be the case, short-term creditors and other investors in financial institutions will rationally anticipate intervention during future crises, negating the risk-mitigating effects of capital-, liquidity- and resolution-based strategies accordingly. This is the essence of the dilemma presented at the outset of this Study.

This Study’s fundamental critique of all three strategies is that none supplies the financial system with a direct mechanism for deterring runs by short-term creditors, nor is equipped as a

result to suppress contagion. Capital requirements can reduce the chance that a systemically important financial institution could fail, but cannot prevent contagion generally, because the amount of capital might prove to be insufficient and short-term debt holders might not pay attention to an institution's solvency during a run. Liquidity requirements can secure temporary access to liquid assets, but cannot indefinitely resist a contagious run that outlasts the coverage they provide. They may also be considerably less efficient than liquidity provided by a public lender-of-last-resort, a major function of central banking. Resolution procedures that threaten short-term debt holders with losses are likely to *provoke* contagion, unless they assure these creditors of a bailout beforehand, which may be impractical and, under Dodd-Frank, statutorily impermissible. For these reason, capital requirements, liquidity requirements, and resolution procedures all fail in at least two identifiable ways: first, at containing systemic risk to the financial system created by contagion; second, on their own terms, since unless contagion is contained, no strategy for internalizing the costs of bad risk-taking, or for controlling it ahead of time, can independently succeed.

A. *Ex Ante Capital Requirements: Basel III Framework*

Skepticism of existing regimes governing the capital requirements to which financial institutions are subject has been vindicated by the financial crisis of 2007–2009.²¹⁰ As these regimes have come to be viewed as inadequate in its aftermath,²¹¹ the first major strategy for financial reform to have been widely considered by policymakers is to recalibrate the existing framework for capital regulation. The basic rationale for strengthened capital requirements is that capital allocates a “strategic reserve” of resources to the financial system that fortifies it against future shocks. Capital standards that are conservative, robust to economic downturns, and that behave countercyclically through the credit cycle position financial institutions to absorb

²¹⁰ See generally CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES, AND INSURANCE (Hal S. Scott ed., 2005); CCMR PLAN FOR REGULATORY REFORM, *supra* note 6 at 57-82; Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 679-86; Scott, INTERNATIONAL FINANCE, *supra* note 28 at 412-73.

²¹¹ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 679-80. The SEC's implementation of Pillar I of Basel II for U.S. securities firms allowed the five major U.S. investment banks (Goldman Sachs, Morgan Stanley, Merrill Lynch, Lehman Brothers, and Bear Stearns) to reach leverage ratios of greater than thirty to one; see also CCMR PLAN FOR REGULATORY REFORM, *supra* note 6 at 57-82 (considering initiatives to improve capital regulation); Committee on Capital Markets Regulation, Future Research—Capital Study, <http://www.capmktsreg.org/futureresearch.html> (last visited Jan. 2, 2011) (detailing forthcoming research program on the role of markets in setting capital requirements).

large losses and internalize the costs of distress without forcing the government to step in with public support by undertaking an expensive bailout or acting as lender-of-last-resort. This lowers the likelihood of a systemically important institution failing, imposing losses on the public, and becoming a transmission line for contagion.

The core of this rationale presumes that contagion is triggered by an actual failure in the financial system. Assuming this is one of its preconditions, capital requirements might help to lower the risk of contagion by reducing the likelihood of such failures taking place.²¹² The most serious contagion effects (for example, on MMMFs and short-term capital markets) witnessed in the financial crisis only began to spread after the collapse of Lehman Brothers and the run on the RPF, lending some credibility to this diagnosis. On the other hand, the analysis of those episodes conducted in Part II establishes that these effects reached far beyond institutions that were exposed to Lehman in any significant degree. This makes it appear more likely that the contagious aftershocks were evidence of a reaction by short-term creditors to the withdrawal of the implied federal guarantee of financial institutions signaled by the government's decision not to rescue Lehman.²¹³ Concern that the next failure would not be entitled to a bailout might have prompted creditors to exit from institutions regardless of their relationship to Lehman. Once the run was underway, all short-term investors in a position to exit (but unlike depositors, lacking a government guarantee) possessed a rational incentive to do so. The demand for liquidity forced institutions affected by runs to engage in fire sales of long-term assets. Since these assets were illiquid, institutional sellers had to accept discounts on many of the sales. Massive disorderly selling drove asset prices down further, wiping out existing capital, causing further withdrawals, and exacerbating fear and lost confidence among short-term investors. If contagion was the result of fear that the next series of failures and market freeze-ups would not be offset by a government guarantee, then capital requirements would not have been sufficient to overcome it. In the end, only promising multiple explicit public guarantees was enough to halt the spread of contagion, indicating that assurances about institutional solvency transmitted through capital ratios were inadequate. This conclusion is supported by the analysis of contagion developed in

²¹² See Basel Committee on Banking Supervision, *Strengthening the Resilience of the Banking Sector: Consultative Document* (Dec. 2009), available at <http://www.bis.org/publ/bcbs164.htm> (full report available at <http://www.bis.org/publ/bcbs164.pdf>) (attributing the origins of the financial crisis of 2007–2009 to suboptimal capitalization and insufficient liquidity).

²¹³ This argument is raised by Peter Wallison in his dissent from the conclusions of the Financial Crisis Inquiry Report released by the Financial Crisis Inquiry Commission. See THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 445.

Part I that found contagion not to depend on prior solvency. If this analysis accurately characterizes the behavior of short-term creditors during the financial crisis, it casts the efficacy of capital requirements and the rationale on which they are premised into doubt. Moreover, because Basel III will apply narrowly to traditional banking institutions, large portions of the non-bank financial system that share the same dependency on short-term debt will probably not be required to comply with its new capital requirements. This could encourage migration of existing banking activity into non-bank financial institutions beyond Basel III's reach. Today, depository banking is no longer the central source of systemic risk to the financial system, so capital regulation oriented only at preserving *bank* solvency cannot be a general solution to the problem of contagion.

The leading reform proposal for international capital regulation that has emerged from the financial crisis is called "Basel III" and was developed by the Basel Committee on Banking Supervision (Basel or Committee) of the Bank for International Settlements.²¹⁴ Basel III is part of a broader series of reform initiatives sponsored by the Group of 20 (G-20) in response to the financial crisis.²¹⁵ U.S. banking institutions will ultimately be required to comply with Basel III. Some believe that selected systemically important non-bank financial institutions subject to supervision by the Federal Reserve could also be required to adopt Basel III under Section 165 of Dodd-Frank,²¹⁶ though this is not certain nor expressly required by the statute. Section 165 directs the Federal Reserve and the Financial Stability Oversight Council (FSOC) to "establish prudential standards for nonbank financial companies...that...are more stringent than the standards and requirements applicable to nonbank financial companies...not present[ing] similar risks to the financial stability of the United States."²¹⁷ These standards are stated to include "risk-based capital requirements and leverage limits."²¹⁸ At this time it is not yet clear, however, if regulators will choose to use this statutory language to support the application of Basel III to

²¹⁴ *Id.*; Basel Committee on Banking Supervision, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards* (Sept. 2010), available at <http://www.bis.org/press/p100912.pdf>; Jaime Caruana, General Manager, Bank of International Settlements, Text of Speech Titled Basel III: Towards a Safer Financial System (September 15, 2010), available at <http://www.bis.org/speeches/sp100921.pdf>; [Cite also to July 2010 Basel III annex].

²¹⁵ G-20 Declaration, Summit on Financial Markets and the World Economy (Nov. 15, 2008), available at http://www.meti.go.jp/policy/trade_policy/wto/declaration.pdf.

²¹⁶ Ernest Patrikis, *Higher Minimum Capital Standards: Basel Committee On Banking Supervision Crowns Common Equity King*, BNA Banking Report (Nov. 30, 2010); Dodd-Frank, § 165.

²¹⁷ Dodd-Frank, § 165(a)(1)-(1)(A).

²¹⁸ Dodd-Frank, § 165(b)(1)(A)(i).

designated systemically important non-bank financial institutions. The centerpiece of Basel III is a series of amendments to the capital adequacy standards embodied in the worldwide framework for capital regulation created by Basel I and extensively revised and expanded under Basel II.²¹⁹ These amendments specify three broad revisions to the Basel I and II architecture: (1) increases in minimum mandatory bank capital requirements, (2) new restrictions on what instruments qualify as capital, and (3) the imposition of new measures to control countercyclicality in capital regulation.

*Figure 3.1: Basel III Capital Requirements Provisional Phase-In Schedule*²²⁰

Phase-in year	Basel II Current	2013	2015	2017	January 1, 2019
COMMON EQUITY					
Common equity capital	2.00%	3.50%	4.50%	4.50%	4.50%
Add: Capital conservation buffer	--	0.00%	0.00%	1.25%	2.50%
Common equity + buffer	2.00%	3.50%	4.50%	5.75%	7.00%
<i>N.B.: Including maximum 2.5% countercyclicality buffer</i>					9.50%
TIER 1 AND TOTAL CAPITAL					
Minimum tier 1 capital	4.00%	4.50%	6.00%	6.00%	6.00%
Add: Capital conservation buffer	--	0.00%	0.00%	1.25%	2.50%
Tier 1 capital + buffer	4.00%	4.50%	6.00%	7.25%	8.50%
Minimum total capital	8.00%	8.00%	8.00%	8.00%	8.00%
Add: Capital conservation buffer	--	0.00%	0.00%	1.25%	2.50%
Total capital + buffer	8.00%	8.00%	8.00%	9.25%	10.50%
<i>N.B.: Including maximum 2.5% countercyclicality buffer</i>					13.00%

With respect to capital requirements, first, Basel III raises the minimum common equity requirement expressed as a percentage of risk-weighted assets (RWA) from 2% to 4.5%.²²¹ Second, it requires financial institutions to institute a supplementary equity capital “conservation buffer” equivalent to an additional 2.5% of RWA to be fully implemented by the start of 2019. In total, the minimum common equity capital requirement imposed under Basel III amounts to

²¹⁹ See BASEL COMM., INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS 3 (1998), <http://www.bis.org/publ/bcbsc111.pdf?>.

²²⁰ Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214.

²²¹ For introductory discussion to the concept of risk-weighting, see Carnell, et al., THE LAW OF BANKING AND FINANCIAL INSTITUTIONS *supra* note 62, at 257-63; 272.

7% of RWA.²²² Third, Basel III prescribes an additional “countercyclical buffer” ranging from 0% to 2.5% of common equity (or “fully loss absorbing” equivalents, i.e. Tier 1 capital) for banks located in countries where “excess credit growth...is resulting in a system wide build up of risk.”²²³ Fourth, Basel III (like Dodd-Frank under Section 165)²²⁴ imposes a still to be determined additional capital requirement on systemically important banks.²²⁵ Basel III also provides for increases of 1.5% in Tier 1 and 2.0% in Tier 2 capital ratios (different from the common equity measure discussed above), bringing these minimum ratios to 5.5% and 10% respectively by 2013. By the end of 2018, once phase in of the regime is completed, minimum bank Tier 1 and total capital under Basel III will be 8.5% and 10.5%, including the capital conservation buffer (see Figure 3.1).²²⁶ In addition to these risk-weighted capital requirements, Basel III further provides for a non-weighted Tier 1 leverage ratio “as a backstop to the risk-based measures,” provisionally set at 3% and subject to adjustment during the phase in.²²⁷

Second, Basel III increases the amount of capital required by altering certain existing risk-weight factors and restricting the range of instruments that are eligible for inclusion in the calculation of Tier 1 capital.²²⁸ In particular, the revisions attach more stringent risk-weightings to securitization exposures including CDOs of ABS.²²⁹ Patrikis (2010) notes that these new risk-weightings may reduce existing capital ratios of certain banks by a factor of up to one half, thus requiring them to raise a considerable amount of new capital.²³⁰ Finally, Basel III ties the countercyclical buffer (but not the conservation buffer) to supervisory discretion, prescribing it for use in overheated credit markets that promote rising asset values with an accompanying

²²² Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214; Caruana, *supra* note 214.

²²³ Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214.

²²⁴ Dodd-Frank, § 165 (directing the Federal Reserve to establish “more stringent” “risk-based capital requirements and leverage limits” for bank holding companies with over \$50 billion in consolidated assets deemed systemically important).

²²⁵ Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214; *see also* Patrikis, *supra* note 216.

²²⁶ Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214.

²²⁷ Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214.

²²⁸ *Id.* *See also* Basel Committee on Banking Supervision, *Basel II capital framework enhancements announced by the Basel Committee* (Jul. 13, 2009), available at <http://www.bis.org/press/p090713.htm>.

²²⁹ Basel Committee, *Basel II capital framework enhancements announced by the Basel Committee*, *supra* note 228; Patrikis, *supra* note 216.

²³⁰ Patrikis, *supra* note 216.

procyclical increase in bank leverage. Patrikis analogizes both the countercyclical and conservation buffers to forms of loan loss reserve intended to be drawn down to absorb unanticipated credit losses.²³¹ The Basel III capital standards, including the supplementary buffers, are scheduled to be phased in gradually from January 2013 to January 2018 with some requirements in force before then (see schedule in Figure 3.1).²³²

Since publication the Basel III framework has confronted vigorous critique for falling short of capitalization levels perceived to be minimally sufficient with the experience of 2007–2009 in hindsight.²³³ Ahead of the financial crisis of 2007–2009, many major U.S. financial institutions already held more capital than Basel III will ultimately require them to²³⁴ and Basel II previously did. Scott (2010) notes that in 2007 the average regulatory capital ratio for the top 20 U.S. banks was 11.7%, which exceeded regulatory minimums by 50%.²³⁵ The major U.S. investment banks had also implemented Basel II pursuant to regulation by the Securities and Exchange Commission (SEC).²³⁶ Yet despite being effectively compliant under the Basel II and III frameworks before the financial crisis, these institutions self-evidently did not hold enough capital to survive the crisis without public support. Analysis by Chiaramonte and Casu (2011) finds that bank default risk as measured by CDS spreads did not correlate meaningfully with regulatory capital ratios during the crisis, feeding “doubts...in relation to the efficacy of the capital index TIER 1 Ratio as a safeguard against the risk of future default.”²³⁷ The fact that Basel III’s minimum capital requirements would not have capitalized U.S. financial institutions sufficiently to avoid public support in the crisis undercuts expectations for the framework’s performance in the future. One paper authored by economists at the Bank of England recently called for bank equity capital requirements of between 16% and 20% of RWA (but noted that optimal bank capital ratios might exceed these levels).²³⁸ A government-appointed commission

²³¹ *Id.*

²³² Basel Committee, *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards*, *supra* note 214.

²³³ See, e.g., Martin Wolf, *Basel: the mouse that did not roar*, FINANCIAL TIMES, Sept. 14, 2010, available at <http://www.ft.com/cms/s/0/966b5e88-c034-11df-b77d-00144feab49a.html>.

²³⁴ [Cite.]

²³⁵ Hal S. Scott, *Reducing Systemic Risk Through the Reform of Capital Regulation*, 13 JOURNAL OF INTERNATIONAL ECONOMIC LAW 773, 763-78 (2010).

²³⁶ 17 C.F.R. §§ 200.30-3, 240.3a4-2 to -6, 240.3a5-1, 240.3b-17 to -18, 240.15a-7 to -9 (2004).

²³⁷ Laura Chiaramonte & Barbara Casu, *Are CDS spreads a good proxy of bank risk?: Evidence from the financial crisis* (2011).

²³⁸ David Miles, Jing Yang & Gilberto Marcheggiano, *Optimal bank capital*, Bank of England, Jan. 2011, available at <http://www.bankofengland.co.uk/publications/externalmpcpapers/extmpcpaper0031.pdf>; Brooke Masters &

of noted policymakers in Switzerland has proposed heightened capital requirements for UBS AG and Credit Suisse as an additional protective measure for the Swiss economy, under which both banks would be required to hold total capital of 19% and be subject to a 10% common equity minimum.²³⁹ The Swiss government is now in the process of sending legislation incorporating the so-called “Swiss finish” to its parliament.²⁴⁰ The new countercyclical measures instituted to supplement Basel III’s basic common and Tier 1 requirements might confer some added support, but it is open to question whether the regulatory judgment required to determine when a national economy is experiencing “excess” credit growth will be reliable. On the opposite end, some groups have attacked Basel III for imposing capital requirements for being too excessive. The Institute for International Finance (IIF), for example, in a report published in June 2010 argued that the economic cost of complying with Basel III would reduce gross domestic product (GDP) growth by approximately 3.1% cumulatively through 2015.²⁴¹ Competing studies issued since by the Basel Committee²⁴² and the Organisation for Economic Co-operation and Development (OECD)²⁴³ reject the IIF’s projections, contending that the economic impact will be substantially less.

These criticisms, some alleging that Basel III prescribes requirements that are too meager and others that the requirements are too severe, supply a convenient illustration of the practical obstacles to capital-based solutions to systemic risk and especially financial contagion. Capital-based solutions cannot ignore the necessity of determining how much capital is enough, what instruments count as capital, and the appropriate risk-weights of different assets. These are exceedingly difficult determinations to make. Attempts to set prices for goods and services, an

Patrick Jenkins, *Bank researchers call for doubling equity safety net*, FINANCIAL TIMES, Jan. 27, 2011, available at <http://www.ft.com/cms/s/0/1f4841ea-2a0b-11e0-997c-00144feab49a.html#axzz1CNpz1rPk>.

²³⁹ Neil Maclucas & Katharina Bart, *UBS, Credit Suisse Face Tough New Capital Rules*, WALL ST. JOURNAL, Oct. 4, 2010, available at <http://online.wsj.com/article/SB10001424052748704631504575531222507779044.html>.

²⁴⁰ Katharina Bart, *Swiss Government To Send Bank Failure Draft Law To Parliament In April*, WALL ST. JOURNAL, Mar. 21, 2011, available at <http://online.wsj.com/article/BT-CO-20110321-710429.html>.

²⁴¹ INST. OF INTERNATIONAL FINANCE, INTERIM REPORT ON THE CUMULATIVE IMPACT ON THE GLOBAL ECONOMY OF PROPOSED CHANGES IN THE BANKING REGULATORY FRAMEWORK (2010), available at <http://www.iif.com/press/press+151.php>. See also *Banks say reform plans could cut growth by 3 pct*, REUTERS, Jun. 10, 2010, available at <http://in.reuters.com/article/2010/06/10/idINIndia-49203620100610>.

²⁴² Basel Committee on Banking Supervision, Macroeconomic Assessment Group, *Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements* (Aug. 2010), available at <http://www.bis.org/publ/othp10.htm> (full report at <http://www.bis.org/publ/othp10.pdf>).

²⁴³ Patrick Slovik & Boris Cournède, *Macroeconomic Impact of Basel III* (OECD Economics Department, Working Paper No. 844, Feb. 14, 2011), available at http://www.oecd-ilibrary.org/economics/macro-economic-impact-of-basel-iii_5kghwnhkkjs8-en.

easier job than pricing risk, have generally failed in the past.²⁴⁴ One solution to improving the determination of capital adequacy is to assign a larger role in the judgment to markets, an approach reflected in the CCMR's project on capital²⁴⁵ and proposals by Scott (2010).²⁴⁶ This approach will help to refine the determination of how much capital institutions should hold in normal times and to fortify them against normal economic shocks.

Proponents of enhanced capital requirements trace the origins of contagion during the financial crisis of 2007–2009 directly to suboptimal capitalization in the financial sector in the face of faltering global economic growth and collapsing residential and commercial real estate prices. This diagnosis blames the toxic combination of “excessive on- and off-balance sheet leverage...insufficient liquidity buffers [and] a procyclical deleveraging process” for spreading “lost confidence in the solvency and liquidity of many banking institutions [then] transmitted to the rest of the financial system and the real economy, resulting in a massive contraction of liquidity and credit availability.”²⁴⁷ The noteworthy aspect of this explanation is its connection of ex ante capital inadequacy to the transmission of contagion effects during the crisis. If this connection is well-drawn, then more stringent capital requirements should help reduce runs on financial institutions in the future by mitigating the incidence of insolvency and failure. The heaviest consideration weighing against capital requirements, however, is that this connection is too attenuated to be useful during a crisis: the strategic reserve that capital supplies to financial institutions certainly *cushions* short-term creditors from having to absorb losses, perhaps deterring the impulse to run, but does not *foreclose* the risk of suffering impairment altogether. As long as a financial institution is reliant on short-term funds, in any amount, to support long-term investment, as it must necessarily be in order to conduct maturity transformation, short-term creditors who supply those funds are exposed to the potential for losses incurred through fire

²⁴⁴ See discussion in Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 683; DWIGHT R. LEE & RICHARD B. MCKENZIE, FAILURE AND PROGRESS: THE BRIGHT SIDE OF THE DISMAL SCIENCE 56 (1993); H. Boissevain et al., *The Effectiveness of Phase II Price Controls*, 5 INTERFACES, Feb. 1975, at 33, 33 (maintaining that most price controls fail notwithstanding the successes of Phase II of the Economic Stabilization Program of 1971); Fiona M. Scott Morton, *The Problem of Price Controls*, REGULATION, Spring 2001, at 50.

²⁴⁵ Committee on Capital Markets Regulation, Future Research–Capital Study, <http://www.capmktreg.org/futureresearch.html> (last visited Jan. 2, 2011).

²⁴⁶ Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 682-85; Andrew Kuritzkes & Hal Scott, Op-Ed., *Markets are the best judge of bank capital*, FT.COM, Sept. 23, 2009, available at <http://www.ft.com/cms/2ca160b0-a870-11de-9242-00144feabdc0.html>.

²⁴⁷ Basel Committee on Banking Supervision, *Strengthening the Resilience of the Banking Sector: Consultative Document* (Dec. 2009), available at <http://www.bis.org/publ/bcbs164.htm> (full report available at <http://www.bis.org/publ/bcbs164.pdf>).

sales of illiquid assets to fund withdrawals of liquidity during a panic. In a crisis, the rational option will be to run. When that happens, capital requirements can certainly lower public costs by ensuring that deeper reserves of private funding and capital are available to the distressed institution. What they cannot do is prevent the run in the first place, or stop it from becoming generalized to the financial system. Capital requirements implemented under Basel III also neglect non-bank financial institutions, a critical source of systemic risk in the financial crisis of 2007–2009. Considered as a solution to the problem of contagion, capital-based solutions are incomplete at best.

B. Ex Ante Liquidity Requirements: Basel, IMF, and U.K. FSA Proposals

Liquidity is a central pillar of institutional regulation slated for reform in the wake of the financial crisis. Minimum private liquidity requirements are supposed to assure financial institutions uninterrupted access to a pool of high-quality liquid assets that can be sold off (or pledged as collateral) to accommodate a sudden surge of withdrawals by depositors and other short-term debt holders, for example during a serious crisis involving contagion.²⁴⁸ In principle, maintaining sufficient high-quality assets should help financial institutions to withstand periodic instability created by the dependency on short-term funds.

Initially, liquidity requirements represent a more promising regulatory approach than capital since contagion originates in (and propagates through) runs that are fundamentally liquidity-driven. The main objections against the adequacy of private liquidity requirements are four-fold, however. First, like capital requirements, the liquidity proposals discussed below apply mainly to traditional banks. For example, the Basel Committee's proposed rules, which are structured to accompany the Basel III capital regime, do not cover the large universe of non-bank financial institutions that, due to their dependency on short-term borrowing, share the same vulnerability to liquidity-driven runs. Second, the stock of high-quality assets that private liquidity requirements can furnish to financial institutions is limited by nature. Basel's proposal, for instance, would require banks to retain sufficient liquid assets to match net cash outflows

²⁴⁸ Patrikis, *supra* note 216.

over 30 days.²⁴⁹ Persistent disruption to short-term borrowing markets leading to sustained investor outflows stretching over a longer period could eventually overrun even the strongest portfolio of liquid assets, forcing financial institutions into liquidating long-term assets to meet incremental redemptions anyway. Short-term creditors of a financial institution subject to such liquidity requirements would thus still have an incentive to exit sooner, while that portfolio was still intact, rather than later, after waves of outflow exhausted it. This would not avert the risk of runs and contagion in spite of liquidity requirements. Third, holding assets suited to meeting the purposes of liquidity requirements entails costs to financial institutions and to the economy, since every dollar of capital allocated to low-yielding, liquid, short-term securities is unavailable to finance longer term lending to borrowers. This lowers the amount of new credit that financial institutions can create and raises the overall cost of capital to the real economy. Fourth, securing emergency liquidity to the financial system through private reserves that have to be maintained at all times, but may be exhausted by severe freeze-ups, may be less efficient than a public central bank lender-of-last-resort that would provide unlimited liquidity (albeit with adequate collateral), but only in an emergency. For these reasons, private liquidity requirements are both under-inclusive and over-inclusive: under-inclusive because they provide coverage that is limited in amount, do not apply to non-bank financial institutions, and will not always forestall runs by short-term creditors, over-inclusive because they may unnecessarily raise the cost of real economic activities that depend on the intermediation of financial institutions, but do not create systemic risk.

Three proposals for reforming liquidity requirements are considered here. First, the Basel Committee announced new liquidity standards for phase-in at the start of 2011, to be completed by 2015.²⁵⁰ The standards encompass two novel measures for controlling short- and longer-term liquidity. Basel's shorter-term metric, known as the "liquidity coverage ratio" (LCR), requires banks to at all times hold unencumbered high quality assets sufficient to meet all outstanding 30-day or fewer liabilities.²⁵¹ Financial institutions that achieve compliant LCRs must hold a "stock

²⁴⁹ Basel Committee, *International framework for liquidity risk measurement, standards and monitoring: Consultative Document*, *infra* note 251.

²⁵⁰ Basel Committee on Banking Supervision, *Report to the G20 on response to the financial crisis released by the Basel Committee* (Oct. 2010), available at <http://www.bis.org/press/p101019.htm>; Basel Committee on Banking Supervision, *The Basel Committee's response to the financial crisis: report to the G20* (Oct. 2010), available at <http://www.bis.org/publ/bcbs179.pdf>.

²⁵¹ Basel Committee on Banking Supervision, *International framework for liquidity risk measurement, standards and monitoring: Consultative Document*, 5-19 (Dec. 2009), available at <http://www.bis.org/publ/bcbs165.pdf>.

of high quality assets” equal to 100% or more of their net cash outflows over a 30-day period.²⁵² Maintaining a 100% LCR in principle should enable an institution to use the sale of its own assets to satisfy all potential net outflows during a full calendar month without impairing its capital by selling longer-term assets at discounted prices, giving managers and regulators breathing room to devise a comprehensive response to the crisis or to wind-down the institution when necessary.²⁵³ Qualifying “high quality assets” that count toward short-term liquidity are liquid assets that can immediately be converted to cash equal to their carrying values during a crisis.²⁵⁴ Among other restricting criteria, qualifying assets must be unencumbered securities with low credit- and market-risk and performance that is not correlated to riskier asset classes. Further, they must be exchange-listed, trade in active and liquid markets, and easily be susceptible of valuation. Examples of high quality assets satisfying Basel’s multifactor standard are cash, central bank reserves, marketable securities with 0% Basel II risk-weightings, and domestic currency government debt.²⁵⁵ The effectiveness of the LCR at meeting demand for liquidity during a crisis depends on making an accurate regulatory judgment beforehand about the appropriate quantity and quality of assets that banks operating under the proposal would be required to hold. This judgment involves significant guesswork about the severity of future crises and assumes that assets thought to be of high-quality today will measure up to regulatory expectations during a period of market dislocation.

To the LCR Basel adds a longer-term metric called the “net stable funding ratio” (NSFR) designed to secure institutions with enough liquidity support for one year. The components of “stable funding”²⁵⁶ are capital, preferred stock, other liabilities with maturities of more than one year, plus “stable” deposits.²⁵⁷ All components are discounted by weightings reflective of their relative stability.²⁵⁸ 100% NSFR-compliant institutions maintain stable funding levels in excess of total assets (both on- and off-balance sheet), weighted according to liquidity and resilience in a period of stress.²⁵⁹ Beyond LCR and NSFR, the Basel proposal introduces other measurements

²⁵² *Id.*

²⁵³ *Id.*

²⁵⁴ *Id.*

²⁵⁵ *Id.*

²⁵⁶ Defined as “equity and liability financing expected to be reliable sources of funds over a one-year time horizon under conditions of extended stress.” *Id.* at 20.

²⁵⁷ *Id.* at 20-22.

²⁵⁸ See Table 1 in *Id.* at 21-22.

²⁵⁹ *Id.* at 22-24.

oriented at facilitating supervisory monitoring of institution liquidity. Their focus is on maturity (mis-)matching, wholesale funding dependency, and amount of available unencumbered assets. Finally, Basel endorses market-based liquidity monitoring using equity prices and CDS spreads.²⁶⁰ Though the NSFR is a valuable supplement to shorter-term liquidity requirements that will provide stability to banks over a longer period of time, it too requires regulators to make accurate forecasts about the stability of funding and the quality and liquidity of a bank's assets during a crisis.

The second major proposal has been developed by the International Monetary Fund (IMF). Its proposal singles out institutional dependency on short-term funding as the root cause of the financial crisis,²⁶¹ a finding with which we agree. It identifies the expanding function performed by non-depository financial intermediation and seeks to combine liquidity requirements with other forms of protection against systemic liquidity risk, such as insurance, encompassing all bank and non-bank financial institutions that “are reliant on short-term wholesale markets for funding and that engage in maturity transformation.”²⁶² For banks, the IMF proposal generally endorses the Basel reforms, recommending in addition (1) extending Basel-like “liquidity buffers” to all non-bank financial institutions dependent on short-term funding, including MMMFs,²⁶³ (2) controls on the amount of maturity transformation that financial institutions can undertake, and (3) imposing a “surcharge or insurance premia” on financial institutions to fund the cost of negative externalities created by “systemic liquidity risk,” the contours of which are to be explored with more specificity in a future IMF report.²⁶⁴ The IMF also addresses reform of unsecured interbank markets, seeking improvements to the quality of information concerning counterparties engaged in interbank lending. In the secured repo lending context, it calls for enhanced collateral valuation and margining policies, stronger clearing and settlement systems, and an increased role for central counterparties to repo borrowing agreements.²⁶⁵ For non-traditional market intermediaries, including money market

²⁶⁰ *Id.* at 25-31.

²⁶¹ International Monetary Fund, Chapter 2, *Global Financial Stability Report: Sovereigns, Funding, and Systemic Liquidity* [pp. 70] (Oct. 2010), available at <http://www.imf.org/external/pubs/ft/gfsr/2010/02/pdf/text.pdf>.

²⁶² *Id.* at 81.

²⁶³ *Id.* at 75-81.

²⁶⁴ *Id.* at 57, 79-81.

²⁶⁵ *Id.* at 70-75.

mutual funds, the IMF proposal would authorize funds to elect to transition to a floating NAV or in the alternative be regulated as traditional banks.²⁶⁶

Taken together, some of the components of the IMF proposal are a promising response to some of the central regulatory issues, including the problem of contagion, implicated in the financial crisis. Recognition of the role of maturity transformation in the financial system's dependency on short-term debt identified in Parts I and II suggests that the most effective strategies for preventing contagion must provide a guarantee to short-term creditors. Properly instituted, an insurance regime could serve as a basis for funding a guarantee of short-term debt, a strategy explored further in Part IV below.²⁶⁷ The IMF's focus on interbank lending is also responsive to aspects of the contagion effects witnessed during the crisis. As discussed above, LIBOR interbank and secured repo borrowing markets were gripped by serious contagion after the collapse of Lehman Brothers as fears about systemic credit risk (illustrated by the unprecedented spike in the TED spread noted in Part II) deterred lending and encouraged a flight to the safety of government securities. Part of the explanation for the exit from interbank markets is likely attributable to uncertainty about the solvency of counterparties even in secured tri-party repo markets where borrowing is collateralized.²⁶⁸ More information about counterparties and the use of central clearing mechanisms to further reduce counterparty risk could reduce the spread of contagion to interbank and interdealer markets. Finally, the IMF proposal to regulate MMMFs as banks or else abolish the floating NAV standard theoretically would be a step toward bringing non-bank financial intermediaries within the coverage of existing policies for banks designed to deter contagious runs. Both options, however, might entail significant costs, such as transitional disruption to the financial system caused by transfers of funds between depository banks and MMMFs in response to regulatory changes, increased moral hazard from protecting MMMF investments with bank-like deposit guarantees, and expense associated with establishing true regulatory convergence across the bank- and non-bank financial systems.²⁶⁹ The benefits and costs reform of MMMFs are considered in further detail in Part IV.

²⁶⁶ *Id.* at 75-76, 81.

²⁶⁷ *See also* Ricks, *supra* note 76 at 35-43.

²⁶⁸ Copeland, Martin & Walker, *supra* note 173 at 2, 25.

²⁶⁹ Investment Company Inst., *Re: President's Working Group Report on Money Market Fund Reform Options*, *infra* note 535.

The third proposal for reform, authored by the U.K. Financial Services Authority (FSA), echoes basic policies of Basel and the IMF. For example, the FSA introduces rule sets requiring institutions to hold adequate inventories of high-quality assets including government debt and central bank reserves.²⁷⁰ It tethers the expected magnitude of institutional liquidity buffers to a multifactor combination of an institution's risk management practices, stress test performance, and "contingent funding plans."²⁷¹ Financial institutions must turn over existing liquidity buffers in the private markets on a regular basis. Periodically, they are expected to access emergency central banking facilities, including the Bank of England and Federal Reserve discount windows and the European Central Bank's marginal lending facility.²⁷² Mandating regular access to the private and public markets is intended to reduce negative signaling associated with the stigma of emergency borrowing.²⁷³ The FSA proposal directs financial institutions to undergo stress-tests and develop contingency plans for navigating severe liquidity freeze-ups. Like Basel, the FSA introduces novel liquidity reporting requirements, metrics, and minimum standards.²⁷⁴

The main alternative to all three proposals that is available to policymakers today is the use of emergency liquidity facilities provided by the central bank to fund solvent financial institutions (those with adequate collateral) in a crisis. Broadening institutional access to Federal Reserve liquidity facilities formed a major pillar of the federal response to the financial crisis. As discussed above, since it is always possible that a severe surge in demand for immediate liquidity by short-term investors could exceed an institution's high quality assets available for sale (for example, if net cash outflows beyond the 30-day LCR under Basel exceeded an institution's stock of high quality assets), or for a prolonged freeze-up of funding markets to prevent an institution from rolling over its short- and medium-term debt, recourse to liquidity provided by a central bank will continue to be necessary at some point in the future. Providing access to central bank liquidity might be more efficient than relying on private institutional liquidity buffers if the access abolished risk to short-term creditors. But it might also introduce inefficiencies to the regulation of financial institutions because it would position a public source as the final backstop against institutional losses, weakening the imposition of losses on creditors.

²⁷⁰ Financial Services Authority, *Policy Statement 09/16: Strengthening Liquidity Standards* [pp. 45] (Oct. 2009), available at http://www.fsa.gov.uk/pubs/policy/ps09_16.pdf.

²⁷¹ *Id.*

²⁷² *Id.* at 46.

²⁷³ *Id.*

²⁷⁴ [Cite.]

Traditionally, we have looked to the central bank to provide liquidity to stem runs on solvent financial institutions, not adequate private liquidity. The use of guarantees, including a lender-of-last-resort, is discussed at the conclusion to this Study in Part IV.

C. Ex Post Resolution Procedures

From the perspective of systemic risk regulation, the protection of short-term creditors of financial institutions should be the prime function that is served by resolution procedures. By design, capital and liquidity requirements reach their useful limit when the financial institutions that are subject to them fail, since at this point there is not enough capital or liquid assets available for sale to cushion short-term creditors from the risk of having to absorb losses. If adverse market forces overwhelm capital and liquidity buffers, or if for any reason short-term creditors anticipate that they could be overwhelmed, neither is likely to stop a run. Resolution procedures that are sensitive to this limitation might succeed at limiting contagion by restructuring failed financial institutions in a way that protects short-term debt holders even after capital and liquidity buffers have been overridden. But resolution rules that exempt short-term debt holders from impairment by definition limit the amount of losses that can be imposed on failed financial institutions, possibly creating a need to seek public support. Furthermore, if the short-term creditors are unsecured, such resolution rules may violate contractually established priorities that would normally obtain in bankruptcy. The recurring criticism of the different sets of resolution strategies catalogued below is that they all refuse to accept the public costs associated with this trade-off, at best providing indirect or incomplete protection to short-term debt holders (for example, by imposing first losses on long-term debt holders or by reserving limited room for discretionary carve-outs from normal priority rules in bankruptcy) that falls far short of what probably is required to deter a run driven by fear of insolvency. Rather than explicitly protecting short-term debt holders from loss during the reorganization of a failed financial institution in a manner that is certain, automatic, and non-discretionary, they instead prioritize avoiding public support and internalizing costs to all debt and equity holders. In doing so they increase rather than offset the risk of contagion by jeopardizing short-term creditors and encouraging preemptive withdrawals.

Out of the many different resolution strategies that have been put forward in response to

this aspect of the financial crisis of 2007–2009, this Study considers:²⁷⁵

- Issuing contingent capital to enhance loss absorption at senior, non-equity levels of the institutional capital structure;²⁷⁶
- Employing creditor “bail-ins” to force contingent-capital-inspired loss absorption upon debt holders without the necessity of proceeding through a disruptive judicial or administrative resolution process;
- Ring-fencing seriously impaired “bad” assets through good-bank/bad-bank bifurcated resolution structures;
- Institution living wills, prepackaged resolution plans instituted by systemically important institutions as an aid to orderly wind-ups during a crisis;
- Use of the Orderly Liquidation Authority under Title II of Dodd-Frank to resolve institutions that are deemed systemically important to the financial system.

Several of these strategies have already been incorporated into the regulatory framework of Dodd-Frank, which empowers the Federal Reserve and FSOC to require institutions to issue contingent capital after a feasibility study,²⁷⁷ provides for the formulation of living wills by systemically important financial institutions,²⁷⁸ and directs the FDIC to develop rules implementing the Orderly Liquidation Authority. Discussion of two other strategies that are not contemplated by the Dodd-Frank reforms, the expanded use of insurance for short-term liabilities and strengthened lender-of-last-resort powers, is reserved to Part IV of this Study, since neither is a resolution procedure and both differ in decisive respects from the taxonomy surveyed in this Part.

As described above, acceptable resolution strategies must go further than (1) internalizing the costs of financial distress to failed institutions, thus reducing moral hazard and protecting the public from exposure to losses. In addition they must (2) contain systemic risk, and contagion in particular, by preventing the spread of runs on institutions and markets in the financial system.²⁷⁹

²⁷⁵ Citations to the main sponsors of these strategies are included in the fuller discussion of each that follows below.

²⁷⁶ Evaluation of contingent capital is reserved for this section, rather than the discussion of capital buffers to which it arguably belongs, because of its close substantive relation to creditor bail-ins.

²⁷⁷ Dodd-Frank, § 165(c), § 115(c). FSOC can recommend contingent capital only after conducting a study to be submitted to Congress within two years of the legislation’s enactment. *Id.*, § 115(c).

²⁷⁸ *Id.*, § 165(d).

²⁷⁹ Proposals must also be capable of being operationalized in a realistic timeframe, casting doubt on the practicality of cross-jurisdictional “universal” resolution regimes. *See, e.g.*, Paul Tucker, Deputy Governor, Financial Stability, Bank of England, Remarks at the European Commission’s Conference on Crisis Management, Brussels, Belgium

This may involve a trade-off, because the price of deterring runs by short-term creditors may be to exempt them from loss imposition during resolution. The weakness shared by every one of the strategies for resolving failed financial institutions discussed below is that the protections that they offer to short-term creditors are incomplete, uncertain, and thus ineffective, thus putting the effectiveness of each at foreclosing the risk of a contagious run *or* internalizing costs in doubt.

1. *Contingent Capital Instruments*

The term “contingent capital” is the name given to a group of long-term hybrid debt instruments, for many years employed by insurance companies to manage loss exposures and now being tested in the banking industry. The distinguishing characteristic of all contingent capital instruments is an embedded equity conversion provision, triggered automatically after the issuer’s financial profile deteriorates below a predefined threshold.²⁸⁰ Conversion is mandatory, not optional. Contingent capital instruments incorporate long-term maturities (for example, two recent series of contingent capital notes issued by European banking institutions are scheduled to mature after 10 years) that enhance the total loss-absorbing capital available to financial institutions that issue them, thus protecting all non-convertible liabilities (including, indirectly, shorter-term debt) against losses large enough to overwhelm undiluted common equity. Since contingent capital is long-term debt, it is more economic to issue than equity. Since it converts automatically, it can absorb losses outside of a formal resolution process. In effect, it streamlines loss absorption (and thus internalization of costs) beyond the common equity layer, free from the disturbance to short-term debt holders, and the financial system, of the disruption contemplated by bankruptcy. For this reason, and owing to its substantive similarity to creditor bail-ins, discussed below, contingent capital is analyzed in this Study as a resolution procedure rather than viewed as being simply an exotic variant of normal capital.

(March 19, 2010), *available at* <http://www.bankofengland.co.uk/publications/speeches/2010/speech431.pdf> (questioning the practicability of “universalist” strategies for resolving large complex financial institutions with multi-jurisdictional activities).

²⁸⁰ Association for Financial Markets in Europe [hereinafter AFME], *The Systemic Safety Net: Pulling failing firms back from the edge* (Aug. 2010) [pp. 7], *available at* <http://www.afme.eu/document.aspx?id=4276>.

Analogous instruments predate the financial crisis in concept and practice. Reinsurance companies use contingent capital to manage risk from large, discrete loss exposures.²⁸¹ As one example, in 1997 LaSalle Re Holdings Ltd. issued \$100 million of contingent capital structured as convertible preferred shares to cover “a major catastrophe or series of large catastrophes that cause[d] substantial losses” in the future.²⁸² The adoption of contingent capital by the banking industry is a more recent development that remains at a largely conceptual stage.²⁸³ Variations of contingent capital instruments customized for bank and non-bank financial institutions have, however, gained traction with policymakers. In Europe, some financial institutions have begun experimenting with contingent capital. Lloyds Banking Group, for example, issued £8.5 billion in 10-year contingent capital bonds as part of a debt exchange in November 2009.²⁸⁴ Conversion of the bonds is triggered after Tier 1 capital falls to less than 5% of total RWA.²⁸⁵ In March 2010, the Dutch financial services firm Rabobank issued €1.25 billion 6.875% 10-year “senior contingent notes” (SCNs), basing conversion on the firm’s equity capital ratio.²⁸⁶ Since then, Credit Suisse has indicated that it is considering issuance of up to \$30 billion in contingent

²⁸¹ *Id.* See, e.g., Gallagher Polyn, *Swiss Re strikes \$150 million contingent capital deal*, RISK.NET, Mar. 1, 2002, available at <http://www.risk.net/risk-magazine/news/1503664/swiss-re-strikes-usd150-million-contingent-capital-deal>; Robert Hunter, *Preparing for Catastrophe: Can the capital markets save the insurance industry from the next big one?*, DERIVATIVESSTRATEGY.COM, Nov. 1998, available at <http://www.derivativesstrategy.com/magazine/archive/1998/1198fea3.asp> (listing contingent capital deals involving reinsurers); Russ Banham, *Just-in-Case Capital*, CFO MAGAZINE, Jun. 1, 2001, available at http://www.cfo.com/article.cfm/2996186/c_2984346/?f=archives; Christopher L. Culp, *Contingent Capital: Integrating Corporate Financing and Risk Management Decisions*, [Vol No.] *Journal of Applied Corporate Finance*, 46, 46-56 (Spring 2002), available at <http://www.rmcsinc.com/articles/JACF151.pdf> (surveying forms of contingent capital).

²⁸² See Business Wire, *LaSalle Re Signs \$100 Million Contingent Capital Program*, Aug. 5, 1997, available at http://findarticles.com/p/articles/mi_m0EIN/is_1997_August_5/ai_19650965; Joe Niedzielski, *Aon-LaSalle Re post \$100M package*, National Underwriter Property & Casualty, Aug. 18, 1997, available at <http://www.allbusiness.com/banking-finance/financial-markets-investing-securities/9214437-1.html>.

²⁸³ See, e.g., Mark J. Flannery, “No Pain, No Gain: Effecting Market Discipline Via Reverse Convertible Debentures,” in Hal S. Scott (ed.), *CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES AND INSURANCE* (Oxford University Press 2005) (proposing reverse convertible debentures for large financial institutions convertible based on pre-established market capital ratios as a mitigant against the costs of financial distress); John C. Coffee, Jr., *Bail-ins Versus Bail-outs: Using Contingent Capital to Mitigate Systemic Risk* (Working Paper No. 380, Sept. 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1675015 (proposing contingent capital convertible into senior preferred stock).

²⁸⁴ Press Release, Lloyds Banking Group PLC, *GAPS Alternative and Rights Issue* (Nov. 3, 2009), available at <http://www.londonstockexchange.com/exchange/news/market-news/market-news-detail.html?announcementId=10257542>.

²⁸⁵ [Cite to prospectus—cannot locate on website]. For description of core terms, see AFME, *supra* note 280 at 22.

²⁸⁶ Press Release, Rabobank *successfully issues Senior Contingent Notes* (Mar. 12, 2010), available at http://www.rabobank.com/content/news/news_archive/005-RabobanksuccessfullyissuesSeniorContingentNotes.jsp. Conversion of the SCNs is triggered if Rabobank’s equity ratio falls below 7%.

capital bonds over several years.²⁸⁷ In early 2011, it began implementing this plan, announcing the issuance of approximately \$7 billion of contingent capital notes, \$6.2 billion of which are to be offered in an exchange for existing hybrids held by investors Qatar Holding and Olayan Group. The new notes will pay interest at a rate of up to 9.5%.²⁸⁸ Barclays Capital has also recently said it will structure bonus compensation to senior managing directors to include payment using convertible debt instruments.²⁸⁹ Using Tier 1 capital, or any measure of regulatory capital, to govern conversion presupposes correctly determining the appropriate regulatory capital ratio, an imposing challenge at the center of the reform of capital requirements discussed above. Nonetheless, policymakers in the U.S.²⁹⁰ and internationally²⁹¹ including Federal Reserve officials William Dudley and Daniel Tarullo have signaled approval of contingent capital. Title I, Section 165(c) of Dodd-Frank echoes enthusiasm among regulators, provisionally authorizing the Federal Reserve to require systemically important financial institutions to issue contingent capital instruments²⁹² following a feasibility study conducted by FSOC.²⁹³

For a number of reasons, contingent capital supplies an attractive compliment to common equity and non-convertible long-term debt. It minimizes the public externalities and market disruption of putting a systemically important financial institution through conservatorship or receivership.²⁹⁴ Automating the restructuring motivates bondholders (who fear conversion) and

²⁸⁷ *Credit Suisse may issue up to \$30 bln in coco bonds*, REUTERS, Dec. 12, 2010, available at <http://www.reuters.com/article/idUSTOE6BC00A20101213> [cite to original FT article].

²⁸⁸ Jennifer Hughes & Patrick Jenkins, *Credit Suisse to test coco market with \$7bn issue*, FINANCIAL TIMES, Feb. 14, 2011.

²⁸⁹ Megan Murphy & Jennifer Hughes, *Barclays causes a stir with cocos plan*, FINANCIAL TIMES, Jan. 24, 2011; Rob Cox, *At Barclays, a Pay System That May Please*, REUTERS BREAKINGVIEWS (N.Y. TIMES), Dec. 5, 2010, available at <http://www.nytimes.com/2010/12/06/business/global/06views.html>.

²⁹⁰ See, e.g., Damian Paletta, *Fed's Tarullo Talks Up 'Contingent' Capital Requirement*, WALL ST. JOURNAL, Oct. 8, 2009, available at <http://blogs.wsj.com/economics/2009/10/08/feds-tarullo-talks-up-contingent-capital-requirement/?KEYWORDS=%22contingent+capital%22>; William C. Dudley, President, Federal Reserve Bank of New York, Remarks at the Institute of International Bankers Membership Luncheon, New York City (October 13, 2009), available at <http://www.newyorkfed.org/newsevents/speeches/2009/dud091013.html>.

²⁹¹ See, e.g., Adam Bradbery & Natasha Brereton, *Financial Stability Board's Draghi Praises Contingent Capital for Banks*, WALL ST. JOURNAL, Dec. 8, 2009, available at <http://blogs.wsj.com/source/2009/12/08/financial-stability-boards-draghi-praises-contingent-capital-for-banks/?KEYWORDS=%22contingent+capital%22>.

²⁹² Dodd-Frank, § 165(c).

²⁹³ *Id.*, § 115(c).

²⁹⁴ Basel Committee on Banking Supervision, *Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability* [hereinafter Basel Committee, *Loss absorbency*] [pp. 8-9] (Aug. 2010), available at <http://www.bis.org/publ/bcbs174.pdf>.

equity holders (who fear dilution) to monitor risk-taking by issuers.²⁹⁵ The current yield on contingent capital instruments serves as an objective leading indicator of the market's judgment of the issuer's financial strength. Contingent capital is cost-effective for issuers relative to permanent equity,²⁹⁶ but more expensive than non-convertible debt, supplying an ex ante source of market discipline and corresponding reduction in public subsidies to issuers.²⁹⁷ And as discussed above, the loss absorbency it confers can shield short-term debt holders along with other creditors supplying credit not subject to conversion from impairment.²⁹⁸ Finally, contingent capital has an established track record of performance in the insurance industry, is praised by regulators, is authorized by Dodd-Frank, and could be implemented swiftly.

But serious practical obstacles to operationalizing contingent capital must be overcome before these benefits can be realized. The three major areas of uncertainty are (1) the breadth of demand from buyers, (2) the appropriate ratings and capital treatment, and (3) the design of an effective conversion trigger. It is too early to tell if contingent capital instruments can be marketed at economic prices that stimulate investor appetite on a scale that supports issuance in sufficient quantity. Bert Bruggink, chief financial officer of Rabobank, reported ambivalence on the part of buyers about pricing the SCNs: "We met people who argued the pricing was completely wrong—overpriced—and others surprised we were even willing to pay a premium to our senior debt."²⁹⁹ Strong demand for contingent capital is essential to realizing the cost-savings that these instruments offer relative to equity. Yet many current institutional investors that comprise the market for *non-convertible* subordinated debt instruments (classified as Tier 2 debt under the existing Basel framework)³⁰⁰ face statutory restrictions on owning common stock or convertible instruments.³⁰¹ Other investors might be reluctant to manage the tail-risk

²⁹⁵ *Id.* at 9.

²⁹⁶ Dudley, *supra* note 290. See also, AFME, *supra* note 280 at 5 (noting that contingent capital "could serve as a bridge between the prudential benefits of higher capital levels and the negative growth consequences of increased capital requirements").

²⁹⁷ Basel Committee, *Loss absorbency*, *supra* note 294 at 9.

²⁹⁸ AFME, *supra* note 280 at [15].

²⁹⁹ Jennifer Hughes, *Rabobank warns of 'dangerous' bail-ins*, The Financial Times, Nov. 8, 2010.

³⁰⁰ See BASEL COMM., INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS, *supra* note 219 at 4-7, 14-16 (defining Tier 2 capital as undisclosed reserves, asset revaluation reserves, general loan-loss reserves, hybrid capital instruments, and subordinated debt).

³⁰¹ Simon Nixon, *Lloyds Banking on Contingent Capital for Escape*, Wall Street Journal, Nov. 2, 2009, available at <http://online.wsj.com/article/SB125713423970322203.html>; Basel, *Loss absorbency*, *supra* note 294, at 11-12.

associated with conversion as a matter of investment policy.³⁰² Excluding these buyers from the marketplace could narrow the prospective investor base for contingent capital to pure fixed income funds and hedge funds with investment mandates that extend affirmatively to hybrid, convertible debt, and equity instruments.³⁰³ To overcome these obstacles and entice more demand from buyers, issuers might be tempted to create unrealistically loose trigger thresholds under which conversion is unlikely, destroying the efficacy of contingent capital in a crisis.³⁰⁴ For these reasons, and despite receptivity to the offerings from Lloyds and Rabobank,³⁰⁵ credit analysts are cautious about the level of real demand for contingent capital instruments especially from institutional bond funds, important holders of Tier 2 subordinated bank debt.³⁰⁶ Expected demand is also likely to be a function of the ultimate ratings treatment applied to contingent capital instruments by ratings agencies, as well as how much credit to assign them as regulatory capital. Both are questions that are yet to be resolved.

Marketing of contingent capital across a wide investor universe will struggle to proceed in earnest until issuers develop standards to govern the circumstances in which the instruments become convertible. Three templates exist. One model assigns this decision to the discretion of the issuer's primary regulator. Conversion occurs following that regulator's determination that the issuer's financial condition is unsatisfactory, for example due to a negative stress-test result or ahead of an imminent public equity injection.³⁰⁷ The regulatory approach is favored by the Basel Committee. The second model bases conversion on the adequacy of the issuer's capital ratios.³⁰⁸ The Association for Financial Markets in Europe (AFME) favors this model and the Lloyds and Rabobank securities are patterned on it.³⁰⁹ The third model employs market-based

³⁰² Simon Nixon, *Lloyds Banking on Contingent Capital for Escape*, [supra](#) note [fn 254]; Basel, *Loss absorbency*, *supra* note 294, at 11-12; see also Alex Monro, *New Basel proposals threaten bank sub debt, investors warn*, RISK.NET (Aug. 26, 2010), available at <http://www.risk.net/credit/news/1729774/new-basel-proposals-threaten-bank-sub-debt-investors-warn>.

³⁰³ See e.g., Tracy Alloway, *Adventures in hybrid debt, fixed income fund edition*, FT.COM ALPHAVILLE (Sept. 9, 2009), available at <http://ftalphaville.ft.com/blog/2009/09/09/70851/adventures-in-hybrid-debt-fixed-income-fund-edition/>.

³⁰⁴ Simon Nixon, *Lloyds Banking on Contingent Capital for Escape*, [supra](#) note [fn 254]

³⁰⁵ See Robert Lindsay, *Lloyds wins strong demand for £8.5bn bond issue*, Times Online, Nov. 23, 2009, available at http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article6928022.ece; Coffee, *supra* note 283, at 36 fn. 70.

³⁰⁶ Jane Merriman, *Analysis - Big banks winners from new contingent capital move*, REUTERS, Aug. 27, 2010, available at <http://www.reuters.com/article/idUKTRE67Q2RW20100827>.

³⁰⁷ Basel, *Loss absorbency*, *supra* note 294 at 5-6.

³⁰⁸ *Id.* at 12.

³⁰⁹ AFME, *supra* note 280 at 8.

variables to determine when to convert,³¹⁰ such as an issuer's share price, credit spreads, or, in a variation proposed by Hart and Zingales (2010), the CDS pricing on an issuer's subordinated debt.³¹¹ To ensure that a market-based trigger is activated only during a genuine market-wide downturn, some have suggested pairing any of these market measures of an issuer's individual riskiness with a secondary variable measuring overall market risk, for instance the trading level of an index of financial firms. For example, McDonald (2010) and Pennacchi (2010) suggest a "dual price trigger" tied to (1) the issuer's share price and (2) an index of financial firms. Using an index-based component theoretically helps ensure that conversion occurs only during a financial crisis, when all firms are faring poorly, while restricting convertibility and leaving scope for normal bankruptcy during periods of market normalcy.³¹²

The market trigger model, in our view, is preferable to the regulatory- or capital-based alternatives because it is independent of regulatory discretion and observable in real-time. Critics of a market trigger worry that it will expose conversion to arbitrary market volatility and conscious manipulation and minimize the maneuvering power of regulators who may at times be justified in overriding the market's judgment.³¹³ But restricting discretion on the part of regulators is desirable in the novel circumstances contemplated by conversion, since this is exactly when investors are most in need of objective information about credit risk and least capable of accommodating uncertainty linked to regulatory judgments. Since a market trigger defines the parameters governing conversion in clear contractual terms at the time of issuance, it will help buyers optimize pricing of contingent capital, addressing concerns about market appetite reported by Rabobank. Risk of manipulation is overstated too. It is doubtful if even wide-scale manipulation by "speculators" or short-sellers could exercise enough influence on securities prices to trigger a conversion event designed only to respond to a systemic crisis. This

³¹⁰ Basel, *Loss absorbency*, *supra* note 294 at 12; AFME, *supra* note 280 at 9.

³¹¹ Oliver Hart & Luigi Zingales, *Curbing Risk on Wall Street*, National Affairs, 20, 26 (Spring 2010), available at <http://www.nationalaffairs.com/publications/detail/curbing-risk-on-wall-street> (outlining a framework for protecting systemically relevant debt through the use of a cushion of loss-absorbing subordinated debt. Hart and Zingales propose using the CDS pricing on this subordinated debt as a proxy for measuring the market's estimate of the risk of the issuer and a signal to regulators for when intervention is necessary); see also Barbara A. Rehm, *A Shot at Redemption for Credit-Default Swaps*, AMERICAN BANKER (Jan. 20, 2011); Chiamonte & Casu, *supra* note 237 (concluding that CDS spreads provide good evidence of bank riskiness based on their strong relationship with bank balance sheet ratios through the financial crisis of 2007–2009).

³¹² Robert L. McDonald, *Contingent Capital with a Dual Price Trigger*, (Working Paper, Feb. 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1553430; George Pennacchi, *A Structural Model of Contingent Bank Capital*, 12 Federal Reserve Bank of Cleveland (Working Paper No. 10-04, Apr. 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1595080.

³¹³ AFME, *supra* note 280 at 9.

risk could be addressed by adding an index-based conversion provision, described above, which would require a downturn in the performance of all financial institutions before mandating conversion of a single issuer's securities. Pairing contingent capital instruments to an index-based trigger would also mitigate concerns that managers and shareholders (who might view their risk-taking as subsidized by convertible bondholders) may develop perverse incentives to trigger conversion.³¹⁴ On the other hand, using index-based triggering might increase overall correlation risk among contingent capital issuers during a market-wide crisis. If a conversion event at one financial institution caused the securities prices of peer institutions to decline, for example because investors become fearful of a more generalized crisis, this could inadvertently prompt conversion of contingent capital securities issued by other institutions. By linking the behavior of individual convertible instruments to the performance of financial institutions *other* than the issuer itself, an index-trigger might introduce an additional source of correlation and interconnectedness to the marketplace, increasing systemic risk as a result.³¹⁵ Additionally, to serve their purpose in a crisis, both the index-based and the single-issuer market triggers, either separately or in conjunction, must incorporate a type of market variable that is impervious to the effects of noise in the marketplace. If CDS prices, credit spreads, or share prices prove to be too easily distorted during a crisis for any reason, then use of a market trigger will have to be reevaluated.

Designing contingent capital instruments to overcome these practical considerations may improve the existing framework for internalizing the costs of financial distress and might lessen the probability of failure by adding to the amount of capital available to financial institutions to draw on, but will not be enough to correct the financial system's vulnerability to contagion: since they cannot guarantee short-term creditors immunity to loss, short-term creditors must always remain potentially exposed. In addition to not deterring a contagious run, contingent capital appears to be unable to halt one that is underway, since converting debt to equity does not provide incremental *liquidity* to the institution in crisis. Under ordinary circumstances, writing off excess indebtedness might create capacity to raise new funds, but only if the issuer persuades the market that it can continue operating as a going-concern, which may be impossible during a crisis. Indeed, a conversion event might well intensify pressures on an institution. Existing

³¹⁴ See Basel, *Loss absorbency*, *supra* note 294 at 9.

³¹⁵ [Cite to Beale].

creditors and new potential investors might instead interpret the signal transmitted by the conversion of contingent capital into equity as a sign of fatal distress. Since contingent capital does not satisfy the systemic demand for liquidity created during a run, it can never be relied on to rescue financial institutions affected by contagion. Those proponents of contingent capital instruments who appreciate this limitation acknowledge the necessity of interim liquidity facilities, organized privately or in all likelihood by a public lender-of-last-resort to steward issuers through a period of systemic crisis.³¹⁶ But this admission concedes too much, since in this case the lender-of-last-resort, not contingent capital bondholders, will be primarily accountable for underwriting the large public costs of dissipating any contagion effects. Evaluated in terms of its effectiveness at preventing the spread of financial contagion, contingent capital might render the financial system marginally safer by improving the quantity and flexibility of its total capitalization. It represents an improvement to using normal capital instruments and normal resolution channels, but it is not a comprehensive solution to the problem of contagion.

2. *Creditor Bail-Ins: Contingent Capital as a Resolution Tool*

Creditor “bail-in” transforms the basic loss absorbing functionality of contingent capital instruments into a more general architecture for restructuring a financial institution’s liabilities without going through a formal resolution process. Bail-in refers to a set of related techniques that aim at forcing the creditors of a financial institution that is deemed by regulators to be in danger of failing to absorb the losses that it has incurred by swapping their liability claims for new equity issued for the purpose of recapitalizing its balance sheet. Like contingent capital, bail-in uses debt-to-equity conversion to increase a troubled financial institution’s total pool of available capital and to reduce its leverage in a period of stress. But aside from this mechanical similarity, bail-in is a standalone strategy for resolving distressed or failed institutions, which is both substantively and procedurally distinct from contingent capital.³¹⁷ In the first place, creditor bail-in is a systematic resolution procedure, not a class of capital instruments, that is intended to automate the conversion and write-down of a designated portion of a financial

³¹⁶ AFME, *supra* note 280 at 6.

³¹⁷ AFME, *supra* note 280 at 5, 11.

institution's debt capital structure in response to a preceding regulatory determination or trigger event.³¹⁸ Second, unlike contingent capital instruments, which are stipulated to be convertible only under a discrete set of contractual conditions, conversion through a process of bail-in can embrace any or all parts of an institution's debt, including instruments that may not have been specified as convertible at the time of issuance. Under most approaches envisioned by its sponsors, to institute a bail-in regulators simply would require that designated liabilities (those that regulators have selected, whether or not they incorporate a preexisting contractual conversion feature) undergo a form of mandatory write-off or convert to equity.³¹⁹ One important consequence of this difference is that contingent capital is naturally limited in the amount of support it can provide to an ailing firm to the value of contingent capital instruments that are actually issued and outstanding. By contrast, creditor bail-in would potentially provide the same firm access to a much larger implied capital cushion, theoretically equal to the firm's entire financial indebtedness. This would enable bail-in to serve the role of a comprehensive resolution system, rather than just supplying a novel form of supplementary capital.

The major shortcoming common to all forms of creditor bail-in, aside from the financial and legal uncertainty associated with implementing it, is the significant destabilizing effect it is likely to exert on short-term creditors of financial institutions that are targeted by regulators for recapitalization.³²⁰ A creditor bail-in regime that is sweeping enough to encompass all classes of financial debt would impose the threat of loss absorption on short-term creditors. This is likely to provoke those that fear an imminent bail-in to exit in anticipation, draining liquidity from the financial system and, potentially, sparking a contagious event. Since bail-in bypasses ordinary bankruptcy channels, the automatic stay normally instituted against creditor withdrawals will not be available to prevent a mass exit.³²¹ Exempting short-term creditors from bail-in, on the other hand, for example by announcing an express carve-out of short-term debt or confining its reach

³¹⁸ AFME, *supra* note 280 at 5 (distinguishing contingent capital from creditor bail-in, noting that the former is "a recovery (rather than resolution) tool that serves to replenish a firm's capital by converting a [specific class of] debt instrument to equity...well before a firm becomes distressed"); *see also* Wilson Ervin, *Presentation at Harvard Europe-U.S. Symposium, Cross Border Resolution Panel [Slide 11]* (March 2011).

³¹⁹ Thomas F. Huertas, Vice Chairman, Committee of European Banking Supervisor and Director, Banking Sector, Financial Services Authority (UK), *Routes to Resolution: Bridge bank and bail-in* [4-9] (Draft for discussion) (describing two related methods of bail-in, by write-down or conversion); AFME, *supra* note 280 at 12-14.

³²⁰ *See Regulators sound caution on bank bail-in proposal*, REUTERS, Oct. 18, 2010, available at <http://www.reuters.com/article/idUSTRE69H28X20101018> (reporting concern that creditor bail-in might "trigger a shock in the markets that might hamper the ability of other banks to raise capital").

³²¹ *See, e.g.*, 11 U.S.C. § 362; [cite to FDIC resolution stay].

to a financial institution's regulatory capital instruments only, will restrict its effectiveness in situations where severe losses overwhelm an institution's capital buffers. If short-term creditors anticipate that a shortfall of loss absorbing capital will prevent a successful recapitalization of the institution, they might decide that bail-in is bound to fail and run anyway. Explicitly carving short-term debt out from the coverage of a bail-in regime might further promote a shift of institutional funding from unprotected longer-term capital instruments into shorter-maturity investments, increasing overall systemic dependency on short-term debt. This will increase the risk of contagion in the financial system rather than contain it.

Policymakers vigorously debate the implementation of creditor bail-in, though most of the varying forms to have been proposed share the same underlying properties.³²² The bail-in procedure is generally patterned on a prepackaged out-of-court restructuring that is intended to enable a struggling bank to recapitalize swiftly and free from the institutional value destruction or market disruption typical in a judicial or administrative reorganization.³²³ The AFME, for example, has envisioned a bail-in process that proceeds in three stages. In the first stage, non-performing balance sheet assets are identified by regulators and written down to durable levels reflective of current valuations, while losses realized in connection are translated to the income statement. Though some urge this process will contribute to an increase in the quality of market information by enhancing the credibility of financial disclosures, perhaps improving the market valuation of the distressed firm,³²⁴ these benefits are uncertain, and depend on the effectiveness of regulators at determining appropriate valuations to assign non-performing assets in the middle of a crisis when markets are distressed. In the second stage, the amount of capital required to (1) replace capital wiped out in the write-off of bad assets in stage one and (2) position the firm to survive future volatility is calculated.³²⁵ Again, this operation is likely to entail considerable

³²² See, e.g., Thomas F. Huertas, Vice Chairman, Committee of European Banking Supervisors and Director, Banking Sector, Financial Services Authority (UK), *The Road to Better Resolution: From Bail-Out to Bail-In* [12] (Working Paper).

³²³ See, e.g., Huertas, *The Road to Better Resolution: From Bail-Out to Bail-In*, *supra* note 322 at 12-15 (comparing bail-ins to a "pre-pack recapitalisation"); Adam Bradbery, *Bondholders Face a Push To Impose Bank Bail-Ins*, *Wall Street Journal*, Aug. 25, 2010, available at <http://online.wsj.com/article/SB10001424052748703447004575449440499780022.html>.

³²⁴ Wilson Ervin, *Are we ready for the next crisis?*, *Credit Suisse*, Mar. 19, 2010, pp. 9; AFME, *supra* note 280 at 21.

³²⁵ AFME, *supra* note 280 at 13. Huertas urges that this capital must be sufficient to replace the minimum mandatory tangible common equity of the institution undergoing bail-in, and ideally in excess of this amount, "on the order of 10% of [risk-weighted assets]." Huertas, *The Road to Better Resolution: From Bail-Out to Bail-In*, *supra* note 322 at 13.

regulatory guesswork and speculation about future market developments. Unless regulators who are overseeing a bail-in can access good market pricing, it will be difficult to calculate the amount of new capital that is required to support the realization of losses. Assuming this uncertainty can be managed, based on how much capital the firm needs, in the third stage the conversion ratio for designated debt instruments is computed and applied in reverse priority upward through the firm's debt capital structure from the least to most senior instruments until all pro forma capital requirements have been met.³²⁶ The procedure must be executed as swiftly as feasible to prevent the erosion of the financial institution's going concern value due to the loss of customers, counterparties, and short-term creditors while regulators are conducting the bail-in. For reasons discussed below, it is doubtful if regulators will be able to conduct a bail-in with the speed necessary to keep a large financial institution's business and financial relationships intact.

The practical effect of carrying out these steps mirrors the economic purpose of standard resolution procedures including chapters 7 and 11 of the U.S. Bankruptcy Code or administrative resolution by the FDIC: the cost of financial distress is imposed on creditors of the troubled firm and its balance sheet is recapitalized.³²⁷ Unlike under these statutory regimes, however, in bail-in the losses imposed on creditors are absorbed automatically at the direction of regulators, thus avoiding the need to place the firm into a prolonged period of conservatorship or receivership or jeopardize its ability to continue operating as a going-concern.³²⁸ Some argue that creditors and shareholders will also prefer bail-in over total liquidation of their claims, since they may benefit from appreciation in the market value of the recapitalized equity they receive,³²⁹ but the "option value" supplied by bail-in is far from certain, since in many cases creditors might recover more from outright liquidation. Creditor bail-in may also reserve room for preserving contracts with financial counterparties, including derivatives, that ordinarily would be entitled to terminate in the context of formal insolvency proceedings.³³⁰ This assumes appropriately structuring the bail-

³²⁶ AFME, *supra* note 280 at 13; Huertas, *Routes to Resolution: Bridge bank and bail-in*, *supra* note [fn 272] at 4-8; see also, Huertas, *The Road to Better Resolution: From Bail-Out to Bail-In*, *supra* note 322 at 13. Sources of "back-up capital" would include "all forms of capital that would be eligible to be bailed in upon a finding that the bank no longer met threshold conditions [including] all non-equity forms of capital (non-core Tier 1 capital such as preferred stock, Tier 2 capital such as subordinated debt, etc.). It might also include certain forms of senior debt."

³²⁷ AFME, *supra* note 280 at 11.

³²⁸ AFME, *supra* note 280 at 11.

³²⁹ Bradbery, *Bondholders*, *supra* note [fn 199]; Paul Calello & Wilson Ervin, *From bail-out to bail-in*, *The Economist*, Jan. 30, 2010 (arguing that creditors and shareholders will favor bail-ins "because the losses from a bail-in resolution are so much smaller than the losses at risk in a liquidation.")

³³⁰ AFME, *supra* note 280 at 14; [cite to QFC exemption in FDIC resolution].

in transaction to circumvent events of default defined by the ISDA Master Agreement.³³¹ This may not be feasible in practice, and will likely require modification of the Agreement foregoing termination rights in the event of a bail-in that will make derivatives contracts riskier investments for counterparties.

Common to all forms of creditor bail-in, including the AFME's proposal, is the question of which classes of debt instruments are eligible for impairment or conversion. Absent a special exemption from normal priority rules, applying debt-to-equity conversion across the entirety of a financial institution's capital structure will expose short-term unsecured debt holders to the risk of impairment, encouraging them to exit preemptively from an institution that is perceived to be in distress, considerably increasing the risk of a run. If a bail-in imposed on short-term creditors of one financial institution prompts investors in the same economic position at other institutions in the financial system to run too, the ultimate results could be contagious, as alluded to above. Additionally, an overbroad bail-in policy might needlessly raise institutional funding costs and restrict demand from debt investors in financial institution that are legally incapable of holding convertible instruments.³³² Currently, the treatment of various forms of non-deposit short-term funding in a bail-in is uncertain (the AFME calls it a "gray area"),³³³ but in practice it will almost certainly have to be protected in order to reduce the risk of contagion. Shielding short-term debt holders (in particular, uninsured deposits including foreign deposits, non-deposit short-term debt, plus all other systemically important liabilities which are likely to exit instead of accepting impairment) from the imposition of losses will, however, override ordinary rules of contractual priority controlling inter-creditor relationships outside of bankruptcy, inviting legal challenge to the validity of the bail-in. Short-term creditors that harbor doubt about the strength of the legal footing for a regulatory carve-out will rationally prefer to withdraw from a distressed institution rather than remain invested during a bail-in, taking their chances in court. This will prevent even a version of bail-in that includes a carve-out from deterring a run or forestalling contagion. Furthermore, since neither the stay nor the array of payment preference rules, which in formal

³³¹ *Id.*

³³² Bradbery, *Bondholders*, *supra* note [fn 199] (quoting Guy Sears, of the U.K.-based Investment Management Association (IMA), expressing concern that introducing creditor bail-ins will raise financial institution funding costs as investors demand high premia to compensate them for the risk of mark-downs and equity conversion and cautioning that other investors may simply withdraw from the market for bank funding due to restrictions on owning equity instruments).

³³³ AFME, *supra* note 280 at 14.

bankruptcy authorize the administrator to void payments to creditors within 90 days of filing,³³⁴ will be available to regulators conducting a bail-in, it will be impossible for regulators to legally block withdrawals by short-term creditors that choose to disregard regulatory assurance of protection. To forestall a drain on liquidity, any bail-in regime probably must give regulators power to institute a temporary stay on withdrawals, most likely requiring additional change to existing law. The immediate risk of deploying a stay against creditors in one institution undergoing bail-in during a panic is that short-term creditors of other financial institutions, fearing a stay being imposed on them, might run in anticipation. This could worsen instability in the financial system at the same time that regulators are trying to contain it.

Most of the current bail-in proposals, such as approaches urged by the AFME or Huertas (2010), would encompass unsecured capital instruments including preferred stock, subordinated debt, hybrid capital, and senior unsecured debt but *not* deposits and other “protected” funding.³³⁵ Special attention must be devoted to the status of *foreign* deposits in bail-in, which do not benefit from the same protections shielding domestic deposits in the U.S. Rather, since the enactment of the national depositor preference in 1993, foreign depositors have ranked *pari passu* with general creditors in FDIC resolution, behind domestic depositors in order of recovery.³³⁶ Unless foreign depositors receive coequal protection against impairment in the event of a bail-in, they are likely to exit domestic institutions that become distressed.³³⁷ Equalizing the treatment of domestic and foreign depositors in the context of a bail-in is especially critical for larger financial institutions with multinational scale, such as Citigroup, which reported \$484 billion in deposits outside of the U.S. at the end of 2008, representing 62.5% of its total deposit base.³³⁸ The Basel Committee proposal, which limits bail-in conversion to non-common Tier 1 and Tier 2 capital instruments

³³⁴ See, e.g., 11 U.S.C. § 547, 550; [cite to FDIC preference equivalent].

³³⁵ AFME, *supra* note 280 at 14; Huertas, *Routes to Resolution: Bridge bank and bail-in*, *supra* note [fn 272] at 5-6.

³³⁶ 12 U.S.C. §§ 1813(l), 1821(d)(11) [hereinafter Federal Deposit Insurance Act]; Public Law No. 103-66 Section 3001[a] (Aug. 10, 1993) [hereinafter National Depositor Preference Amendment].

³³⁷ See, e.g., James A. Marino & Rosalind L. Bennett, *The Consequences of National Depositor Preference*, FDIC BANKING REVIEW (Oct. 1999), available at http://www.fdic.gov/bank/analytical/banking/1999oct/2_v12n2.pdf (voicing concern that the “national depositor preference...will very probably alter the behavior of market participants in meaningful ways. Uninsured depositors and unsecured creditors will probably be more skittish. They will protect their interests more actively and thus precipitate a liquidity failure much more rapidly than has been the case in the past...because earlier closures have a greater potential for leaving foreign depositors and other creditors unprotected, to the benefit of the FDIC.”)

³³⁸ Citigroup, Financial Information, Quarterly Financial Data Supplement (Dec. 31, 2008), *supra* note 341 (reporting \$774 billion total deposits as of December 31, 2008, comprising \$290 billion, or 37.5%, in interest- and non-interest bearing deposits in U.S. offices and \$484 billion, or 62.5%, in offices outside the U.S.).

only, would be likely to preserve foreign deposits intact.³³⁹ Under this formulation, short-term debt presumably will be excluded from conversion, since it is not a capital instrument. This will reduce the danger of setting off a run or spreading contagion. Limiting the selection of bailable instruments to Tier 1 and Tier 2 capital only, however, could restrict the total amount of capital potentially available to absorb losses, narrowing the usefulness of bail-ins to situations in which institutional losses are no greater than total existing capital. During an exceptionally severe crisis, the Basel approach risks reserving too few convertible resources for regulators to tap without provoking a run. Short-term investors suspicious that their issuer's long-term debt and common equity are insufficient to facilitate the recapitalization will expect to be impaired too despite ex ante assurances of a carve-out, and may run anyway. In any event, if the total asset value remaining after incurring a series of drastic write-offs during a bail-in is less than the amount of protected funding, the institution will be forced to raise capital from outside sources to correct the mismatch, injecting delay and uncertainty into the process and perhaps inviting a politically contentious government bailout.

Illustrative analysis of the December 31, 2008 consolidated balance sheet of Citigroup (see Figure 3.2) suggests that the firm possessed enough long-term debt to support losses of 20% to its trading, investment, and loan portfolios through bail-in, without impairing guaranteed, short-term, and otherwise ineligible instruments. Losses greater than approximately 30% of the carrying value of these assets would, however, have exhausted the amount of long-term debt eligible for bail-in, requiring public support to fully restore the pre-bail-in leverage ratio without converting shorter-term instruments. Even assuming the legal and economic risks attached to a carve-out for short-term debt in the context of bail-in could be overcome, enabling it to be credibly exempted from bail-in, this would perversely lead to more liquidity risk as creditors shifted out of longer-term to short-term debt. This might also make institutional funding more expensive. This creates a serious dilemma for the creditor bail-in strategy: if short-term debt holders do *not* believe in the credibility of a protective carve-out, either because it appears legally uncertain, financially unfeasible, or both, the rational choice in the face of impending bail-in will be to run. Alternatively, if regulators articulate a convincing plan to exempt short-term debt holders from bail-in that market participants *do* believe, it may augment the market's bias for funding financial institutions on a short-term basis, increasing the financial system's

³³⁹ Basel, *Loss absorbency*, *supra* note 294 at 4.

dependency on short-term borrowing. Either outcome will increase the risk of contagion in the financial system.³⁴⁰

*Figure 3.2: Illustrative Bail-in of Citigroup
Balance Sheet as of December 2008 (\$ in Millions)*³⁴¹

ASSETS	12/31/2008	REALIZED IMPAIRMENT OF:	
	Actual	20.0%	50.0%
Cash, deposits, fed funds, and brokerage receivables ^(a)	\$427,995	\$427,995	\$427,995
Trading account assets	380,043	304,034	190,022
Investments, available for sale and held to maturity)	253,393	202,714	126,697
Loans, net of allowances	664,915	531,932	332,458
Other assets ^(b)	218,917	218,917	218,917
TOTAL ASSETS	\$1,945,263	\$1,685,593	\$1,296,088
Total losses to be absorbed	--	(\$259,670)	(\$649,176)
LIABILITIES AND EQUITY			
Deposits	\$774,185	Protected/ineligible funding source that cannot be impaired through bail-in.	
Repurchase agreements	205,293		
Brokerage payables	70,916		
Trading account liabilities	167,536		
Short-term borrowings	126,691		
Other liabilities ^(c)	90,275	Available to absorb losses	
Subtotal - Protected or ineligible liabilities	1,434,896		
Long-term debt	359,593		
Shareholders' equity	150,774		
TOTAL LIABILITIES AND EQUITY	\$1,945,263		
Tier 1 capital / Implied Tier 1 to maintain constant	\$118,758	\$102,905	\$79,126
Tier 1 leverage ratio (Tier 1 capital / total assets)	6.1%	6.1%	6.1%
ILLUSTRATIVE LOSS ABSORPTION SCHEDULE			
Total losses to be absorbed		\$259,670	\$649,176
Less: Losses absorbed by Tier 1 capital		(118,758)	(118,758)
Residual losses to be absorbed by converting long-term debt		140,912	530,418
Add: Conversion of long-term debt to maintain Tier 1 leverage ratio		102,905	79,126
Total long-term debt required for bail-in		243,817	609,543
Actual long-term debt held on balance sheet		359,593	359,593
Implied bail-in funding surplus (deficit/required public support)		\$115,776	(\$249,950)

(a) Includes fed funds sold and securities borrowed/purchased under resale agreements.

(b) Includes goodwill, intangible assets, mortgage servicing rights, and other.

(c) Includes credit loss allowances for letters of credit.

³⁴⁰ Regulators sound caution on bank bail-in proposal, *supra* note 320.

³⁴¹ See Citigroup, Financial Information, Quarterly Financial Data Supplement (Dec. 31, 2008), available at <http://www.citigroup.com/citi/fin/qer.htm>.

Even if regulators were successful at structuring creditor bail-in transactions to exempt short-term debt holders while deterring the incentive to shift funding to short-term borrowing, they would still face the same array of practical obstacles that were confronted in the analysis of contingent capital. First, the impact on investor appetite of subjecting the debt of financial institutions to the risk of automatic conversion at the discretion of regulators is unknown, but it could be significant. The Financial Times reported recently the results of a customer survey by JPMorgan showing that one quarter of senior bondholders have indicated they would refuse to purchase instruments subject to bail-in risk.³⁴² This could raise average bank borrowing costs by 0.87%.³⁴³ Also unknown are the prospective ratings and capital treatment that would apply to instruments eligible for bail-in, though Moody's Investors Service has cautioned that it will consider downgrades of junior bank debt subject to bail-in.³⁴⁴ Second, the mechanics governing conversion must be designed and articulated.³⁴⁵ If the "trigger" controlling when bail-in takes place is a pure function of regulatory discretion (rather than premising it on capital- or market-based variables), then at the very least regulators must define prospectively under what circumstances bail-in will occur (plus, which liabilities will be included or exempted from its sweep). This is the subject of considerable disagreement among advocates for the solution.³⁴⁶ More problematically, it is probably not susceptible of straightforward resolution, since no one (regulators, financial institutions, or investors) can know in advance when a financial crisis will occur, how severe it is likely to be, what actions regulators will have to take in order to contain it, or how much capital will ultimately be required to facilitate loss absorption in cases of issuers that suffer extensive balance sheet impairment. Many of the putative advantages of bail-in, for example, automating resolution, minimizing regulatory intervention, and promoting uniformity in reorganizational outcomes, all in a non-disruptive manner,³⁴⁷ require investors to know ex ante which claims will bear these costs and under what circumstances, but many market participants

³⁴² Jennifer Hughes & Brooke Masters, *The debt net*, FINANCIAL TIMES, Feb. 21, 2011.

³⁴³ *Id.*

³⁴⁴ Jennifer Hughes, *Junior debt in line for Moody's downgrade*, FINANCIAL TIMES, Feb. 14, 2011, available at <http://www.ft.com/cms/s/0/b4edd888-386e-11e0-959c-00144feabdc0.html#axzz1EnpiUy3Y>. [Need to get original Moody's report.]

³⁴⁵ AFME, *supra* note 280, at 11-13.

³⁴⁶ See, e.g., Calello & Ervin, *supra* note [fn 205]. Calello and Ervin of Credit Suisse would have applied a bail-in to enable Lehman Brothers to circumvent bankruptcy, while others would restrict use of the policy to situations in which a federal bailout was unnecessary.

³⁴⁷ Wilson Ervin, *Are we ready for the next crisis?*, Credit Suisse, Mar. 19, 2010, pp. 9; AFME, *supra* note 280 at 21.

echo doubts that certainty in this connection can be achieved.³⁴⁸ Senior executives at Rabobank, since embracing contingent capital, have expressed revealing skepticism of regulators' ability to make effective determinations.³⁴⁹ Third, during a severe market dislocation if asset prices fall temporarily to severely depressed levels regulators will face difficulty establishing accurate fair market valuations for the purposes of determining the amount of conversion required on the part of debt exposed to the bail-in. The most straightforward solution to this valuation problem is to require *all* eligible debt to convert to equity *in its entirety*, but this could excessively increase the total amount of capital cushioning the financial institution undergoing bail-in to an extent that is uneconomic and unfair. It might also needlessly inflate the cost of borrowing for issuers whose creditors fear their claims will be converted in their entirety on a bail-in signal from regulators. Though the same set of questions is implicated in the design of contingent capital instruments, the contours of the problem there are more circumscribed, since the terms governing the convertibility of contingent capital instruments are specified in contract and conversion is less likely to affect the financial value or rights of *non*-convertible creditors of the same issuer. Creditor bail-in, by contrast, reaches all non-exempt parties to the restructuring of a distressed financial institution. This is a second intractable dilemma facing creditor bail-in, since although the general problem of advance notice probably cannot be resolved, short-term creditors will not ignore it in calculating whether to exit or remain invested.

The fourth major practical shortcoming of creditor bail-in is of a jurisdictional nature. To encompass a meaningful portion of the international financial system, a bail-in regime will need to be coordinated with insolvency laws and resolution procedures controlling in multiple national jurisdictions so that bail-ins can take place on a cross-border basis without violating or otherwise interfering with local laws.³⁵⁰ This is crucial when large financial institutions with multinational operations are subjected to bail-ins during a crisis. Today, no framework for coordinating cross-border resolution of such institutions exists. Given the major obstacles to achieving coordinated bail-in policies in the near future, the better solution is to require new debt instruments issued by financial institutions to incorporate private contract terms authorizing conversion to equity upon a trigger signal from regulators, as the Basel Committee has suggested.³⁵¹ Under this alternative,

³⁴⁸ *Regulators sound caution on bank bail-in proposal*, *supra* note 320.

³⁴⁹ Jennifer Hughes, *Rabobank warns of 'dangerous' bail-ins*, *supra* note 299.

³⁵⁰ Bradbery, *Bondholders*, *supra* note [fn 199].

³⁵¹ Basel, *Loss absorbency*, *supra* note [fn 178] at 2, 6, 10.

creditors could contract to apply the law of the bail-in jurisdiction in advance, so that conflicts of law and among local regulators would be minimized. However appealing it may be in principle, contracting for cross-border bail-in presents daunting challenges in practice. Since creditors may resist the prospect of future bail-in, regulators might be forced to impose terms instead. Whether they succeed at doing this depends, among other things, on *where* the long-term debt of complex financial institutions is issued, outstanding, and held, and at what level of the corporate structure. If such debt is issued at the holding company level in a single bail-in jurisdiction, it might then be relatively straightforward to subject creditors to uniform bail-in rules. But for large financial institutions that issue debt in multiple jurisdictions through dozens or potentially hundreds of local bank subsidiaries, this will prove impossible. Lehman Brothers, for example, operated 433 subsidiaries in 20 different countries prior to its failure.³⁵² Local regulators that are charged with managing the capital ratios of local bank subsidiaries might be unwilling to allow conversion of subsidiary-level debt for the purpose of restoring the consolidated capital ratio at the holding company-level in a different jurisdiction. Host countries for local subsidiaries of banks domiciled elsewhere will instead be likely to assert regulatory control over claims in their jurisdiction, including deposits, in order to preserve comprehensive control over their respective banking systems. Contracts with host countries would always be susceptible to violation on the part of local regulators who, faced with a failing firm about to impose bail-in losses on creditors including uninsured depositors in their jurisdiction, determine to opt out of the contract instead of submitting to bail-in overseen by a foreign regulators, which could be politically contentious. Knowing that contractual bail-in of a complex issuer might fail if local regulators were to refuse to cooperate, short-term creditors might simply discount it from their determination whether to run or stay invested through a crisis.

Even for regulators bailing-in a financial institution that is organizationally confined to a *single* jurisdiction, the challenge of coordinating the conversion of debt instruments outstanding across many different bank subsidiaries so that all of these subsidiaries, in addition to the parent holding company, are adequately (but not over-) capitalized after the bail-in, will be formidable. Contracting for bail-in of complex multinational financial institutions thus presents a “vertical” problem (coordinating bail-in between the holding company and its bank subsidiaries) as well as

³⁵² Kaufman, *Living Wills: Putting the Caboose before the Engine and Designing a Better Engine*, *infra* note [FN] at 2.

a “horizontal” one (coordinating bail-in of debt in different jurisdictions). Furthermore, relying on contract to streamline bail-in would transform it into a form of contingent capital, sacrificing its functionality as a distinctive substitute for formal resolution procedures by requiring that the major terms controlling conversion be stipulated in advance. This might still require additional legislation by Congress if regulators lack the power to impose conversion terms on issuers and debt holders unilaterally. However this question is resolved, it is crucial for the legal parameters governing creditor bail-in to be unambiguously clear in advance so that market participants, especially short-term creditors, are confident that it can be executed free from the encumbrance of litigation.³⁵³ Securing legal certainty and ensuring that no litigation concerning the status of bail-in arises is unrealistic and probably impossible *ex ante*.

The substantial economic and legal uncertainties that surround creditor bail-in make the strategy seem unworkable in practice, and in the worse case could *provoke* runs by short-term debt holders, increasing systemic risk instead of containing it. For the reasons discussed above, creditor bail-in is not an effective standalone system for halting the spread of financial contagion.

3. *Good-Bank/Bad-Bank Resolution*

“Good-bank/bad-bank” (GBBB) resolution describes a method for reorganizing a failed financial institution by reclassifying its balance sheet into two distinct asset classes. In a classic GBBB transaction, “bad” assets that are deemed to be impaired or otherwise non-performing are divided (or “ring-fenced”) from “good” assets, and both groups are transferred from the original institution into two new ones, respectively called the “bad” and “good banks” (good assets might alternatively remain behind with the original institution). In contrast to more experimental resolution tools such as creditor bail-in, GBBB has been widely used in prior banking crises both in the U.S. and internationally. Different implementations of GBBB have managed the division of the institution’s liabilities, the pro forma capitalization and ownership of the good and bad banks, the level of public support, and the techniques for distinguishing and valuing good and bad assets in varying ways. Every approach though is predicated on two recurring features: first, the systematic division of good and bad assets on the asset-side of the balance sheet, with the aim

³⁵³ *Regulators sound caution on bank bail-in proposal*, REUTERS, Oct. 18, 2010, available at <http://www.reuters.com/article/idUSTRE69H28X20101018>.

of improving information available to the market,³⁵⁴ minimizing uncertainty created by blending good and bad assets together, and raising investor confidence in the quality of the good bank's balance sheet;³⁵⁵ second, the transfer of any guaranteed liabilities (or non-guaranteed but still systemically relevant liabilities that must be protected to prevent a run) to the good bank on the liability-side, so that they receive the maximum protection possible from the good assets and the need for government support is minimized.³⁵⁶ Bad assets can then be liquidated over a longer time horizon, aided by specialized managers, in an orderly manner that is alleviated from the forced selling pressures created by spiking demand for liquidity during times of distress.³⁵⁷ The twin-division formalizes the distinction between the two different economic functions of the good bank (loan origination) and the bad bank (asset disposition), preventing the one from interfering with the other.³⁵⁸ Some believe this limits runs and contagion effects from emanating from institutions that are resolved through GBBB, since by transferring systemically important liabilities into a good bank regulators carve them out of the restructuring process and provide reassurance that the good bank is capable of meeting its future obligations.³⁵⁹ This belief is unjustified.

Though GBBB transactions confer a useful set of efficiencies to the resolution process, the general approach is not designed to stop a systemic contagious run by short-term creditors, contrary to the assertions of some of its proponents.³⁶⁰ Like contingent capital and creditor bail-in, the improvements it promises to the stability of the financial system instead are indirect at best, oriented primarily at facilitating loss imposition on creditors at minimal taxpayer expense,

³⁵⁴ Jonathan Macey, *Are bad banks the solution to a banking crisis?*, 9-10, 32, SNS Occasional Paper (No 82, June 1999) available at http://www.sns.se/document/occasional_paper_82.pdf (describing how splitting off bad assets enhances market information about the solvency of financial institutions resolved through GBBB, ameliorating the “lemons problem facing many troubled financial institutions”).

³⁵⁵ Macey, *supra* note 354 at 29-32, 37 (noting elimination of “guilt by association” discounts through price discovery promoted by disambiguating good and bad assets). See also Santomero & Hoffman, *infra* note 398 at 14 (noting additional benefits related to increased transparency, balance sheet strength, and investor confidence commanded by the good bank, including lower-cost private capital raising); Holmes, *supra* note [fn 221] (noting benefit of increased new lending activity including interbank loans).

³⁵⁶ Robert Hall & Susan Woodward, *The right way to create a good bank and a bad bank*, Financial Crisis and Recession (Feb. 23, 2009), available <http://woodwardhall.wordpress.com/2009/02/23/the-right-way-to-create-a-good-bank-and-a-bad-bank/>.

³⁵⁷ Macey, *supra* note 354 at 20-28, 37. [ADD HOLMES REFERENCE?]

³⁵⁸ Macey, *supra* note 354 at 28-29.

³⁵⁹ Macey, *supra* note 354 at 32; Hall & Woodward, *supra* note [fn 362].

³⁶⁰ Hall & Woodward, *supra* note [fn 362] (urging that under the GBBB approach to resolving a failed financial institution “no run would occur on the heavily capitalized good bank...Reorganization could proceed peacefully while the good bank went about its banking business. The claims of the shareholders and bondholders, which are inferior to those of the depositors, can be sorted out without interfering with the operation of the bank”).

and are ultimately unlikely to deter a mass withdrawal of short-term funding during a financial crisis. At bottom, this is due to the fact that GBBB cannot *guarantee* short-term creditors against impairment. At best, it can supply enhanced credit protection to debt that is migrated over to the good bank and shielded with the improved coverage from the good assets. This presupposes that regulators (aided by the institutions themselves) will be able to isolate and value the good assets in the first place, itself a doubtful exercise. In the middle of a panic when correlations are high, pushing both good and bad asset prices to converge, market price discovery may be distorted, impeding attempts to establish credible valuations for good assets.³⁶¹ But even assuming that regulators were able to distinguish an institution's good and bad assets in the middle of a panic, then carry out a swift division of its balance sheet, it still does not follow that GBBB will deter short-term creditors from running—in fact, it might induce them to run, if the result of the valuation exercise is to establish that there are not enough good assets to satisfy all of their short-term claims in full. Though GBBB may be able to increase the *visibility* of the size of the cushion available to short-term creditors by stripping away bad assets, it cannot enhance the *value* of the good assets backing it. If common equity capital and longer-term liabilities prove to be insufficient to fully absorb the total losses realized in the course of splitting up of good and bad assets, short-term debt will have to absorb the remainder, or else public funding will be required to fill the value gap. Short-term creditors are very unlikely to stay invested if there is even a remote risk of being impaired as a result of this procedure. They are more likely to opt to exit safely, triggering a run and, in the worst case scenario, spreading contagion through the financial system. If at this point the government steps in to inject incremental funding, the public will have underwritten the cost (and assumed the risk) of protecting short-term creditors, and therefore the cost of containing contagion effects. When regulators have used GBBB, they have usually required some public funding of either the good, bad, or both banks. This was true of GBBB resolutions during the U.S. savings and loan crisis, and of some of the most prominent international examples of GBBB such as the government of Sweden's restructuring of its banking sector in 1992 and the Irish government's ongoing efforts to rescue its banking system.

Despite its obvious shortcomings as a policy tool for managing the problem of contagion, GBBB has been used with some success to resolve failed financial institutions when a contagious run was *not* an immediate threat. Though the specific format of GBBB transactions varies from

³⁶¹ Macey, *supra* note 354 at 37-40.

case to case, regulators in the U.S. and internationally have patterned prominent reorganizations on this general archetype. The best-known U.S. experience with GBBB dates to the U.S. savings and loan crisis. To address the crisis, U.S. government created the Resolution Trust Corporation (RTC) in August 1989 under the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA),³⁶² to acquire bankrupt thrift institutions, strip out bad assets, then resell them (with good assets and insured liabilities intact) to new acquirers. Bad assets that were not immediately marketable were retained for separate disposition by the RTC³⁶³ or, in some cases, were placed into public-private partnership vehicles that managed the sales professionally over a longer time period.³⁶⁴ Generally, a standard RTC resolution commenced when an insolvent thrift failed and entered conservatorship under the control of the RTC.³⁶⁵ Upon its formation the RTC obtained control of 262 thrifts with \$115 billion in assets already operating in conservatorship.³⁶⁶ By the end of one year, it had assumed conservatorship of 531 thrifts with \$278 billion in assets.³⁶⁷ The RTC resolved and disposed of the good assets and protected liabilities of failed thrifts through a variety of channels, including “purchase and assumption” (P&A) transactions, in which a healthy acquirer assumed insured deposits (and often uninsured amounts in excess of the FDIC insurance cap) and selected good assets³⁶⁸ or, if no ready acquirer existed, through payoffs or transfers of insured deposits.³⁶⁹ Approximately two-thirds of all thrifts brought under RTC control during its tenure were resolved using P&A.³⁷⁰ The RTC initially experimented with granting put options on loan portfolios in P&A transactions to incentive prospective acquirers to assume more “good” assets. An acquirer that purchased a failed thrift subject to a put option received the right to sell back assets it later determined to be unwanted to the RTC.³⁷¹ This enabled buyers to take assets on a provisional basis, retaining any that proved to be good but returning others that turned out to

³⁶² Lee Davison, *Politics and Policy: The Creation of the Resolution Trust Corporation*, [pp. 18] 17(2) FDIC BANKING REVIEW (2005), available at <http://www.fdic.gov/bank/analytical/banking/2005jul/article2.pdf>.

³⁶³ Barry Meier, *Savings and Loan Crisis May Be Guide for Bank Bailout*, N.Y. TIMES (Sept. 28, 2008), available at http://www.nytimes.com/2008/09/29/business/29rtc.html?ref=resolution_trust_corporation.

³⁶⁴ Morrison Foerster, *Good Bank-Bad Bank: A Clean Break and a Fresh Start*, 5 (2009), available at <http://www.mofo.com/files/Publication/c9b79abf-1d65-4694-9836-635345926fa5/Presentation/PublicationAttachment/3e48d29f-602e-4fa3-abcf-15a2830eb8ec/20090218GoodBankBadBank.pdf>.

³⁶⁵ FDIC, *MANAGING THE CRISIS: THE FDIC AND RTC EXPERIENCE*, 7 (1998), available at <http://www.fdic.gov/bank/historical/managing/history1-01.pdf>.

³⁶⁶ *Id.* at 14.

³⁶⁷ *Id.* at 8.

³⁶⁸ *Id.* at 13-18.

³⁶⁹ *Id.* at 18-20.

³⁷⁰ *Id.* at 15.

³⁷¹ *Id.* at 15.

be bad. At first the RTC embraced this strategy, selling \$40 billion of assets to buyers using put options and taking back \$20 billion after the options were exercised.³⁷² Though use of a put option enabled the RTC to increase the total volume of dispositions, its success was mixed, typically incentivizing what the FDIC has called “cherry picking” tactics by prospective acquirers.³⁷³ The large pool of bad assets assumed by the RTC over its lifetime made retaining and managing them more economical than paying private acquirers to assume them immediately in connection with P&A sales.³⁷⁴ In some cases, the RTC disposed of troubled loans directly through auctions³⁷⁵ and securitizations,³⁷⁶ typically enlisting the evaluation, management, and marketing tasks to private outside contractors.³⁷⁷ In others, the RTC sponsored public-private equity joint ventures to hold, manage, and dispose of troubled assets acquired from failed thrifts.³⁷⁸ In all, 72 public-private partnerships were created to manage \$21.4 billion of bad assets.³⁷⁹ The RTC program as a whole can thus be viewed as a single GBBB transaction that pooled together the bad assets of many failed institutions for long-term public-private management, operating until 1995 and resolving 747 institutions with assets totaling \$394 billion.³⁸⁰

In the U.S., GBBB was also deployed during the savings and loan to restructure larger financial institutions outside of the context of the RTC. For example, during the same era, the FDIC used the GBBB technique in 1988 to resolve First City National Bank of Houston, creating a bad bank (called the “Collecting Bank”) through a process of open bank assistance capitalized with \$970 million of government financing to assume First City’s energy and commercial real estate loans, which subsequently were liquidated over the next 15 years.³⁸¹ In this case, public support from the FDIC was procured for the bad bank, rather than funding the transfer purely

³⁷² *Id.* at 15.

³⁷³ *Id.* at 15.

³⁷⁴ *Id.* at 28.

³⁷⁵ *Id.* at 30-32.

³⁷⁶ *Id.* at 38-39.

³⁷⁷ *Id.* at 30.

³⁷⁸ *Id.* at 40-42.

³⁷⁹ *Id.* at 40.

³⁸⁰ Timothy Curry & Lynn Shibut, *The Cost of the Savings and Loan Crisis: Truth and Consequences*, [pp 26] 13(2) FDIC BANKING REVIEW (2000), available at http://www.fdic.gov/bank/analytical/banking/2000dec/brv13n2_2.pdf.

³⁸¹ Jim Greer, *First City turns corner on final days*, HOUSTON BUSINESS JOURNAL (Nov. 9, 2003) available at <http://www.bizjournals.com/houston/stories/2003/11/10/story2.html>; Max Holmes, *Good Bank, Bad Bank; Good Plan, Better Plan*, N.Y. TIMES (Feb. 1, 2009) available at <http://www.nytimes.com/2009/02/01/opinion/01holmes.html>; FDIC, MANAGING THE CRISIS: THE FDIC AND RTC EXPERIENCE, 567-76 (1998).

through the imposition of losses on existing debt holders of First City. Relieved of its troubled loan book, First City became an effective good bank and subsequently was able to raise \$500 million in new private capital.³⁸² Ultimately, however, it continued to absorb losses on non-performing loans and, in 1992, was taken into receivership by the FDIC.³⁸³

Also in 1988, Mellon Bank Corporation formed the bad bank Grant Street National Bank to assume approximately \$640 million of impaired real estate loans (47% of their value at origination of \$1.4 billion).³⁸⁴ In contrast with First City, the bad bank in the Mellon transaction was financed privately, without the need to solicit government support.³⁸⁵ Instead, Grant funded the acquisition of the portfolio through the issuance of \$513 million in new sub-investment grade debt sold to investors through Drexel Burnham Lambert, supplemented with an additional \$128 million in capital (a mixture of senior and junior preferred stock and common equity) supplied to Grant by Mellon.³⁸⁶ Mellon also recognized \$142 million in losses on the transfer of assets to Grant, but its capital structure was otherwise kept intact, with no liabilities transferred along with the bad assets from Mellon to Grant.³⁸⁷ Mellon's shareholders received the Grant Street common stock through a special dividend.³⁸⁸ Grant Street bondholders recovered their full investment at maturity.³⁸⁹ Though the Mellon-Grant GBBB transaction has been applauded as an illustration of a successful implementation of the strategy free from public support,³⁹⁰ it depended on accommodative high-yield bond markets to provide funding for the bad bank.³⁹¹ During a contagious market panic it is unlikely that private financing markets will be as receptive to large-scale split-offs of perceived toxic assets.³⁹² Other examples of GBBB (or

³⁸² Greer, *supra* note 381; Holmes, *supra* note 381.

³⁸³ Greer, *supra* note 381.

³⁸⁴ ReedSmith, *From 'Bad' Bank to 'Good'* Client Alert 08-143 (Aug. 2008), available at http://www.reedsmith.com/_db/_documents/bull08143_200809034643.pdf; Stephen Kleege, *Mellon Inspires 'Bad Bank' Plans for Property Portfolios*, AM. BANKER, Feb. 5, 1991. See also Macey, *supra* note 354 at 13; Holmes, *supra* note 381; Morrison Foerster, *supra* note 364 at 5.

³⁸⁵ Kleege, *supra* note 384; Holmes, *supra* note 381.

³⁸⁶ Kleege, *supra* note 384; ReedSmith, *supra* note 384 (discussing Mellon's capital contribution to Grant, including \$35 million common equity, \$90 million senior preferred, and \$3 million junior preferred); Macey, *supra* note 354 at 13.

³⁸⁷ Kleege, *supra* note 384; Macey, *supra* note 354 at 13.

³⁸⁸ ReedSmith, *supra* note 384.

³⁸⁹ Kleege, *supra* note 384.

³⁹⁰ See, e.g. Macey, *supra* note 354 at 13.

³⁹¹ Kleege, *supra* note 384; Macey, *supra* note 354 at 21.

³⁹² Macey, *supra* note 354 at 21 (noting that "[t]he decline of this [junk bond] market makes the private financing of bad bank strategies much more difficult"); Santomero & Hoffman, *infra* note 398 at 14 (noting that "[t]he first use of [GBBB] was in the mid 1980s when high yield debt capital was relatively easy to come by. The subsequent collapse of the junk bond market has raised costs, and reduced the attractiveness of this alternative").

reorganizations incorporating GBBB-like features) abound in the U.S.³⁹³ Most recently, in early 2011 Bank of America stated it was forming a new business unit called Legacy Asset Servicing to hold and service the bulk of its non-performing residential mortgage loans that were originally brought onto its balance sheet in the 2008 acquisition of Countrywide Financial.³⁹⁴ The unit will not be structured as an independent legal vehicle or funded with new capital, so it is not technically an example of GBBB.³⁹⁵ Bank of America has instead indicated that its primary utility will be to improve managerial focus (and transparency) by reconfiguring its organizational structure to distinguish more sharply between good and bad assets,³⁹⁶ potentially replicating some of the supposed efficiencies of the GBBB structure.

Regulators outside of the U.S. have also embraced GBBB from time to time.³⁹⁷ Arguably the most prominent international example of GBBB is Sweden's sponsorship of two bad banks in 1992 to assume troubled assets from the Swedish commercial banks Nordbanken and Gota after steep declines in property values and losses linked to the floating of the Swedish krona seriously undermined the stability of Sweden's financial system.³⁹⁸ In response, the Swedish government injected SKR 25 billion of new capital into Nordbanken, nationalizing the bank, then provided a further SKR 40 billion of new capital to a bad bank known as Securum to acquire SKR 67 billion of Nordbanken's non-performing loans.³⁹⁹ In conjunction with this transaction, the government injected an additional SKR 10 billion into Nordbanken, for a total SKR 50 billion investment to finance the transfer and write-off of bad assets.⁴⁰⁰ Retriva, a second government-sponsored bad bank, assumed a further SKR 38 billion of troubled assets from Gota.⁴⁰¹ Gota and Nordbanken resumed operating as good banks, stripped of bad assets by

³⁹³ See Macey, *supra* note 354 at 12-14.

³⁹⁴ Press Release, Bank of America, Bank of America Announces Changes to Resolve Legacy Mortgage Issues and Continue Building the Leading Home Lending Business (Feb. 4, 2011), *available at* <http://mediaroom.bankofamerica.com/phoenix.zhtml?c=234503&p=irol-newsArticle&ID=1525074&highlight=>; Nelson D. Schwartz, *Bank of America to Create Troubled Loans Unit*, N.Y. TIMES (Feb. 4, 2011) *available at* <http://www.nytimes.com/2011/02/05/business/05bank.html>.

³⁹⁵ Schwartz, *supra* note 394.

³⁹⁶ Bank of America, *supra* note 394; Schwartz, *supra* note 394.

³⁹⁷ See Macey, *supra* note 354 at 15 (citing proposed or actual usage of GBBB, at various times, in France, Germany, the Czech Republic, the Slovak Republic, Thailand, China, New Zealand, Brazil, and Japan).

³⁹⁸ Anthony M. Santomero & Paul Hoffman, *Problem Bank Resolution: Evaluating the Options*, [pp. 23-24] Wharton Financial Institutions Center (Working Paper, October 1998) *available at* <http://fic.wharton.upenn.edu/fic/papers/98/9805.pdf>; Macey, *supra* note 354 at 11, 16; *see also* Peter Sederowsky, *Sweden-Legal Report*, *International Financial Law Review* (Special Supplement, July 1994).

³⁹⁹ Santomero & Hoffman, *supra* note 398 at 24.

⁴⁰⁰ Peter Went, *Lessons from the Swedish Bank Crisis* 6-7 (GARP Research Center, Feb. 14, 2009).

⁴⁰¹ Santomero & Hoffman, *supra* note 398 at 24.

the government while retaining their remaining performing loans books. Despite the recapitalization, Gota ultimately failed in late 1992⁴⁰² and was acquired by Nordbanken in a SKR 3.1 billion transaction that created Sweden's largest bank.⁴⁰³ The transactions involved large amounts of public funding to support the GBBB reorganization and later the merger. Both the bad banks, Securum and Retriva, were owned by the Swedish government, operating as asset management companies with a mandate to dispose of their portfolios, comprising a majority of real estate assets and some corporate loans,⁴⁰⁴ over a 10 to 15 year time period.⁴⁰⁵ Securum's management was assigned significant latitude to design its asset disposition plan.⁴⁰⁶ Despite the intensive level of public financial support for the bad banks, critics have praised the success of these transactions.⁴⁰⁷ New Zealand,⁴⁰⁸ the Czech and Slovak republics,⁴⁰⁹ and, during the financial crisis, Switzerland (UBS)⁴¹⁰ are among many other countries that have used GBBB to restructure financial institutions in their domestic banking systems. Still ongoing is the Irish government's sweeping reorganization of its largest banking entities, including Allied Irish Banks, Bank of Ireland, and Anglo Irish Bank, through a government-sponsored "master" bad bank called the National Asset Management Agency (NAMA).⁴¹¹ NAMA's business plan, published in draft format in October 2009, calls for the issuance of government-backed debt to

⁴⁰² Pierre Harkay, *What options to solve systemic banking crises?* 25 (Universiteit Maastricht, Faculty of Economics and Business Administration, 2009), available at <http://arno.unimaas.nl/show.cgi?fid=17618>.

⁴⁰³ Santomero & Hoffman, *supra* note 398 at 24.

⁴⁰⁴ Went, *supra* note 400 at 7.

⁴⁰⁵ Went, *supra* note 400 at 7-8; Harkay, *supra* note 402 at 25-26.

⁴⁰⁶ Clas Bergström, Peter Englund & Per Thorell, *Securum and the Way out of the Swedish Banking Crisis 1* (Summary of a report commissioned by SNS, Center for Business and Policy Studies, Translated by Timothy Chamberlain, May 2003), available at http://www.sns.se/document/securem_eng.pdf.

⁴⁰⁷ Carter Dougherty, *Stopping a Financial Crisis, the Swedish Way*, N.Y. TIMES (Sept. 22, 2008), available at <http://www.nytimes.com/2008/09/23/business/worldbusiness/23krona.html>; Russell Hotten, *UK turned to Nordic bail-out*, THE TELEGRAPH (Oct. 13, 2008), available at <http://www.telegraph.co.uk/finance/financetopics/financialcrisis/3190488/UK-turned-to-Nordic-bail-out.html>.

⁴⁰⁸ Chris Hunt, *Banking Crisis in New Zealand – an historical perspective*, [pp. 35] 72(4) Reserve Bank of New Zealand: Bulletin (2009), available at http://www.rbnz.govt.nz/research/bulletin/2007_2011/2009dec72_4hunt.pdf.

⁴⁰⁹ Michael S. Borish et al., *Banking Reform in Transition Economies*, [pp. 23] Finance & Development (1995).

⁴¹⁰ UBS, *Changes in 2008*, available at <http://www.ubs.com/1/e/investors/08q3/0003.html>, last accessed Dec. 22, 2010.; *SNB cuts value of toxic UBS asset fund by a third*, REUTERS, Feb. 10, 2009, available at <http://uk.reuters.com/article/idUKLA75333720090210>.

⁴¹¹ National Asset Management Agency, <http://www.nama.ie/> (last visited Mar. 1, 2011); Dara Doyle, *Irish Bad Bank Sees EU5.5 Billion Profit in Gamble*, BLOOMBERG (Oct. 15, 2009), available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aTksIzeFX4vk>; John M. Brown, *Ireland's Nama tasked to acquire toxic bank assets at a discount*, GULFNEWS (Oct. 2, 2010), available at <http://gulfnnews.com/business/economy/ireland-s-nama-tasked-to-acquire-toxic-bank-assets-at-a-discount-1.690305>.

finance the purchase of troubled real estate assets from Irish commercial banks,⁴¹² including the several which have been nationalized by the Irish government, most recently Allied Irish Banks Plc.⁴¹³ The plan has been heavily criticized as amounting essentially to a complete government bailout of the Irish financial system funded, with public money.⁴¹⁴

Past field-testing of GBBB is supposedly a source of strength relative to competing (but untested) resolution models, but its actual historical record is mixed at the best. First, GBBB has not proven to be viable as a strictly private resolution tool. Instead it usually has required public financial support whenever regulators have deployed it against a background of severe economic dislocation, for example, in the recent cases of Sweden and Ireland. Second, GBBB has not been rigorously tested as a standalone strategy for containing the spread of contagion in the financial system. Many of the most prominent U.S. cases of GBBB, for example, date to the savings and loan era, a classic example of asset shock that did not involve contagious runs or mass fire sales of troubled assets by failing institutions. When regulators *have* used GBBB to resolve financial institutions in contagious environments, they have typically done so only in conjunction with explicit public guarantees of customer deposits and other systemically relevant debt instruments. Ireland, for instance, guaranteed all deposits and debt instruments issued by its six major banking institutions in September 2008,⁴¹⁵ before forming NAMA one year later to manage the resolution of the Irish financial system. At other times regulators have been compelled to drop the GBBB approach altogether when they faced a developing contagious run. At a relatively early stage in the financial crisis of 2007–2009, U.S. regulators abandoned plans for using the Troubled Asset Relief Fund (TARP) as a ring-fencing mechanism for funding purchases of bad assets from U.S. financial institutions, after it became clear that this strategy would not be effective at halting the mass exit of investors from financial institutions and short-term capital markets.⁴¹⁶ Although not technically qualifying as a GBBB transaction, TARP presented regulators with similar practical

⁴¹² National Asset Management Agency, Draft NAMA Business Plan, Oct. 13 2009, *available at* http://nama.ie/Publications/2009/Business_Plan_13OCT09.pdf.

⁴¹³ See, e.g., Finbarr Flynn, *Ireland to Take Majority Ownership of AIB in Bailout*, BLOOMBERG BUSINESSWEEK (Sept. 30, 2010), *available at* <http://www.businessweek.com/news/2010-09-30/ireland-to-take-majority-ownership-of-aib-in-bailout.html>.

⁴¹⁴ See, e.g., Michael Lewis, *When Irish Eyes Are Crying*, VANITY FAIR (March 2011); Louisa Fahy & Simone Meier, *Government ‘squandering’ money in bank bailout plan*, THE INDEPENDENT (Oct. 7, 2009), *available at* <http://www.independent.ie/business/irish/government-squandering-money-in-bank-bailout-plan-1906787.html>; David McWilliams, *Nama is highway robbery*, THE POST (Oct. 11, 2009), *available at* <http://www.sbpost.ie/commentandanalysis/nama-is-highway-robbery-44915.html>.

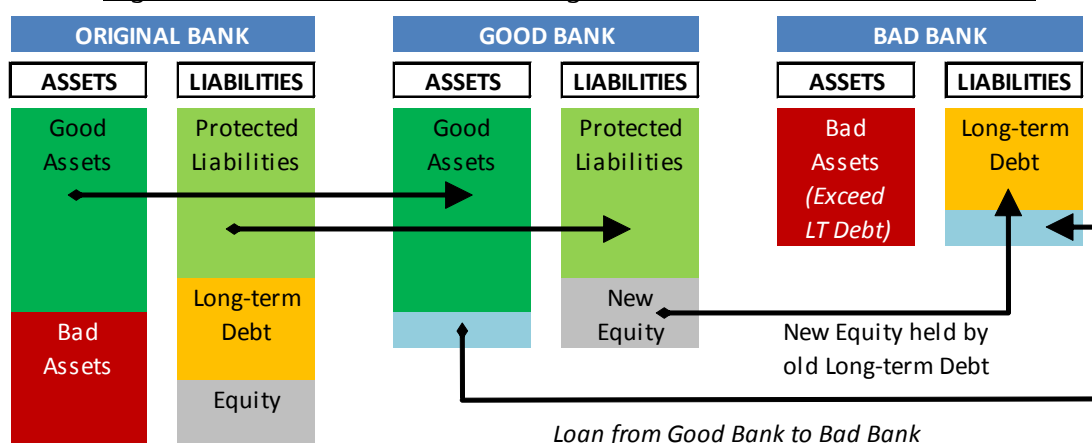
⁴¹⁵ Department of Finance, Government Decision to Safeguard Irish Banking System, *infra* note [1](#).

⁴¹⁶ [Cite.]

challenges, including how to distinguish and value good and bad assets in a disorderly market environment.⁴¹⁷ The U.S. government ultimately deployed the federal funding allocated to TARP in the form of equity investments in major U.S. banks under the CPP.⁴¹⁸ At the time it made the CPP investments, the government already had been compelled to issue unprecedented guarantees of all bank deposits, MMMF investments, and unsecured senior bank debt in the U.S. financial system. Public guarantee of short-term debt, not GBBB resolution, thus became the policy instrument primarily responsible for stopping the spread of contagion. Third, repeated historical usage has yielded no unified template for GBBB. Regulators have used the resolution method on an ad hoc and customized basis, adapting it to the unique pattern of exigencies that characterized the particular financial crisis they faced. At least so far, GBBB has been guided by significant regulatory discretion, making it the polar opposite of a bright-line set of ex ante rules and assurances that short-term debt holders likely require to be deterred from running.

Since the financial crisis of 2007–2009, some efforts have been made toward developing models of GBBB that would be more generally applicable and less dependent on public funding. Hubbard, Scott, and Zingales (2009),⁴¹⁹ for example, outline a form of GBBB in which the bad bank acquires the non-performing loan portfolio of the original bank and assumes its original long-term debt, with any funding gap filled by a new loan from the good bank (see Figure 3.3):

Figure 3.3: Hubbard, Scott, and Zingales Illustrative GBBB Transaction



⁴¹⁷ [Cite.]

⁴¹⁸ Press Release, Dep't of the Treasury, Treasury, Regulators Issue Additional Guidance on Capital Purchase Program (Oct. 20, 2008), *available at* <http://www.treasury.gov/press-center/press-releases/Pages/hp1222.aspx>; Press Release, U.S. Dep't of the Treasury, Treasury Issues Additional Information on Capital Purchase Program (Oct. 31, 2008), *available at* <http://www.treasury.gov/press-center/press-releases/Pages/hp1247.aspx>.

⁴¹⁹ Hubbard, R. G. et al., *Banks Need Fewer Carrots and More Sticks*, The Wall Street Journal, May 6, 2009, *available at* <http://online.wsj.com/article/SB124157669428590515.html>.

This loan, the authors note, “is necessary because the long-term debt of the original bank is not likely to be sufficient to fund the assets of the bad bank.”⁴²⁰ Old equity holders receive new equity in the bad bank, likely having only nominal value. The good bank then acquires the good assets from the original and assumes all of its FDIC-guaranteed liabilities (including insured deposits). In practice, however, the good bank will probably have to assume *all* of the original short-term debt, even if it is not subject to an explicit government guarantee, to prevent short-term creditors from running. Former long-term debt holders in the original bank become pro forma owners of shares issued by the good bank, providing them with upside exposure to the operating performance of the good bank. In theory, public involvement is kept to a minimum (but not absolutely ruled out), since the bad bank’s financing needs are supplemented by the old long-term debt, which is wholly transferred to the bad bank, and funding from the good bank, while the guaranteed liabilities are protected by the good assets held at the good bank.

There are four scenarios, however, in which public support might become necessary. First, these good assets may be insufficient to cover all of the good bank’s guaranteed liabilities and any short-term debt that could opt to run rather than risk impairment. This is essentially the same problem facing creditor bail-in when a financial institution incurs losses that are large enough to exhaust all of its longer-term liabilities and have to be absorbed by systemically relevant short-term ones, provoking a run. Second, the loan underwritten by the good bank to support the bad bank could become impaired, for example if the bad bank recovers less from the disposition of its bad assets than expected, causing the good bank to incur loan losses that render it insolvent in the worst case. Third, public support could be necessary if the loan from the good bank proves not to be feasible *at all*, for instance because it is too risky financially or politically unpopular. Fourth, even if coverage from the good assets is sufficient, and the inter-bank loan proves creditworthy, holders of guaranteed liabilities could run anyway, rather than assume the (from their standpoint) unnecessary risk of staying invested while the workout of the original bank proceeds. Under any of these scenarios, public support will be required to fund the transaction, as it has in many historical instances of GBBB. Following the split, the recapitalized good bank, stripped of its bad assets and its excess liabilities, returns to normal operations. The

⁴²⁰ *Id.*

bad bank is run as a liquidating “closed-end mutual fund” until all impaired assets are sold off in an orderly manner by its managers.⁴²¹

Hall and Woodward (2009)⁴²² propose using GBBB to divide a failed financial institution into a good bank, which retains all good assets and operates normally, and a bad bank, structured as a “financial fund with no operating functions.” Their model is similar in most respects to the Hubbard, Scott, and Zingales proposal, but here the fund owns the equity of the good bank in the form of an asset (rather than distributing it to long-term creditors directly). Like the bad bank in the Hubbard, Scott, and Zingales proposal, this “fund” contains all of the bad assets held by the original institution for the purpose of disposing of them in an orderly manner. It is not, therefore, technically a “bank,” and in fact is assumed to relinquish its banking license and discontinue its loan origination activities altogether. The fund then commences a gradual liquidation, operating in run-off until all of its bad assets have been sold.⁴²³ Deposits (plus, presumably, non-deposit short-term debt instruments susceptible to run risk) are transferred to the good bank, where they are protected by the coverage supplied by the good assets. All other liabilities (for example, non-guaranteed long-term debt) issued by the original bank become liabilities of the fund and are paid off over time through the proceeds from the sale of its troubled assets. It is expected that “bondholders [and other debt transferred to the fund] will lose part of their value, because there is no reason or justification for bailing them out.”⁴²⁴ Finally, shareholders of the original bank receive equity in the bank fund giving them an option on any residual value recovered from the disposition of assets. The distinguishing structural feature of the Hall and Woodward proposal is that the fund owns the good bank’s equity in the form of an asset carried on its balance sheet alongside its portfolio of troubled assets. This makes the creditors and shareholders of the fund effective but indirect owners of the good bank, supposedly giving them an incentive to promote the good bank’s operations (see Figure 3.3). The economic outcome is, however, the same as in the Hubbard, Scott, and Zingales proposal, in which the original bank’s long-term debt holders are issued shares in the good bank, making them its direct owners. Here, the long-term debt holders own this interest through their claims in the fund. In both proposals, cross-ownership of

⁴²¹ *Id.*

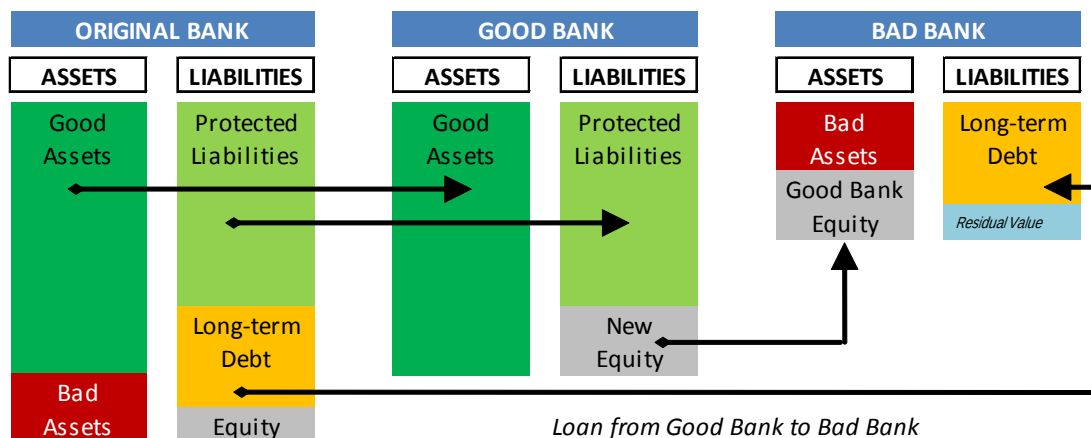
⁴²² Robert Hall & Susan Woodward, *The right way to create a good bank and a bad bank*, Financial Crisis and Recession (Feb. 23, 2009), available <http://woodwardhall.wordpress.com/2009/02/23/the-right-way-to-create-a-good-bank-and-a-bad-bank/>.

⁴²³ See Willem Buiters, *The ‘Good Bank’ Solution*, FT.COM BLOGS, Maverecon (Jan. 29, 2009) available at <http://blogs.ft.com/maverecon/2009/01/the-good-bank-solution/>.

⁴²⁴ Hall & Woodward, *supra* note [fn 12].

both banks must be carefully structured so that the two are not consolidated for accounting or regulatory purposes.⁴²⁵

Figure 3.3: Hall and Woodward Illustrative GBBB Transaction



Both proposals attempt to minimize scope for public funding by assigning as much of the losses from the sale of bad assets to shareholders and creditors of the old bank as possible. This will be feasible only when losses do not exceed total equity and long-term debt. When losses are in excess of this limit (and, correlatively, good assets are insufficient to cover guaranteed or non-guaranteed but systemically important short-term debt) public support will be required to prevent short-term creditors and depositors from running. This is especially likely to be problematic in a contagious environment, where mass withdrawals and forced asset sales depress market pricing, lowering the amount of protection afforded from the good assets. In such an environment, the difficulty of determining the intrinsic value of good and bad assets independent of market prices will be acute, leading creditors to suspect the credibility of regulatory valuations. Thus, neither GBBB approach can rule out the use of public support under all circumstances. Perhaps for this reason, several GBBB proponents such as Holmes (2009)⁴²⁶ and Buiter (2009)⁴²⁷ concede that

⁴²⁵ Morrison Foerster, *Good Bank-Bad Bank: A Clean Break and a Fresh Start*, 2 (2009), available at <http://www.mofo.com/files/Publication/c9b79abf-1d65-4694-9836-635345926fa5/Presentation/PublicationAttachment/3e48d29f-602e-4fa3-abcfe-15a2830eb8ec/20090218GoodBankBadBank.pdf>.

⁴²⁶ Max Holmes, *Good Bank, Bad Bank; Good Plan, Better Plan*, N.Y. TIMES (Feb. 1, 2009) available at <http://www.nytimes.com/2009/02/01/opinion/01holmes.html>.

⁴²⁷ Buiter, *supra* note [fn 219].

public ownership or a guarantee of one or both of the banks may be required,⁴²⁸ both to avert a run and buy time for regulators to analyze and sort assets into good and bad categories.

4. *Living Wills for Systemically Important Financial Institutions*

The pervasive dependency of the financial system on leverage and short-term funding is widely seen to transform any delay in the process of resolving failing institutions into a source of systemic risk. Delay means more time for short-term creditors to run. Much of the energy invested in the design of replacement resolution policies has thus been directed toward finding ways to expedite this process. Living wills are “plans or strategies to be developed by specified large complex financial institutions...for winding down their operation if and when they become insolvent with minimum disruption both to themselves and to the economy.”⁴²⁹ Their purpose is to aid and promote swift resolution of complex financial institutions by stipulating how the process will unfold and identifying what resources must be marshaled to complete it in advance of a crisis.⁴³⁰ Though some argue that advance planning mandated by living wills will minimize disruption to financial markets in the event of a major financial institutional failure, they are not ever likely to deter contagious runs by short-term creditors. Living wills supply regulators with critical information to aid them if resolution is necessary in the future, but do not represent a standalone resolution mechanism in their own right,⁴³¹ so cannot cure the basic defect common to all resolution-based approaches to the containment of contagion effects that prioritize the imposition of losses on creditors. Furthermore, if a living will is to serve as more than just an itemized list of assets and liabilities, it must make a complicated set of assumptions about the shape of the future financial crises in which it might be tested. Plans that are too specific will be ineffective in a wide range of possible alternative scenarios; those that are too broad in their design will require regulators to fill in most of the detail in the midst of a crisis, negating the public cost-savings that they promise in principle. Above all, living wills offer short-term

⁴²⁸ Morrison Foerster, *supra* note [fn 220] at 7-8. [DELETE??]

⁴²⁹ George Kaufman, *Living Wills: Putting the Caboose before the Engine and Designing a Better Engine*, [pp. 1] (Working Paper, 2010), available at <http://ssrn.com/abstract=1599787>.

⁴³⁰ *Id.*; see also Scott, INTERNATIONAL FINANCE, *supra* note 28 at 697-98.

⁴³¹ Thomas Huertas, Director, Banking Sector, Financial Services Authority, Text of Speech at CCBS/FMG Conference, London, U.K. (February 26, 2010), available at http://www.fsa.gov.uk/pages/Library/Communication/Speeches/2010/0226_th.shtml (noting that, in the context of living wills, “[t]he actual resolution plan (choice among resolution methods) is for the authorities to develop”).

creditors no incremental assurances, either in the form of a guarantee, or in the more moderate form of a cushion, that they will not be impaired. To the contrary, by declaring how important institutions will be unwound in advance and reducing the costs to regulators of failure, living wills may make regulators *more* willing to allow institutions to fail, giving substance to the concerns of creditors and provoking runs. Furthermore, the anti-bailout policies at the center of Dodd-Frank are likely to compel regulators to reject living wills that call for public support. Increasing the probability of failure and building in advance restrictions against public support for failed institutions through living wills could actually increase the susceptibility of the financial system to contagious runs by fearful creditors. Since living wills neither augment a financial institution's capitalization, reducing the likelihood of failure, or provide protection to short-term creditors for institutions that do fail, they cannot accordingly provide incremental deterrence and containment of contagious runs.

Living wills primarily reflect awareness that the multi-line and multi-country business model of the world's largest financial companies has created organizational complexities that cannot be efficiently resolved through administrative or judicial bankruptcy channels without significant advance preparation.⁴³² The collapse of Lehman Brothers and AIG in 2008 has reinforced this sense. Figures compiled by Kaufman (2010) illustrate why. Lehman Brothers Holdings incorporated nine banks, three insurance companies, 84 mutual and pension funds, 210 other financial subsidiaries, and 127 "non-financial" subsidiaries—in all, 433 subsidiaries in 20 countries—less than a year before its collapse.⁴³³ These numbers pale beside Citigroup, which encompassed 101 banks, 35 insurance companies, 706 mutual and pension funds, and over 1,500 other financial and non-financial subsidiaries at year end 2007.⁴³⁴ Statistics for other "large complex financial institutions" (LCFIs) such as Bank of America, JPMorgan Chase, and Deutsche Bank paint a similar portrait of geometric organizational complexity at the larger end of the financial services industry.⁴³⁵ This imposes public transaction costs on the resolution process of any LCFI. Living wills are possibly one way to cope with these costs by requiring managers to maintain "inventor[ies of]...all assets and liabilities," catalogue derivatives counterparties, formulate a plan to maintain core operations and customer services during a

⁴³² Kaufman, *Living Wills: Putting the Caboose before the Engine and Designing a Better Engine*, *supra* note [FN].

⁴³³ *Id.* at 19.

⁴³⁴ *Id.* at 1-2, 19.

⁴³⁵ *Id.* at 19.

workout, and take steps in advance to address complications related to the cross-border nature of contemporary banking.⁴³⁶ Living wills are in effect a way for managers and regulators to rehearse for resolution by choreographing the steps they will need to take when the time comes.

Perhaps because the function served by living wills is to reduce apparent transaction costs related to resolution that otherwise would be absorbed by regulatory agencies, they have garnered widespread support of lawmakers and regulators both in the U.S. and abroad, particularly in the U.K.⁴³⁷ In May 2010, the FDIC proposed that insured depositories with \$10 billion in total assets that are subsidiaries of bank holding companies with \$100 billion in total assets develop contingency plans for separating from their parent.⁴³⁸ Title 1, Section 165(d) of Dodd-Frank requires all systemically important financial institutions to develop advance resolution plans to be reviewed and approved by regulators.⁴³⁹ Specifically, the Act requires the Federal Reserve Board to require all supervised non-bank financial institutions and bank holding company with greater than \$50 billion in assets to make regular reports to the Federal Reserve, FSOC, and the FDIC on its advance planning for orderly resolution.⁴⁴⁰ Sheila Bair, chairperson of the FDIC, has called living wills a “key element” of the resolution rules for systemically important financial institutions of Dodd-Frank.⁴⁴¹ Under Dodd-Frank, acceptable plans must detail the “ownership, structure, assets, liabilities, and contractual obligations of the company and identify cross-guarantees tied to different securities, major counterparties, and a process for

⁴³⁶ *Id.* at 10.

⁴³⁷ In the U.K. for example Adair Turner, chairman of the FSA, has been an early and persistent advocate for the use of living wills by systemically important financial institutions. *See, e.g.*, Adair Turner, Chairman, FSA, Text of Turner Review Conference: progress towards global regulatory reform (November 2, 2009), *available at* http://www.fsa.gov.uk/pages/Library/Communication/Speeches/2009/1102_at.shtml; Patrick Jenkins & Brooke Masters, *FSA's Turner backs living wills for banks*, *The Financial Times*, Sept. 2, 2009, *available at* <http://www.ft.com/cms/s/0/d67f2976-9805-11de-8d3d-00144feabdc0.html#axzz199IVjyJB>.

⁴³⁸ FDIC, Special Reporting, Analysis and Contingent Resolution Plans at Certain Large Insured Depository Institutions, 75 Federal Register 27,464 (May 17, 2010), *available at* <http://edocket.access.gpo.gov/2010/2010-11646.htm>; see discussion in Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 697-98.

⁴³⁹ Dodd-Frank, § 165(a), (d).

⁴⁴⁰ *Id.*

⁴⁴¹ Sheila Bair, Chairman, Federal Deposit Insurance Corporation, Text of 2010 Glauber Lecture at the John F. Kennedy Jr. Forum, Harvard University, Cambridge, MA, titled "Ending Too Big To Fail: The FDIC and Financial Reform" (October 20, 2010), *available at* <http://www.fdic.gov/news/news/speeches/chairman/spoct2110.html>; *see also* Sheila Bair, Chairman, Federal Deposit Insurance Corporation, Statement on Systemically Important Institutions and the Issue of "Too Big to Fail" before the Financial Crisis Inquiry Commission (September 2, 2010), *available at* <http://www.fdic.gov/news/news/speeches/chairman/spsep0210.html>; Bill McConnell, *Resolving resolution*, *The Deal*, Oct. 29, 2010, *available at* <http://www.thedeal.com/newsweekly/insights/resolving-resolution.php>.

determining to whom the collateral of the company is pledged.”⁴⁴² They must articulate how insured depository subsidiaries of bank holding company are protected from risk associated with its non-bank activities.⁴⁴³ Dodd-Frank authorizes the Federal Reserve Board and the FDIC to issue joint orders requiring that living wills submitted by financial institutions to incorporate additional information judged to be relevant to the resolution process⁴⁴⁴ and requires them to review plans submitted by covered institutions.⁴⁴⁵ Plans that are deemed inadequate by the Federal Reserve and the FDIC must be revised and resubmitted for review.⁴⁴⁶ Institutions that fail to submit living wills for review or that submit deficient plans may be subject to higher capital and liquidity requirements as well as more constraining activity restrictions.⁴⁴⁷ Dodd-Frank empowers the Federal Reserve and the FDIC, in consultation with FSOC, to require institutions to divest “assets or operations” that would interfere with an orderly resolution.⁴⁴⁸

Reducing the sizable transaction costs incurred by regulators to resolve large financial institutions through living wills will not reduce the risk of contagion in the financial system, however. As discussed above, short-term creditors that fear the risk of the failure of a major financial institution will not be reassured by living wills, and may be more likely to run if a will credibly commits to impose losses on them in resolution. Since living wills are probably unable to deter runs by fearful creditors, they are not an antidote to the problem of financial contagion.

5. *Treatment of Short-Term Debt in Resolution:* *Orderly Liquidation of Systemically Important Financial Institutions*⁴⁴⁹

Mindful of the systemic risk inherent to dependency on short-term institutional funding, the FDIC developed new procedures to govern the resolution of systemically important financial

⁴⁴² Bair, September 2, 2010, *supra* note 441; Dodd-Frank, § 165(d)(1)(B)-(C).

⁴⁴³ Dodd-Frank, § 165(d)(1)(A).

⁴⁴⁴ Dodd-Frank, § 165(d)(1)(D); Bair, September 2, 2010, *supra* note 441.

⁴⁴⁵ Dodd-Frank, § 165(d)(3).

⁴⁴⁶ *Id.*, § 165(d)(3)-(4).

⁴⁴⁷ *Id.*, § 165(d)(5)(A).

⁴⁴⁸ *Id.*, § 165(d)(5)(B).

⁴⁴⁹ The text and analysis of this section formed the main portion of the CCMR’s letter of November 15, 2010 to the FDIC responding to a request for comment on the FDIC’s Proposed Rule for the resolution of systemically important financial institutions under the Orderly Liquidation Authority of Title II of Dodd-Frank. See Comm. on Capital Mkts. Regulation, comment to Federal Deposit Insurance Corporation Advance Notice of Proposed Rulemaking, *Implementing Certain Orderly Liquidation Authority Provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act*, 75 Fed. Reg. 61,653 (filed Nov. 15, 2010), available at http://www.capmksreg.org/pdfs/2010.11.15_FDIC_letter.pdf [hereinafter “CCMR Letter to FDIC”].

institutions⁴⁵⁰ under the Orderly Liquidation Authority of Title II of the Dodd-Frank Act.⁴⁵¹ In October 2010, the agency released its Proposed Rule for public comment. In January 2011, it published an Interim Final Rule responding to the first round of comments and soliciting further input. Section 380.2 of the FDIC's Proposed⁴⁵² and Interim Final⁴⁵³ versions of the Rule lays down standards that control the amounts and timing of financial recoveries paid to creditors of systemically important financial institutions that fail and undergo special resolution administered by the FDIC.⁴⁵⁴ Loss absorption by creditors and shareholders operates on three principles generally tracking standard bankruptcy priority rules: First, long-term unsecured senior debt (defined as maturing more than 360 days after issuance),⁴⁵⁵ subordinated debt,⁴⁵⁶ and shareholders⁴⁵⁷ receive no preferential treatment relative to other general creditors of a systemically important financial institution. The FDIC has no discretion to make preferential "additional payments" to these debt and equity holders beyond what would be recovered through the application of normal priority rules to their claims.⁴⁵⁸ In its Interim Final Rule, the FDIC again clarified that "the authority to make additional payments...will *never* be used to provide additional payments...to shareholders, subordinated debt holders, and bondholders [and] that these creditors...will *never* meet the statutory criteria for receiving such additional payments."⁴⁵⁹ Second, shorter-term debt (debt maturing within 360 days of issuance) is eligible on a case-by-case basis to receive "additional payments" at the FDIC's discretion if such payments "meet all of the [statutory] requirements,"⁴⁶⁰ including Dodd-Frank's requirement that the FDIC maximize going-concern value and minimize resolution costs.⁴⁶¹ These payments would be an effective carve-out from normal priority rules such as are embodied in chapter 11 of the U.S. Bankruptcy

⁴⁵⁰ Termed "covered financial companies" in the language of the Proposed Rule, *see* note 452 *infra*.

⁴⁵¹ Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 201(a)(8), 203(b) [hereinafter "Dodd-Frank Act"] (defining "covered financial company").

⁴⁵² 75 Fed. Reg. 64,173 (Oct. 19, 2010) (to be codified at 12 C.F.R. Part 380) [hereinafter "Proposed Rule"].

⁴⁵³ [Notice of interim final rule implementing certain orderly liquidation authority provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act] 75 Fed. Reg. 64,173 (Jan. 6, 2011) (to be codified at 12 C.F.R. Part 380). [Full citation.] [hereinafter "Interim Rule"].

⁴⁵⁴ Proposed Rule § 380.2(b); Interim Rule § 380.2(b).

⁴⁵⁵ Proposed Rule § 380.2(a), (b)(1); Interim Rule § 380.2(a), (b)(1).

⁴⁵⁶ Proposed Rule § 380.2(b)(2); Interim Rule § 380.2(b)(2).

⁴⁵⁷ Proposed Rule § 380.2(b)(3); Interim Rule § 380.2(b)(3).

⁴⁵⁸ Proposed Rule §§ 380.2(b)(1)-(4); Interim Rule §§ 380.2(b)(1)-(4).

⁴⁵⁹ Interim Rule [discussion pp 8] (emphasis added).

⁴⁶⁰ Proposed Rule at 64,178; *accord id.* at § 380.2(b)(4); Interim Rule §§ 380.2(b)(4).

⁴⁶¹ Dodd-Frank Act §§ 210(b)(4), (d)(4), (h)(5)(E).

Code⁴⁶² and the FDIC's statutory resolution procedure⁴⁶³. The decision to award exempted status to short-term debt is made by the FDIC Board of Directors and is non-delegable.⁴⁶⁴ Third, any preferential additional payment made to short-term debt holders (or any other creditor or shareholder class) that is deemed unnecessary to preserve the "essential" operations of the issuer is subject to claw-back under section 210(o)(1)(D) of Dodd-Frank.⁴⁶⁵ In its Interim Final Rule, the FDIC predicted that additional payments "to any creditor will be very rare" and that it is "highly unlikely that payments to short-term lenders would be found to qualify for...exemption" from claw-back. According to the FDIC, preferential treatment will be strictly limited and will be reserved in most cases to payments to critical vendors and trade creditors, such as "software or hardware [vendors]...or payments to a utility with a local monopoly,"⁴⁶⁶ rather than to short-term financial instrument holders.

As the CCMR noted in its letter of November 15, 2010, published in response to the FDIC's solicitation of comment on the Proposed Rule, this approach, though designed to enforce loss absorption by long-term creditors and to deter moral hazard, injects too much uncertainty into the calculus of the resolution process and will ultimately not work under the statute. In the first place, it does not displace the risk that short-term debt holders will flee insolvent issuers that are about to fail and undergo a resolution, because the protective carve-out from normal priority recovery principles is at best highly uncertain and at worst far too narrow to encompass most non-trade financial creditors, including uninsured deposits, unsecured interbank lending, commercial paper,⁴⁶⁷ and any other wholesale liabilities. Instead, all of these short-term creditor classes, the FDIC emphasized in its commentary attached to the Interim Final Rule, are likely to be excluded from its protective sweep. Furthermore, whatever protection that is afforded these creditors by the carve-out will be limited by the claw-back requirement of section 210(o)(1)(D) of Dodd-Frank, which the FDIC stated is likely to apply to short-term financial creditors that do receive the benefit of any additional payments. In the face of these restrictions, short-term creditors that reasonably conclude they will be ineligible for a carve-out from priority recovery

⁴⁶² See generally 11 U.S.C. § 1129; §§ 506, 507.

⁴⁶³ 12 U.S.C. § 1821(d)(11).

⁴⁶⁴ Proposed Rule § 380.2(b)(4); Interim Rule §§ 380.2(b)(4).

⁴⁶⁵ Dodd-Frank Act § 210(o)(1)(D).

⁴⁶⁶ Interim Rule [discussion at 19].

⁴⁶⁷ Interim Rule [discussion at 17] (noting that "[s]hort-term debt holders (including, without limitation, holders of commercial paper and derivatives counterparties) are highly unlikely to meet the criteria set forth in the statute for permitting payment of additional amounts").

rules (or are at risk of a claw-back) will in either case prefer to exit before the FDIC intervenes, instead of risking haircuts being imposed on them during resolution. As such, the emphasis on narrowing the scope of the FDIC's discretionary carve-out will increase the risks to short-term creditors relative to their treatment during the financial crisis of 2007–2009. This is likely to accelerate runs and will create more contagion risk in the financial system, not less. Even if the FDIC were to adopt a favorable interpretation of the carve-out and apply it liberally to short-term financial creditors (and if the risk of claw-back were discounted), the ultimate decision to make preferential additional payments will continue to be discretionary rather than automatic under the Rule. This will give short-term debt holders who perceive that the failure of their issuer is imminent a compelling incentive to withdraw their funding and flee anyway, as no one will know with confidence whether the FDIC will choose to intervene by effectively exempting short-term debt from the coverage of priority-based recovery rules or not.

Second, the application of the Rule is strictly limited to non-bank financial institutions that are determined by regulators to be of systemic importance. Short-term debt issued by non-bank financial institutions that do *not* present a systemic threat may, on the other hand, be subject to different recovery rules. Determining whether a financial institution is systemically important or not, either *ex ante* or on the eve of bankruptcy, poses significant challenges for regulators.⁴⁶⁸ If short-term debt holders do not know if their issuer will be deemed systemically important, then they will not know which resolution principles will apply to them, compounding uncertainty in the marketplace. In principle, the FDIC's focus on harmonizing the treatment of short-term debt across the different resolution systems by, among other things, narrowing the scope of the carve-out so that uniform priority rules control the recoveries to short-term financial creditors of all financial institutions, whether they are deemed systemically important or not, should correct some of this uncertainty. The trouble with the FDIC's approach, however, is that it achieves otherwise desirable harmony in the application of resolution rules by announcing a uniform policy of loss imposition against short-term creditors. This reduces uncertainty around the distinction between systemically important and non-systemically important institutions, but incurs higher risks of runs by short-term creditors and ultimately of contagion in the financial system.

⁴⁶⁸ See Comm. on Capital Mkts. Regulation, comment to Financial Stability Oversight Council Advance Notice of Proposed Rulemaking, *Authority to Require Supervision and Regulation of Certain Nonbank Financial Companies*, 75 Fed. Reg. 61,653 (filed November 5, 2010).

Furthermore, regardless of the scope applied to the carve-out, the value of any additional payments that *are* made to short-term creditors itself is questionable because these payments will have to be clawed back under § 210(o)(1)(D). That section requires assessments against claimants that received additional payments from §§ 210(b)(4), (d)(4), or (h)(5)(E), “except for payments or amounts necessary to initiate and continue operations essential to implementation of the receivership or any bridge financial company.” The additional payments contemplated by the Rule cannot be so justified. Rather, they would be intended to send a signal to short-term creditors of other institutions that they may receive a preference as a way to mitigate contagion. Priority for short-term creditors could be justified as part of ordinary debtor-in-possession (DIP) roll up financing, in which creditors are preferenced on their existing debt if they extend new money.⁴⁶⁹ But this preference would be given to all creditors, not just short-term ones and does not in any event seem to be the objective of the proposal. Thus, creditors will know that if they receive such payments they will be clawed back and will, therefore, have to accrue the obligation to return the payments, nullifying any value they may have had in the first place.

In its letter, the CCMR emphasized that strong resolution rules for systemically important financial institutions must be deployed with a view toward protecting the financial system as a whole. It outlined three possible approaches to the treatment of short-term debt in the context of resolution (apart from leaving the issue unresolved for the time being), each contemplating a different set of prospective benefits and costs:

(a) Discretionary application of priority recovery rules to short-term debt. The principal costs of this approach are those enumerated above: namely, undesirable incentives to increase short-term debt and statutory incompatibility with the existing Dodd-Frank framework. It could be argued that these costs could be minimized by making this priority uncertain. However, the uncertainty will all but insure that the proclivity of short-term debt to run will be unaffected by the FDIC’s new policy.

(b) Mandatory application of priority recovery rules to short-term debt in systemically important institutional resolutions. Under the narrow exemption urged by the FDIC, which closely replicates current FDIC priority rules, short-term debt, along with other general unsecured liabilities, would be subordinated in right of payment to administrative expenses and

⁴⁶⁹ See generally 11 U.S.C. § 364(c)-(d).

depositor liability claims in a resolution.⁴⁷⁰ The FDIC is entitled to first priority payment, after administrative expenses, for the amount of any insured deposits.⁴⁷¹ In effect, this rule imposes contract-based priority recovery on short-term debt with no discretionary carve-out.⁴⁷² It forces short-term debt to internalize the costs of failure and informs the marketplace in advance. However, imposing normal priority rules, now used for banks in FDIC resolutions, on all short-term debt increases the incentive for short-term debt holders of non-bank financial institutions to preemptively withdraw from a systemically important institution that is perceived to be failing, instead of running the risk of impairment in a resolution. This is much less of a problem for banks whose short-term debt is largely in the form of insured deposits. For other systemically important institutions that are substantially dependent on uninsured short-term funding as a source of liquidity, the effect of a mass-exit will be severely destabilizing. Moreover, a run at one failing institution might mutate into genuine contagion if it prompts short-term creditors at other institutions to run.

(c) Absolute exemption for short-term debt from priority recovery. Under this approach, short-term debt would be subject to a blanket exemption from the application of normal priority rules to the calculation of financial recovery, conferring an effective special guarantee, if not supplemented by other limitations, to short-term debt. While this might suppress the impulse on the part of short-term creditors to run it could also promote over-reliance on short-term funding by systemically important financial institutions, compounding the systemic effects of a mass-exit by short-term creditors if one were to occur. If a systemically important institution issued too much short-term debt to take advantage of the guarantee, undermining confidence that its assets were sufficient to make short-term creditors whole, the guarantee might nevertheless fail to forestall a run. This is comparable to the risk, in the context of a creditor bail-in, that a financial institution's total assets ultimately prove insufficient to cover its total protected liabilities. An absolute exemption for short-term debt is also likely to require a statutory change.

The CCMR ultimately concluded that the best approach was to leave treatment of short-term debt unresolved, deferring the formulation of final resolution procedures for systemically important financial institutions until appropriate policy responses to other dimensions of the central problem of systemic risk in the U.S. financial system have been devised and implemented

⁴⁷⁰ 12 C.F.R. § 360.3.

⁴⁷¹ *Id.*

⁴⁷² See 12 U.S.C. § 1821(d)(11).

by regulatory authorities. This would enable FSOC to coordinate an overall government response to contagion, reflecting the CCMR's belief that the determination of appropriate resolution procedures should follow from, not precede, the design of overall regulatory policy. The approach that the FDIC has adopted in its Interim Final Rule—narrow agency discretion to exclude certain short-term debt instruments from loss imposition in resolution—is not a solution to the problem of contagion. By denying, or at least sharply curtailing, any protection for short-term creditors, the Rule will provoke runs on financial institutions in distress or facing imminent failure. This will hasten institutional collapses and promote contagion in periods of financial crisis. In favoring uniform loss imposition by institutional creditors, the FDIC's Rule tracks the overarching policy orientation of Dodd-Frank, as well as the outcome contemplated by the other approaches (and aids) to resolution that have been analyzed above, including contingent capital, creditor bail-in, GBBB, and living wills. But like these alternatives, the Rule inherits the same core deficiency that attaches to all the systems of institutional resolution that emphasize priority-based recovery and decline to distinguish systemically important short-term liabilities from long-term capital that can be reorganized without triggering contagion. To function appropriately during a crisis, these resolution systems must be combined with a regulatory framework for managing the structural instability created by the dependency on short-term borrowing in the financial system. Not only does the Rule *not* develop such a framework, but by narrowing the scope for exceptional treatment of short-term debt, it actually obstructs its development in the future. As such, the FDIC's approach, embodied in the Proposed and Interim Final Rule for orderly liquidation, is not an independent buttress against the problem of contagion.

IV. GUARANTEES: LENDER-OF-LAST-RESORT AND LIABILITY INSURANCE

Ex ante capital and liquidity requirements and ex post resolution procedures are designed around a common regulatory purpose: imposing losses on debt and equity holders so that public support for the financial system at no time becomes necessary. Capital, liquidity, and resolution are also commonly regarded as providing mutually reinforcing buttresses against systemic risk. Capital and liquidity aim toward minimizing the rate of failure in the financial system; resolution toward minimizing disruption to the financial system that is caused by failures that capital and liquidity are unable to forestall. Deploying them in conjunction should supposedly reduce both

the frequency and the severity of failure, which in turn should lower the risk of contagion in the financial system. This is the basis of the strategic vision for protecting the financial system from contagion animating the catalogue of approaches outlined in Part III. Its ordering principle is that the failure of one or more major financial institutions is the predicate of a contagious run on the financial system, so lowering the risk of failure in the future should contain the systemic risk created by contagion. The failure of Lehman Brothers has been interpreted as evidence favoring this principle, since the contagion in the financial system during the financial crisis of 2007–2009 began to spread only after Lehman filed for bankruptcy and the RPF was forced to mark down its NAV to below \$1.00.

This principle supplies an incomplete depiction of the origins of contagion in the financial system. Contagion is the result of a structural dependency on short-term funding (procured from uninsured depository sources or in the short-term capital markets) that banks and non-bank financial institutions both incur to finance the origination of long-term investment. Suppliers of short-term credit are always at liberty to withdraw their funds from financial institutions before they fail or otherwise become insolvent. Since at certain times, individual short-term creditors may find it in their interest to exit *before* a failure occurs, periodic runs on financial institutions are inevitable. Faced with the choice of accepting even very improbable losses or withdrawing or not renewing their funding, short-term creditors will systematically prefer doing the latter unless some structural protection can be introduced to entice them to remain invested. The recurrent criticism raised in Parts I, II, and III of this Study is that using capital, liquidity, and resolution to *cushion* short-term creditors against losses is an inadequate deterrent, since they will always prefer to exercise their contractual right to redeem at par over the possibility, however minimal, that the combined protections conferred by ex ante and ex post cushions might fail to insulate their investments perfectly. Even if such protections lessen the risk and impact of failure in the financial system, they will not contain the spread of contagion.

Instead there are only two structural mechanisms that can prevent investors from withdrawing funding from the financial system prior to and during a contagious run. The first is contractual: *maturity*. Equity and long-term debt holders cannot exit during a crisis unless it coincides with the maturing of their investments. Since maturity is fixed ahead of time, redemptions by long-term capital providers are unlikely to correlate to the occurrence of a financial crisis, so they present a minimal systemic risk. For obvious reasons, maturity cannot

prevent runs by short-term debt holders. Only the second of the two mechanisms is able to do this: a publicly provided *guarantee*. A credible public guarantee supplies short-term creditors with a layer of formal protection that differs fundamentally from the probabilistic safety offered by capital, liquidity, and resolution. Assuring short-term creditors immediate total recovery of their funds transforms the possibility of absorbing losses into a structural impossibility that neutralizes the advantages of withdrawing. But the assurances supplied by a guarantee must be absolute. Undermining the credibility attached to an explicit guarantee re-imposes the risk that short-term creditors could be impaired, reinstating the rationale for an anticipatory exit and possibly tarnishing the credibility (and therefore the effectiveness) of similar guarantees issued for the purpose of protecting creditors in order to stay runs in the future.

By the same logic, if for any reason short-term creditors develop an expectation for an implied guarantee, government action that subsequently damages this perception can trigger the same shockwaves. This is the key to understanding the puzzle posed by the timing of the contagion effects witnessed during the financial crisis of 2007–2009. First, the government's assisted rescue of Bear Stearns in March 2008 in partnership with JPMorgan, then the nationalization of the Government Sponsored Enterprises (GSEs) Freddie Mac and Fannie Mae in July of the same year, are likely to have progressively reinforced belief among market participants, including short-term creditors, in the existence of an unlimited implied public guarantee of large financial U.S. institutions, which dissuaded uninsured short-term creditors from initiating a run through 2006 and 2007, even as national home prices and the U.S. economic outlook were deteriorating. But then by allowing Lehman Brothers to fail, the government could have been seen as canceling or at least weakening the guarantee. According to this interpretation, the anti-bailout signal transmitted by the failure of Lehman, not the failure itself, triggered the spread of contagion effects in markets for short-term institutional borrowing by withdrawing protection that market participants assumed they would receive. Dissenting from the primary conclusions of the FCIC's Financial Crisis Inquiry Report, Peter Wallison articulated an account of the chain of events, including the government's role, preceding the failure of Lehman Brothers strongly supportive of this interpretation:

[I]nvestors and other market participants reasonably believed after the rescue of Bear [Stearns] that all large financial institutions would also be rescued if they encountered financial difficulties. However, when Lehman Brothers—an investment bank even larger than Bear—was allowed to fail, market participants

were shocked; suddenly, they were forced to consider the financial health of their counterparties...This caused a halt to lending and a hoarding of cash—a virtually unprecedented period of market paralysis and panic that we know as the financial crisis of 2008.⁴⁷³

Wallison's conclusion draws important support from the fact that the contagion effects initiated by Lehman began to subside only after the government took the unprecedented step of adopting multiple *explicit* guarantees including the U.S. Treasury's guarantee of MMMFs and the FDIC's TLGP program for unsecured senior bank debt. Remedial steps taken before the creation of the TLGP, including the Federal Reserve's sponsorship of multiple emergency liquidity facilities and the historic conversion of Goldman Sachs and Morgan Stanley to bank holding companies with discount window access, proved incapable of independently negating the contagion that was unleashed by Lehman (see Figure 2.5 above). Instead only an explicit return to the status quo ante through the announcement of unlimited public guarantees restored order in the rapidly disintegrating financial system.

There are two principal means of constructing a guarantee of comparable strength and effectiveness, both of which are already in limited use in certain segments of the U.S. financial system. Either a public guarantee can be deployed in the form of (1) a strong lender-of-last-resort that is mandated to step in to provide unlimited liquidity to solvent financial institutions undergoing runs (though such borrowing must be adequately collateralized), and/or it could take the form of (2) universal insurance for *all* short-term funding to the financial system, including liabilities outstanding against *insolvent* borrowers. As they have been implemented in the U.S. financial system today, both fall far short of equipping policymakers with a sufficient resource for managing episodes of serious panic in the financial markets.

Before the enactment of Dodd-Frank, the role of emergency lender-of-last-resort was filled by the Federal Reserve through its Section 13(3) power under which it is authorized to make emergency collateralized loans to non-bank borrower, but this role has been pared back. Longstanding statutory constraints on Section 13(3) lending restrict the Federal Reserve from providing financial assistance to insolvent firms, disabling it from intervening to prevent the failure of a bankrupt financial institution like Lehman Brothers, for example.⁴⁷⁴ Section 1101 of Dodd-Frank compounds existing statutory limitations on the exercise of this power by

⁴⁷³ THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 133 at 445.

⁴⁷⁴ See *generally* 12 U.S.C. 343 [hereinafter Federal Reserve Act], § 13(3)(A).

conditioning future Section 13(3) lending on approval from the Secretary of the Treasury, and commanding that all emergency lending programs are undertaken through general market-wide liquidity facilities that will prohibit emergency central bank lending to institutions on an individual basis during a future crisis.⁴⁷⁵ Conditioning the Federal Reserve's assistance on Treasury approval dangerously politicizes the decision to lend in the context of an anti-bailout climate. This will amplify volatility and systemic risk in the future, since market expectations about the credibility of a public guarantee have been undermined and could be negated by policymakers at any time. But, even if these restrictions were lifted, assigning the Federal Reserve the primary responsibility for guaranteeing the financial system would still unfavorably compromise its independence and might limit its ability to conduct monetary policy in the future, as discussed in detail below.

For deposit-taking banks, the role of liability insurer is filled by the FDIC, but only in the context of depository borrowing, and never for non-bank financial institutions. FDIC insurance applies to customer deposits issued by traditional banking institutions only, omitting nearly all levels of the contemporary non-depository financial system that was outlined in Part II, along with all of the wholesale liabilities that this system creates to finance itself. Furthermore, insured deposits are covered only up to \$250,000 under the current FDIC system, with deposit amounts exceeding this cap fully exposed to losses resulting from a run or during resolution.⁴⁷⁶ During the financial crisis non-interest bearing transaction accounts were subject to a temporary unlimited FDIC guarantee, which has since been extended until the end of 2012.⁴⁷⁷ Though depository insurance is rightly regarded as a critical stabilizing attribute of financial regulation, innovation in financial technology over the past three decades and increasing intermediation in the modern financial system have now rendered the coverage it provides fatally incomplete.

Thus, neither the Federal Reserve nor the FDIC, acting in the current scope of their powers, is capable of providing an adequate public guarantee that will protect the financial system from generalized contagion in the future. Ultimately, neither fills the dimensions of a comprehensive framework for the containment of systemic risk.

⁴⁷⁵ See generally Dodd-Frank, § 1101(a).

⁴⁷⁶ Dodd-Frank, § 335(1)(1).

⁴⁷⁷ FDIC, Final Rule: Temporary Unlimited Coverage for Noninterest - Bearing Transaction Accounts, *infra* note 520.

A. *Lender-of-Last-Resort*

The Federal Reserve acts as a lender-of-last-resort to banking institutions through the discount window.⁴⁷⁸ Standard discount window loans from the Federal Reserve must be fully secured with acceptable collateral including government and agency securities, ABS, corporate bonds, money market instruments, and residential and commercial real estate loans, among other eligible securities.⁴⁷⁹ Unsecured discount window lending is not permitted, so institutions with no acceptable collateral cannot access it. Prior to the enactment of Dodd-Frank the Federal Reserve was also authorized to act as the lender-of-last-resort to individual *non*-banks including “[i]ndividuals, [p]artnerships, and [c]orporations” in “unusual and exigent circumstances” by Section 13(3) of the Federal Reserve Act.⁴⁸⁰ Combined with the discount window, Section 13(3) enabled central bank liquidity to reach potentially the entire bank- and non-bank financial system (to the extent borrowers could post collateral which the Federal Reserve deemed to be adequate). During the financial crisis of 2007–2009 the Federal Reserve exercised its Section 13(3) liquidity power through the creation of a sweeping series of novel borrowing facilities, including the TAF, PDCF, TSLF, TALF, AMLF, CPFF, and MMIFFF. The role that these facilities played during the crisis is described in Part II. Section 13(3) also formed the statutory footing for the Federal Reserve assistance of selected individual non-bank financial institutions including Bear Stearns and AIG.⁴⁸¹

Before Dodd-Frank, the main predicates of emergency Section 13(3) lending were a five-of-seven vote by the Federal Reserve Board members coupled with the inability of the recipient institution “to secure adequate credit accommodations from other banking institutions.”⁴⁸² Funds were required to be “secured to the satisfaction of the Federal Reserve,”⁴⁸³ leaving the appraisal of the adequacy of collateral posted by recipients to the Board’s discretion. The Federal Reserve exercised its Section 13(3) authority for the first time since 1936⁴⁸⁴ by giving

⁴⁷⁸ See The Federal Reserve Discount Window, *available at* <http://www.frbdiscountwindow.org/discountwindowbook.cfm?hdrID=14&dtlID=43>.

⁴⁷⁹ *Id.*

⁴⁸⁰ Federal Reserve Act, § 13(3)(A).

⁴⁸¹ Press Release, Bd. of Governors of the Fed. Reserve Sys. (Mar. 16, 2008), *supra* note 199; Press Release, Bd. Of Governors of the Fed. Reserve Sys. (Sept. 16, 2008), *supra* note 202.

⁴⁸² Federal Reserve Act, § 13(3)(A).

⁴⁸³ *Id.*

⁴⁸⁴ Scott, INTERNATIONAL FINANCE, *supra* note 28 at 658.

discount window access to primary dealers through the PDCF program in the financial crisis.⁴⁸⁵ Section 1101 of Dodd-Frank drastically carves back on the former scope of the Federal Reserve's Section 13(3) authority and strengthens collateral requirements for emergency lending. Dodd-Frank requires Section 13(3) programs to be conducted on a market-wide basis⁴⁸⁶ only, prohibiting assistance to individual non-bank financial institutions undergoing runs or in danger of failing. All emergency lending is subject to "the prior approval of the Secretary of the Treasury"⁴⁸⁷ and is governed by policies agreed to by the Treasury ensuring Section 13(3) loans are adequately collateralized and are never extended to insolvent borrowers.⁴⁸⁸ This effectively withdraws exclusive control over both the eligibility and appraisal of collateral posted to secure emergency loans from the Federal Reserve Board. It makes the availability of emergency lending to non-bank financial institutions a contingent matter reserved to the case-by-case judgment of the Treasury. Holders of short-term debt issued by failing financial institutions are extremely unlikely to accept the uncertainty inherent to an ad hoc lending regime that might be cancelled at any time or simply never initiated at all,⁴⁸⁹ especially when the arbiter of the decision to is the Secretary of the Treasury, a political actor. The risk that the Secretary will withhold lender-of-last-resort assistance from a distressed financial institution at a critical moment incapacitates it from serving its function as a guarantee. Before the crisis, collateral standards were weaker and there was no necessity to get the approval of the Treasury Secretary, an approval that could be considerably more difficult in the context of heightened anti-bailout sentiment that has emerged out of the crisis. More generally, carving out insolvent companies from coverage of a central bank emergency lender regime is the functional opposite of a guarantee. It assures short-term creditors who are fearful of future insolvency that emergency funding will *not* be available to support them, which will increase, not decrease, the incentive for

⁴⁸⁵ See Press Release, Bd. of Governors of the Fed. Reserve Sys., *supra* note 199.

⁴⁸⁶ Dodd-Frank, § 1101(a)(2), (6) (requiring lending facilities to be structured with "broad-based eligibility" with "the purpose of providing liquidity to the financial system, and not to aid a failing financial company" and stating that a "program or facility that is structured to remove assets from the balance sheet of a *single and specific company*... shall not be considered a program or facility with broad-based eligibility.") (emphasis added).

⁴⁸⁷ *Id.*, § 1101(a)(6) ("(B)...(iv) The Board may not establish any program or facility under this paragraph without the prior approval of the Secretary of the Treasury").

⁴⁸⁸ *Id.*, § 1101(a)(6).

⁴⁸⁹ Hal S. Scott, Testimony Before The Committee on Financial Services, U.S. House of Representatives, January 26, 2011 (urging that the Treasury Secretary "may be reluctant to approve needed lending facilities for fear of political consequences").

short-term creditors to run in anticipation of a future failure. Thus, the ability of the Federal Reserve to stem contagion has been decisively weakened.

To serve as a complete guarantee the central bank's lender-of-last-resort powers would have to be unlimited and non-discretionary. The parameters of the Federal Reserve Act (before and after the amendments contemplated by Dodd-Frank) do not provide such powers to the Federal Reserve. Chairman Bernanke has claimed that the Federal Reserve was unable to rescue Lehman because it could not post adequate collateral, and collateral requirements have now been strengthened.⁴⁹⁰ It would be unwise to give the Federal Reserve unlimited lender of last resort powers. In the first place, access to emergency borrowing would continue to hinge on Federal Reserve decision-making (even if freed from Treasury approval in the Section 13(3) context). This would impinge on its ability to serve as an ironclad guarantee to which short-term creditors would be willing to entrust their investments. Second, allowing unlimited unsecured lending by the Federal Reserve would further entail negative consequences for central bank independence and negative consequences for the financial system as a whole. Scott (2010) identifies four separate risks to Federal Reserve independence presented by unsecured lending activity, including increasing the Federal Reserve's linkage with the Treasury, "jeopardizing [its] ability...to finance its own operations," "tarnishing its image and financial credibility in the event that [it] ends up with minimal or negative capital," and subjecting it to greater "political pressures."⁴⁹¹ Endangering the autonomy of the Federal Reserve may not only interfere in its ability to provide liquidity in the future, it could also affect the independence of its monetary policy. Extending an unlimited line of credit to financial institutions could also result in a sizeable loss position to U.S. taxpayers,⁴⁹² by decreasing the profits the Federal Reserve now contributes to the Treasury and the general revenue of the U.S., amounting to \$79.3 billion in

⁴⁹⁰ Ben S. Bernanke, Chairman, Fed. Res. Bd., Speech at the Economic Club of New York, New York, New York (October 15, 2008), *available at* <http://www.federalreserve.gov/newsevents/speech/bernanke20081015a.htm> (stating that a "public-sector solution for Lehman proved infeasible, as the firm could not post sufficient collateral to provide reasonable assurance that a loan from the Federal Reserve would be repaid"); *Highlights: Bernanke's testimony to financial crisis panel*, REUTERS, Sept. 2, 2010, *available at* <http://www.reuters.com/article/idUSTRE6812ZH20100902> (stating that "the only way we could have saved Lehman would have been by breaking the law and I'm not sure I'm willing to accept those consequences for the Federal Reserve and for our system of laws").

⁴⁹¹ Scott, INTERNATIONAL FINANCE, *supra* note 28 at 665-66.

⁴⁹² *Id.* at 665.

2010⁴⁹³ (a 67% increase over 2009 payments to the Treasury of \$47.4 billion).⁴⁹⁴ Since 2006, the Federal Reserve's balance sheet assets have increased more than 100% to \$2.4 trillion at the end of 2010,⁴⁹⁵ greatly expanding taxpayer exposure to losses on Federal Reserve holdings. To protect taxpayers from internalizing the expenses associated with guaranteeing short-term debt holders some method for recouping the public costs of Federal Reserve lending would need to be devised. But since by definition the recipients of unsecured public loans would be insolvent at the time, the effectiveness of this system would be limited unless funding could be sought from the remaining solvent financial institutions. This funding would have to be raised in the form of an assessment imposed on healthy financial institutions for the purpose of covering the public costs of a bailout. It could be imposed either before or after a crisis. Both approaches to funding a guarantee were debated extensively during the formulation of the Dodd-Frank reforms.⁴⁹⁶ At that time, the CCMR signaled its preference for an ex post assessment, raised after the actual "clean-up" costs of government intervention were known with precision, as well as the identities of the market participants that contributed the lion's share of systemic risk.⁴⁹⁷ Determining the appropriate method for funding the cost of a public guarantee structured in this format is a complex undertaking that the CCMR will address in a future study.

B. *Non-Deposit Liability Insurance*

The limitations pertaining to a central bank lender-of-last-resort guarantee of the financial system could be substantially overcome with the provision of insurance through a government administered fund, structured in the form of an extension of the deposit insurance regime

⁴⁹³ Press Release, Bd. of Governors of the Fed. Reserve Sys., (Mar. 22, 2011), <http://www.federalreserve.gov/newsevents/press/other/20110322a.htm>; BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE FEDERAL RESERVE BANKS: COMBINED FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009 AND INDEPENDENT AUDITORS' REPORT (Mar. 22, 2011), *available at* <http://www.federalreserve.gov/monetarypolicy/files/BSTcombinedfinstmt2010.pdf>; Fed had record 2010 profit, Treasury got the bulk, REUTERS, Mar. 22, 2011, *available at* <http://www.reuters.com/article/2011/03/22/us-usa-fed-profits-idUSTRE72L6D320110322>.

⁴⁹⁴ Scott, INTERNATIONAL FINANCE, *supra* note 28 at 666.

⁴⁹⁵ BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE FEDERAL RESERVE BANKS: COMBINED FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009 AND INDEPENDENT AUDITORS' REPORT, *supra* note 493; *see also* Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 720-21.

⁴⁹⁶ *See generally* Scott, *The Reduction of Systemic Risk in the United States Financial System*, *supra* note 1 at 715-17.

⁴⁹⁷ *Id.* at 716.

currently in place for depository banks to other sources of short-term funding utilized by both banks and non-bank financial institutions. Insurance for customer deposits administered by the FDIC has formed an integral element of depository banking regulation in the U.S. since 1934.⁴⁹⁸ Deposit insurance is credited with stabilizing the depository banking system after it collapsed in the early 1930s.⁴⁹⁹ Nor has its application been confined to the U.S.: explicit deposit insurance is a recurring worldwide feature of modern banking regulation utilized in over 88 countries (excluding countries that employ an “implicit” guarantee of bank deposits that is not formalized through the provision of a discrete insurance fund).⁵⁰⁰ The economic efficiencies of deposit insurance have been documented by Diamond and Dybvig,⁵⁰¹ Carnell, Macey, and Miller (2009),⁵⁰² and Ricks,⁵⁰³ among others. The financial crisis of 2007–2009 has stimulated multiple proposals to expand insurance coverage to non-deposit short-term liabilities that are issued to finance maturity transforming transactions. In its October 2009 report, discussed in Part III, the IMF endorsed an insurance premium to fund “systemic liquidity risk.”⁵⁰⁴ That report identified a series of related proposals by Gorton and Metrick (2009),⁵⁰⁵ Brunnermeier and others (2009),⁵⁰⁶ Perotti and Suarez (2009),⁵⁰⁷ and several others outlining different shapes that liquidity insurance might take.⁵⁰⁸ All share a unifying recognition of the symmetrical run risk presented by wholesale short-term financing of bank and non-bank credit intermediaries and the utility of an

⁴⁹⁸ Carnell, et al., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* *supra* note 62, at 309 (describing deposit insurance as the “defining policy issue in U.S. banking regulation”).

⁴⁹⁹ See, e.g., Friedman & Schwartz, *supra* note 10 at 434-45 (describing deposit insurance as “the most important structural change in the banking system to result from the 1933 panic, and...the structural change most conducive to monetary stability”).

⁵⁰⁰ See Asli Demirgüç-Kunt, Baybars Karacaovali & Luc Laeven, *Deposit Insurance Around the World: A Comprehensive Database*, World Bank (April 2005), available at http://siteresources.worldbank.org/INTRES/Resources/DepositInsuranceDatabasePaper_DKL.pdf; see also Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 316-18 (discussing deposit insurance in the European Union), 382-83 (in Japan), 1148-49 (discussing the implicit deposit insurance regime in China).

⁵⁰¹ Diamond & Dybvig, *supra* note 77 at 413-16.

⁵⁰² Carnell, et al., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* *supra* note 62, at 309-11.

⁵⁰³ Ricks, *supra* note 76 at 35-43.

⁵⁰⁴ See, e.g., International Monetary Fund, *Global Financial Stability Report: Sovereigns, Funding, and Systemic Liquidity*, *supra* note 261 at 57.

⁵⁰⁵ Gorton & Metrick, *supra* note 169.

⁵⁰⁶ Markus Brunnermeier, et al., *The Fundamental Principles of Financial Regulation*, Geneva Reports on the World Economy (Geneva, International Center for Monetary and Banking Studies, 2009), available at <http://www.princeton.edu/~markus/research/papers/Geneva11.pdf>.

⁵⁰⁷ Enrico Perotti & Javier Suarez, *Liquidity insurance for systemic crises*, 31 *POLICY INSIGHT* (Center for Economic Policy Research, Feb. 2009), available at <http://www.cepr.org/pubs/policyinsights/PolicyInsight31.pdf>.

⁵⁰⁸ See also Ricks, *supra* note 76.

insurance regime for internalizing its costs and formalizing the guarantee of wholesale short-term creditors.

Universal insurance for short-term financial liabilities would assure short-term creditors automatic protection from a fund raised *ex ante* through assessments on issuers, removing the element of uncertainty tied to discretionary emergency lending or politically contingent bail-outs. The costs of supplying a public guarantee could be internalized before a crisis occurred through insurance premia or through some other form of assessment, though this is a complex issue that requires significant further analysis. Operational responsibility for a public insurance fund could then be assigned to a separate government agency (for example, the FDIC) free from conflicting institutional mandates that factor in decision-making by the Federal Reserve. The central economic cost of short-term liability insurance is the same moral hazard problem created in all insurance regimes: insured creditors, like any policyholders protected from loss, have no incentive to monitor risk-taking by issuers.⁵⁰⁹ The economic cost imposed on insurance systems by moral hazard can in theory be internalized by optimizing the premia extracted from policyholders, but it is unrealistic to imagine that the pricing of insurance on short-term liabilities could be perfected. It is an established fact that FDIC deposit insurance underprices the risk of actual losses to the Deposit Insurance Fund (DIF).⁵¹⁰ This reflects the practical difficulty in optimizing premium pricing but also reluctance by regulators to *cause* the failure of weak financial institutions by raising their deposit insurance rates at the same time as they struggle to recapitalize (transforming deposit insurance into a “closure rule” for weakened banks).⁵¹¹ Prior to the imposition of risk-based insurance,⁵¹² the insurance fund incurred large losses during the savings and loan crisis and required over \$200 billion in government subsidies to replenish its reserves.⁵¹³ Despite instituting a seven basis point increase in deposit insurance rates in December 2008,⁵¹⁴ the FDIC continues to project multibillion-dollar losses on the cost of bank failures originating in the financial crisis of 2007–2009.⁵¹⁵

⁵⁰⁹ Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 210; Carnell, et al., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* *supra* note 62, at 326-28.

⁵¹⁰ Carnell, et al., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* *supra* note 62, at 328-29.

⁵¹¹ *Id.*; Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 210.

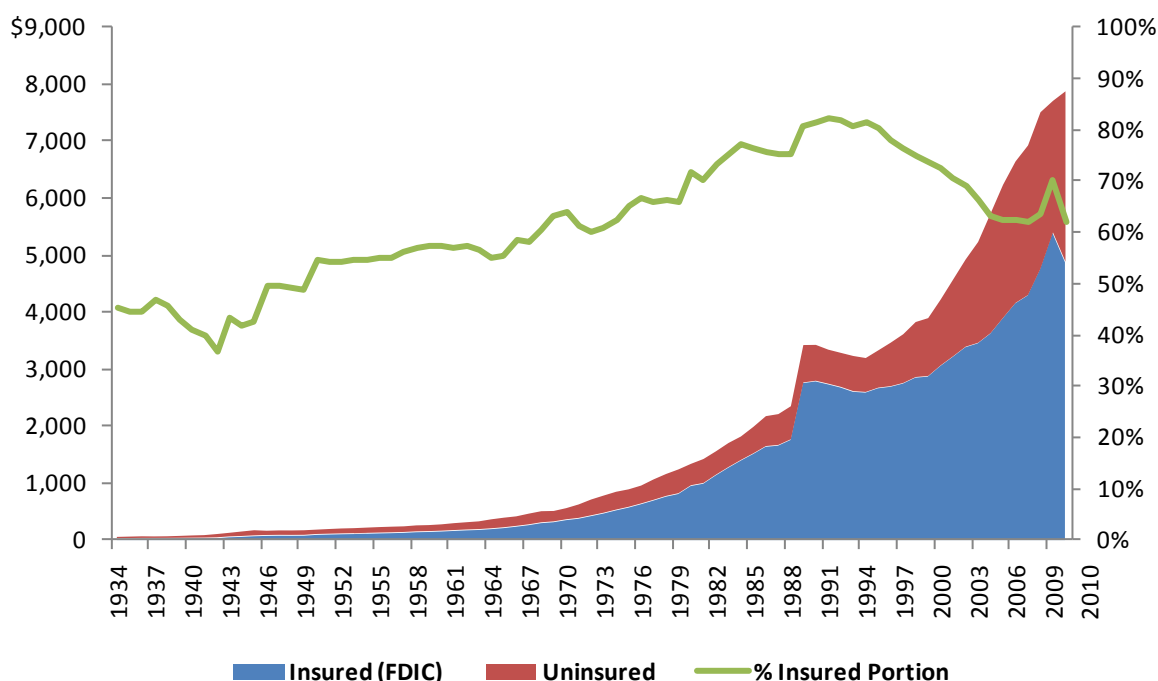
⁵¹² See 12 C.F.R. §§ 327.09-327.10.

⁵¹³ Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 210.

⁵¹⁴ FDIC, Risk Based Assessments, 73 Fed. Reg. 78155, December 22, 2008.

⁵¹⁵ See Marcy Gordon, *Banks closed in Puerto Rico, Mich., Mo., Wash.*, *THE ASSOCIATED PRESS* (Apr. 30, 2010). See also discussion in Scott, *INTERNATIONAL FINANCE*, *supra* note 28 at 210.

Figure 4.1: Insured (FDIC) and Uninsured Domestic Deposits – 1934 to Present (\$ in Billions)⁵¹⁶



To realize the theoretical appeal of universal financial liability insurance to the problem of systemic risk, policymakers will first have to answer a host of practical questions concerning its scope, amount, overall structure, the plan for pricing and funding it, and how to regulate the activities of financial institutions that are covered under it. All of these questions are subjects for detailed analysis weighing the benefits and costs of various alternatives. A challenging initial question is what caps if any to apply to guarantees of covered liabilities. Standard bank deposits have long been subject to explicit caps on FDIC coverage. Prior to the financial crisis of 2007–2009, the FDIC insured bank deposits up to the amount of \$100,000 per account. During the crisis, this cap was raised to \$250,000 per account, a 150% increment which is permanently memorialized in Section 335 of Dodd-Frank.⁵¹⁷ The FDIC also announced temporary unlimited insurance for non-interest bearing transaction accounts through the Transaction Account

⁵¹⁶ FDIC, 2009 ANNUAL REPORT, 145-47 (2009), available at <http://www.fdic.gov/about/strategic/report/2009annualreport/AR09final.pdf>; FDIC, Statistics on Banking, <http://www2.fdic.gov/SDI/SOB/> (last visited Mar. 26, 2011).

⁵¹⁷ Dodd-Frank, § 335(1)(1); FDIC, “Emergency Economic Stabilization Act of 2008 Temporarily Increases Basic FDIC Insurance Coverage from \$100,000 to \$250,000 Per Depositor,” Oct. 7, 2008, available at <http://www.fdic.gov/news/news/press/2008/pr08093.html>; Scott, INTERNATIONAL FINANCE, *supra* note 28 at 210.

Guarantee Program created as part of the TLGP.⁵¹⁸ In April 2010 it extended the guarantee through December 31, 2010.⁵¹⁹ In November 2010 it issued a final rule under Section 343 of Dodd-Frank extending it through the end of 2012.⁵²⁰ In total, the FDIC insured approximately \$4.9 trillion of domestic deposits at the end of 2010, accounting for 62% of all domestic deposits outstanding in the U.S. financial system.⁵²¹ The remaining \$3.0 trillion of outstanding domestic deposits are uninsured. Since its inception the ratio of insured-to-total domestic deposits that are backed by the FDIC has fluctuated, but generally tended toward increasing gradually, from less than 45% in 1934 (\$18 billion of \$40 billion total) to as much 82% in 1993 (\$2.7 trillion of \$3.3 trillion total) (see Figure 4.1).⁵²² By comparison, according to flow-of-funds data published by the Federal Reserve, as of December 31, 2010 there were \$2.8 trillion shares issued by MMMFs, \$1.1 trillion of commercial paper, \$1.2 trillion of repos outstanding in the financial system, as well as \$733 billion of net securities loaned (\$5.8 trillion in total). Many of these instruments are short-term in nature but not presently the subject of insurance. These figures exclude a further \$10.2 trillion in longer-term GSE, agency-backed, and ABS issuer securities outstanding at the end of the same period. Cumulatively, non-deposit financial liabilities totaled nearly \$16 trillion at the end of 2010, representing a reduction of 22% relative to their peak level in 2007 of greater than \$20 trillion (see historical evolution in Figure 4.2).⁵²³

Supplying unlimited insurance for some portion of the systemically relevant short-term non-deposit liabilities issued by financial institutions and intermediaries in the financial system would maximally reduce the risk of contagion, but raises two intertwining considerations that may argue for a more limited regime: moral hazard and public loss exposure. First, *uncapped* insurance for *all* (or a significant portion) of the short-term non-deposit financial liabilities listed above might inject significantly greater moral hazard into the behavior of market participants

⁵¹⁸ FDIC, "FDIC Board of Directors Approves TLGP Final Rule," Nov. 21, 2008, *available at* <http://www.fdic.gov/news/news/press/2008/pr08122.html>.

⁵¹⁹ FDIC, Final Rule Regarding Amendment of the Temporary Liquidity Guarantee Program to Extend the Transaction Account Guarantee Program, 12 C.F.R. 370, Apr. 13, 2010, *available at* <http://www.fdic.gov/news/board/rule2.pdf>; Karey Wutkowski, *US FDIC proposes large banks pay for their risk*, REUTERS (Apr. 13, 2010), *available at* <http://uk.reuters.com/article/2010/04/13/banks-fdic-idUKN1321819820100413>.

⁵²⁰ FDIC, Final Rule: Temporary Unlimited Coverage for Noninterest - Bearing Transaction Accounts, Nov. 9, 2010, *available at* <http://www.fdic.gov/news/news/financial/2010/fil10076.pdf>; Dodd-Frank, § 343.

⁵²¹ FDIC, Statistics on Banking, <http://www2.fdic.gov/SDI/SOB/> (last visited Mar. 26, 2011).

⁵²² FDIC, 2009 ANNUAL REPORT, 145-47 (2009), *available at* <http://www.fdic.gov/about/strategic/report/2009annualreport/AR09final.pdf>.

⁵²³ BD. OF GOVERNORS OF THE FED. RESERVE SYS., FLOW OF FUNDS ACCOUNTS OF THE UNITED STATES, *available at* <http://www.federalreserve.gov/releases/z1/>.

than is the case today, where investors benefit only from *capped* insurance for only *some* (depository) liabilities. Under the FDIC’s current approach to insuring normal interest-bearing accounts, customers with more than \$250,000 deposited in a single account are motivated to police risk-taking activity by their bank (though many customers appear not to have done so in the years preceding the financial crisis of 2007–2009). Removing the cap, which the FDIC did for non-interest bearing accounts in 2008, smothers this incentive. Eliminating private monitoring of risk-taking of all short-term debt issuers in the financial system could greatly amplify the existing level of moral hazard, generating costly inefficiencies that would ultimately be imposed on regulators and the public.

*Figure 4.2: Non-Deposit U.S. Financial System Liabilities – 1970 to Present (\$ in Billions)*⁵²⁴

Year	1970	1980	1990	2000	2007	2008	2009	2010
MMMF shares	--	\$76	\$493	\$1,812	\$3,033	\$3,757	\$3,258	\$2,755
Open market paper	40	164	610	1,614	1,789	1,599	1,137	1,058
Federal funds and repos	1	116	372	1,013	2,160	1,271	1,457	1,213
Securities loaned, net	--	1	71	508	1,240	887	857	733
GSE liabilities	45	190	468	1,924	3,081	3,394	2,977	6,561
Agency/GSE backed pools	5	114	1,020	2,493	4,464	4,961	5,376	1,166
ABS issuer liabilities	--	--	269	1,504	4,544	4,135	3,350	2,456
Non-deposit liabilities	\$92	\$662	\$3,303	\$10,867	\$20,311	\$20,005	\$18,413	\$15,943
Comparison: Domestic bank deposits								
Deposits - FDIC insured	\$350	\$949	\$2,785	\$3,055	\$4,292	\$4,757	\$5,392	\$4,877
Deposits - Uninsured	196	376	631	1,157	2,630	2,749	2,313	2,996
Total deposits	\$545	\$1,324	\$3,415	\$4,212	\$6,922	\$7,505	\$7,705	\$7,873
% insured	64.1%	71.6%	81.5%	72.5%	62.0%	63.4%	70.0%	62.0%
Memo: Cap (000s)	\$20.0	\$100.0	\$100.0	\$100.0	\$100.0	\$100.0	\$250.0	\$250.0

The marginal cost of creating incremental moral hazard must, however, also be weighed against any existing disincentive among short-term debt holders to monitor issuers, which might be traceable to current market expectation for a government bailout during a future crisis. If in the absence of an explicit guarantee market participants nonetheless develop expectations for an implied backstop, as many appeared to do before the bankruptcy of Lehman, this could have the

⁵²⁴ BD. OF GOVERNORS OF THE FED. RESERVE SYS., FLOW OF FUNDS ACCOUNTS OF THE UNITED STATES, *available at* <http://www.federalreserve.gov/releases/z1/>; tabulation based on convention in Pozsar, *supra* note 104 at 5 note 4 (defining “shadow bank liabilities” as sum of MMMF shares outstanding [line 13, L.121], open market paper [line 1, L.208], federal funds and repo liabilities [line 1, L.207], net securities loaned [line 20, L.130], GSE liabilities [line 21, L.124], agency- and GSE-backed pool securities [line 6, L.125], and ABS issuer liabilities [line 11, L.126]).

same effect of increasing moral hazard within the financial system as explicit insurance would. In this case, a public guarantee that expressly embraces liabilities that short-term debt holders believe will be bailed out in *any* event might be closer to cost neutral when its expense is netted against the embedded moral hazard that attaches to current bailout expectations. Compared to an implied government backstop, the prime advantage of substituting in an express guarantee is that this moral hazard expense can theoretically be internalized to the financial system by charging issuers fees in the form of insurance premia in return for government protection, which will not be possible when a guarantee is merely implied. In any case, the persistent trade-off between lower systemic risk and higher moral hazard embedded in the setting of insurance limits needs to be carefully weighed.

*Figure 4.3: Unlimited Non-Deposit Liability Insurance – Illustrative Incremental Public Loss Exposure (\$ in Billions)*⁵²⁵

	Loss exposure	
	\$ Amount	% Current
Current loss exposure - FDIC insured deposits	\$4,877	100%
Add: Uninsured portion of deposits	+2,996	+61%
Subtotal - Pro forma insured deposits	7,873	161.4%
Add: MMMF shares outstanding	+2,755	+56%
Subtotal - Pro forma insured deposits + MMMF shares	10,628	218%
Add: Open market/commercial paper	+1,058	+22%
Add: Federal funds and repos	+1,213	+25%
Add: Securities loaned, net	+733	+15%
Total - Pro forma insured deposits + non-deposit short-term liabilities	\$13,633	280%
Memo: Add GSE liabilities, agency/GSE backed pools, ABS issuer liabilities	+10,184	+209%
<i>Total</i>	<i>\$23,816</i>	<i>488%</i>

The second, though closely related, concern associated with the creation of unlimited insurance for non-deposit financial liabilities is the enormous prospective increase in potential loss exposure to the public of operating such a system. As noted above, the FDIC is presently the insurer of \$4.9 trillion of domestic bank deposits. Expanding coverage to all non-deposit liabilities could lead to an increase in total public exposure ranging from 200% to 300% (see Figure 4.3). This increase is attributable to two sources. First, non-deposit short-term liabilities

⁵²⁵ BD. OF GOVERNORS OF THE FED. RESERVE SYS., FLOW OF FUNDS ACCOUNTS OF THE UNITED STATES, *supra* note 524.

(MMMF shares, commercial paper, repos, and loaned securities), totaling \$5.8 trillion in 2010, exceed *insured* deposits. MMMF shares outstanding of \$2.8 trillion amount to 56% of the current value of FDIC insured deposits alone. Some or all of these liabilities would have to be insured, immediately doubling the size of the notional risk exposure assumed by the government. Second, granting an unlimited guarantee to non-deposit liabilities in all likelihood will require a coequal increase in the coverage of deposit liabilities since otherwise uninsured depositors will just systematically withdraw uncovered funding from bank accounts and redeposit them in non-deposit instruments such as MMMFs that are subject to the unlimited guarantee. Thus, choosing to insure all non-deposit liabilities means that coverage also must simultaneously be extended to all currently *uninsured* deposit liabilities, representing an additional \$3 trillion at year-end 2010.

Doubling or tripling the government's potential loss exposure to the financial system is a significant increase in an already sizeable public commitment. It also may be economically unwarranted. At least in the depository context the risk assumed through removing the insurance cap might, for example, outweigh the marginal gains in systemic stability if regulators set the cap high enough to embrace a critical mass of small creditors who are fully insured and thus deterred completely from initiating a run that then forces larger creditors with real loss exposures to exit out of necessity. This is a reflection of the fact, appreciated by Friedman and Schwartz, that liability insurance "tends to reduce the contingency insured against" by reducing the probability of runs and thus the necessity of having to make pay outs from the insurance fund.⁵²⁶ But on the other hand, though MMMFs and other short-term capital markets instruments arguably represent deposit equivalents to their investors, there may not be any equivalent of the "small depositor" in these settings, which are dominated by institutional or corporate investors managing quantum of investment capital many times exceeding the average small retail bank account.⁵²⁷ It may prove impossible, if this is true, to establish insurance caps that are low enough to reduce the public's loss exposure to a reasonable level while simultaneously sweeping in a critical mass of investors who will be completely protected and thus deterred from running during a crisis. Furthermore, if there is any disparity between the amount of protection afforded to bank deposits and the amount covering non-deposit liabilities, it could encourage an undesirable shift of funding from one over to the other, resulting in market distortions driven purely by regulation.

⁵²⁶ Friedman & Schwartz, *supra* note 10 at 440.

⁵²⁷ [Cite.]

One mitigating consideration regarding the prospective cost and risk of non-deposit liability insurance is whether issuers of *all* classes of short-term capital markets debt instruments, including MMMF shares, commercial paper, and repo securities, have to be subject to equivalent protections. MMMFs, Part II established, are the dominant buyers of commercial paper and repo in the financial system, so insuring *only* MMMF investments might be sufficient to deter runs which, absent insurance, would provoke mass liquidations of MMMF holdings, including commercial paper and repo, created earlier in the chain of intermediation. Guaranteeing only MMMFs shares, plus the incremental uninsured portion of deposits, would still represent a doubling of current insured risk exposure, but would be considerably more modest than insuring all short-term non-deposit liabilities. Whatever limits are set on non-deposit liability protection, just as with private insurance the expense of publicly guaranteeing increasing dollar amounts of liabilities must be offset by charging institutions higher premia that enable the government to offset its risk exposure. Setting premia is a complex actuarial pricing exercise that will require further study, field testing, and regular refinement.

Beyond the payment of premiums, insured institutions that receive the benefit of a public guarantee typically are subject to wide-ranging regulation designed to control the risks that they present to the public. This is the fundamental rationale for capital and liquidity requirements and the range of activity-based restrictions and prudential rules limiting loan concentration and risk-taking to which insured institutions are subject.⁵²⁸ Regulation is necessary in order to control the cost of moral hazard associated with the protection of deposit insurance. Extending the coverage of liability insurance to new classes of non-bank financial institutions and intermediaries argues for expanding the scope of regulation controlling capital, lending activity, and risk-taking so that financial regulation is coterminous with the public guarantee of the financial system. The non-depository financial system embraces an exceptionally diverse array of financial institutions with varying business models, funding structures, and risk profiles, which will complicate the effort to design a uniform regulatory framework to be deployed coordinately with the extension of public insurance.

A related challenge is achieving international participation, requiring greater cross-border convergence on capital and liquidity standards and activity restrictions. This is important to

⁵²⁸ Scott, INTERNATIONAL FINANCE, *supra* note 28 at 209-17, 412 (noting “banking regulation is premised on a concern with systemic risk and losses to the public safety net designed to avoid such risks. The central feature of this regulation is capital adequacy”).

prevent short-term creditors from transferring funding from financial institutions in risky non-guaranteed jurisdictions to safer insured institutions in countries with public guarantees during a financial crisis. Otherwise, uneven implementation of insurance will exert a destabilizing effect on non-guaranteed institutions as investor funds flow toward risk-free instruments backed by the government. This danger is illustrated by the Irish government's public guarantee of all deposits and debt instruments at six major Irish financial institutions, including Allied Irish Banks, Bank of Ireland, and Anglo Irish Bank in September 2008.⁵²⁹ The government guarantee caused fund outflows from banking institutions elsewhere in Europe, including the U.K., as investors sought to shield themselves from rising credit risk.⁵³⁰

Determining the contours of regulatory reform that will ideally have to accompany any public guarantee of the non-depository financial system will require policymakers to make a judgment about which institutions or financial instruments are eligible for insurance in the first place, which are not, and who should bear the direct costs of administering a liability guarantee. In depository banking, the benefit and cost of insurance is assigned to deposit-taking banks, since they are the *sole* intermediary standing between long-term borrowers and short-term depositors. Non-depository finance, which is marked by significantly higher levels of intermediation as well as complex differentiation in the range of short-term instruments that are created by issuers to fund origination, presents the practical problem, not faced by regulators in the depository setting, of deciding *which* entities should internalize the cost of administering universal insurance. In interbank borrowing, the cost of insurance should be borne by bank and non-bank institutional market participants. But outside of the bilateral interbank market, MMMFs, the major buyers of short-term capital markets instruments including ABCP and secured repo, are very likely one of the best candidates for insurance, since they (1) absorb many of the short-term liability claims created by financial institutions and intermediaries in the financial system, (2) issue demand-like

⁵²⁹ Department of Finance, Government Decision to Safeguard Irish Banking System, Sept. 30, 2008, *available at* <http://www.finance.gov.ie/documents/pressreleases/2008/blo11.pdf> (declaring "a guarantee arrangement to safeguard all deposits (retail, commercial, institutional and interbank), covered bonds, senior debt and dated subordinated debt (lower tier II), with...Allied Irish Bank, Bank of Ireland, Anglo Irish Bank, Irish Life and Permanent, Irish Nationwide Building Society and the Educational Building Society"); John Murray-Brown & Neil Dennis, *Ireland guarantees six banks' deposits*, FINANCIAL TIMES, Sept. 30, 2008, *available at* <http://www.ft.com/cms/s/0/2124f8f4-8eb9-11dd-946c-0000779fd18c.html3#axzz1FB0Hf2nT>; Patrick Hosking, *Ireland extends deposit guarantee to foreign banks*, SUNDAY TIMES, Oct. 9, 2008, *available at* http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article4913313.ece.

⁵³⁰ Gonzalo Vina & Caroline Binham, *Brown Lifts Deposit Guarantee as Cash Goes to Ireland*, BLOOMBERG, Oct. 3, 2008, *available at* <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ax7rcN0fhh5Q>.

claims that are redeemable at par, and (3) employ a fixed \$1.00 NAV standard that transforms MMMF instruments (which are linked to long-term investment) from mutual fund investments into deposit-equivalent investments prone to destabilizing runs.⁵³¹

These three features of the MMMF business model have arguably reinforced expectation among market participants in an implicit guarantee of MMMF investments.⁵³² The centrality of MMMFs to modern financial intermediation, and the powerful influence that investor confidence in the integrity of MMMF investments exerts on the stability of financial markets, was displayed in during the financial crisis of 2007–2009, when serious runs on MMMFs impaired the orderly operation of the commercial paper markets and propelled contagious knock-on runs up the chain of intermediation. Analysis by Birdthistle (2010) of SEC rules introduced *following* the crisis to regulate the composition of MMMF investment portfolios concludes that such runs will remain problematic in the future.⁵³³ Instead Birdthistle suggests that, alongside other reforms, MMMF insurance organized privately or publicly would help to offset this risk.⁵³⁴ Since MMMFs absorb large portions of other short-term liability claims created to finance origination activity in the financial system, insuring MMMF investments is the narrowest way for regulators to reduce the spread of contagion up the chain of intermediation during a financial crisis. If investors in MMMFs know their shares are guaranteed to \$1.00, they will not rush to exist during a panic. This will reduce pressure on MMMFs to engage in fire sales of commercial paper and repo securities for the purpose of redeeming exiting investors, contributing to the prevention of a downward spiral in asset prices that could cripple the short-term capital markets and render other financial institutions reliant on them unable to roll over their short-term liabilities. Limiting insurance to MMMF investments would also be more economical than a comprehensive guarantee embracing all non-deposit short-term liabilities, since it would involve assuming a smaller incremental loss exposure. This would make unlimited insurance more feasible, raising its chances of performing during a crisis.

⁵³¹ William A. Birdthistle, *Breaking Bucks in Money Market Funds*, WISCONSIN LAW REVIEW 1160-61, 1155-1201 (2010) (describing the stable NAV “pricing scheme...combined with check-writing and ATM privileges [makes] money market funds look and feel a great deal more like bank savings accounts than the mutual funds they are”); Ricks, *supra* note 76 at 4.

⁵³² Wermers, *supra* note 120 at 1.

⁵³³ *Id.* at 1180-89; *see also* Money Market Fund Reform Proposed Rule, 74 Fed. Reg. (to be codified at 17 C.F.R. Part 270, 274).

⁵³⁴ Birdthistle, *supra* note 531 at 1197-99.

Critics such as the Investment Company Institute (ICI) contend, however, that the size and complexity of contemporary MMMF portfolios would make a comprehensive insurance system impracticable, drive outflows from depository banking, and create moral hazard.⁵³⁵ In the ICI's view, providing federal insurance to MMMF investments would siphon cash from traditional bank deposits causing "disintermediation [and] significant disruption to the banking system."⁵³⁶ Capping the guarantee, as in the depository insurance context, would leave room for runs by investors with uninsured exposures in excess of the cap.⁵³⁷ Though more thorough consideration of the benefits, costs, and structure of MMMF insurance must be undertaken, at the threshold this analysis is unconvincing: as urged at length in Part II, the securitized and traditional banking systems perform an identical economic function and incur a symmetric dependency on short-term borrowing. Since both systems serve the same purpose and would be subject to equivalent forms of guarantee, there is no justification for the ICI's contention that under such a regime investors would systematically prefer to route funds through the wholesale banking system rather than the traditional one. On the contrary, exempting MMMFs from explicit insurance, as they are today, will encourage investors to shift short-term funding from deposits into MMMFs because those investments will continue to benefit from an implied public guarantee without internalizing its costs. Ultimately, since the guarantee of depository and MMMF investments would be equivalent, there should be no artificial incentive for investors to shift funding from one instrument to the other.

Comprehensive evaluation of the structural choices surrounding the implementation of guarantees, either through lender-of-last-resort or liability insurance will form the subject of forthcoming analysis by the CCMR on financial regulatory reform.

V. CONCLUSIONS

The central contention of this Study is that only public guarantees of short-term creditors of financial institutions and intermediaries in the financial system can reliably eliminate the risk of the insolvency or failure of a major institution mutating into contagious panic. This principle

⁵³⁵ Investment Company Inst., *Re: President's Working Group Report on Money Market Fund Reform Options* (File No. 4-619), 46-50, Jan. 10, 2011.

⁵³⁶ *Id.* at 47.

⁵³⁷ *Id.* at 47-8.

has long been reflected in modern financial regulation and policy governing depository banking, where bank deposits, the quintessential short-term financial liability, are insured by government guarantee, in exchange for which deposit-taking banks submit to pervasive regulation of capital, liquidity, activity, and risk-taking. This guarantee inhibits runs by depositors. In recent decades, the rise of non-depository financial intermediation has stimulated new institutional dependencies on short-term debt instruments that are not shielded by the existing depository guarantee. ABCP, other forms of commercial paper, unsecured interbank lending, and secured repo, are among the short-term capital market instruments that the contemporary financial system uses to finance the origination of long-term investment, foregoing the government protection historically afforded to traditional credit intermediation. Reliance on uninsured short-term borrowing exposes financial institutions to periodic runs, which under some circumstances become contagious. Nonetheless, until the financial crisis of 2007–2009, many short-term creditors, especially those that invested in prime MMMFs, developed the expectation of an implicit federal backing of their instruments. The government-assisted rescue of Bear Stearns and the nationalization of the GSEs during 2008 arguably reinforced this belief, deterring systemic runs on other financial institutions that already were widely recognized to be verging on insolvency. The collapse of Lehman Brothers violently reversed this expectation, igniting an unprecedented contagious run on financial institutions and capital markets that rippled through the global economy. The magnitude of the reaction forced the government to intervene to rescue or otherwise support most of the major institutional participants in the U.S. financial system, incurring significant public costs but without imposing losses on many private capital providers, including short- and long-term creditors.

The experience of 2007–2009 demonstrates that the two objects of financial regulation—(1) mitigating system risk and (2) internalizing losses—are mutually interdependent. Unless the risk of contagion in the financial system is controlled, periodic financial crises will continue to force regulators to fall back on expensive and politically contentious bailouts, increasing moral hazard and shouldering the public with the economic costs of private risk-taking. Guaranteeing short-term financial debt will eliminate the problem of contagion, allowing financial institutions to become insolvent and fail without triggering a panic. In an orderly financial environment, the losses incurred by a failed institution could then be imposed on long-term capital providers using any of the restructuring channels explored by this Study, such as contingent capital, creditor bail-in, GBBB, or FDIC special resolution. Instituting a public guarantee of short-term debt enables

long-term capital to absorb losses safely, removing the necessity of government intervention or bailout. The sole public risk exposure would be the guarantee itself, which could be offset with an insurance system that charged issuers of short-term financial liabilities *ex ante*, although the implementation of such a system requires significant further study. As with deposit insurance, the mechanisms selected by regulators to re-transmit the cost of funding a guarantee to financial institutions might fail to perfectly offset future government losses, but in any event these costs will be lower by far than the expense of periodic systemic federal bailouts in future episodes of contagious panic.

As this Study has tried to show, the grand strategy for the containment of the systemic risk of contagion that is embodied in public guarantee of short-term debt is the functional opposite of the policies of Dodd-Frank, which privileges loss-imposition over bailout and restricts regulatory flexibility to provide emergency support or protection to the financial system in the future. This will not prevent contagious market crises from occurring again, but it will increase their severity when they do. As regulators continue to tackle the massive challenge of implementing Dodd-Frank's many reforms,⁵³⁸ they should bear this limitation firmly in mind and attempt to develop new rules that thoughtfully reserve scope for dealing with this primary element of systemic risk.

⁵³⁸ Dodd-Frank calls for federal agencies to formulate at least 230 new rules. Sec. Industry & Fin. Mkts. Ass'n, *Regulatory Action Database*, <http://www.sifma.org/members/dodd-frank.aspx> (calculated based on rulemakings required by the SEC, FDIC, CFTC, FRB, and FSOC); *see also* Letter from the Comm. on Capital Mkts. Reg. to Christopher Dodd, Chairman, Richard Shelby, Ranking Member, S. Comm. on Banking, Hous. & Urban Affairs and Barney Frank, Chairman, Spencer Bachus, Ranking Member, H. Comm. on Fin. Servs. 1 (Dec. 15, 2010), http://www.capmksreg.org/pdfs/2010.12.15_Rulemaking_Timeline_Letter.pdf (urging a slowdown in the pace of regulatory implementation of Dodd-Frank).