REGULATING MONEY CREATION AFTER THE CRISIS

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Like bank deposits, money market instruments function in important ways as "money." Yet our financial regulatory regime does not take this proposition seriously. The (non-government) issuers of money market instruments—almost all of which are financial firms, not commercial or industrial ones—perform an invaluable economic function. Like depository banks, they channel economic agents' transaction reserves into the capital markets. These firms thereby reduce borrowing costs and expand credit availability. However, this activity—"maturity transformation"—presents a problem. When these issuers default on their money market obligations, they generate adverse monetary consequences. This circumstance amounts to a market failure, creating a prima facie case for government intervention. This Article evaluates policy alternatives in this area. It finds reasons to favor establishing money creation as a sovereign responsibility by means of a public-private partnership system—in effect, recognizing money creation as a public good. (This is just what modern bank regulation has done for decades.) Logically, this approach would entail disallowing access to money market financing by firms not meeting the applicable regulatory criteria—just as firms not licensed as banks are legally prohibited from issuing deposit liabilities. Against this backdrop, the Article reviews the Dodd-Frank Act's approach to regulating money creation. It finds reasons to doubt that the new law will be conducive to stable conditions in the money market.

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INTRODUCTION

It is a truism of finance that banks are in the *money-creation* business. This is not a mere figure of speech. Most bank deposits are included in "M1," the Federal Reserve's narrowest measure of the money supply—"restricted to the most liquid forms of money."[1] And the vast majority of deposited funds are redeployed by banks into loans and other forms of credit. Consequently, banks' actual cash reserves typically amount to only a small fraction of their outstanding deposits. (Hence the term "fractional-reserve banking."[2]) Banks, then, really do augment the money supply—they create deposits that are not backed by ready cash. Indeed, economists use the term *money multiplier* to refer to the ratio of banks' deposit obligations to their cash reserves. That term means just what it suggests: banks "multiply" each dollar of currency they hold into many more dollars of "money," in the form of deposits.

To say that banks create money is just another way of saying that deposits *function* as money. Deposits serve as a common substitute for legal tender. Businesses and individuals use deposit accounts to "store" liquid cash reserves and make payments. They willingly do so even though deposits are not fully backed by currency in banks' vaults. ("Storage" is a misleading term in this context!)

For depositors, this service brings real advantages. Holding large piles of currency is cumbersome and expensive. Currency poses security risks, counting and authentication costs, and transportation challenges. Banks offer depositors a solution to these problems, and they thereby facilitate trade. Just as importantly, banks enable cash reserves to be pooled and invested in the credit markets—instead of lying idle in currency hoards. To the extent that banks create money, then, they increase credit availability. They consequently reduce borrowing costs and expand economic activity.

Banks' role in money creation distinguishes them from most other types of financial intermediaries. In other words, not all financial firms are said to create money. Ordinary finance companies, for example, bear a certain formal resemblance to banks. Like banks, they accumulate funds in the form of fixed obligations, and they reinvest those funds in the credit markets. But the fixed obligations of finance companies are not redeemable by their holders in the near future. Their price—their value *in terms of* money—fluctuates due to changes in interest rates and other market conditions. Unlike deposits, there is no assurance that they can be monetized at their "carrying value" (the price at which they were purchased). Finance companies' IOUs are just

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[1] Federal Reserve, *The Money Supply,* FEDPOINT (July 2008), *available at* http://www.ny.frb.org/aboutthefed/fedpoint/fed49.html.

[2] This term is widely used in the finance and economics literature to denote modern systems of banking.

ordinary debt instruments. And ordinary debt instruments have never been included in the Federal Reserve's, or anyone else's, monetary aggregates.

It should be obvious that banks' role in money creation does not arise from their use of "leverage" (debt financing) per se. All sorts of firms, commercial and financial alike, employ leverage—often in large amounts—but are not said to create money. Nor is money creation synonymous with "lending" (or investing) in and of itself. Finance companies are prominent in the lending business, after all. Rather, it is the combination of banks' investment activities and their reliance on a particular *type* of liability—deposits—that is responsible for their role in augmenting the money supply.

If banks can create money they can destroy it too. Consider a bank that exhausts its cash reserves and defaults on its deposit obligations. (Assume for the moment that the government does not insure its deposits.) It is entirely possible that the bank will be able to satisfy all its depositors' claims *eventually*, as it liquidates its assets over time. Even so, the deposits of this bank are no longer "money" in any meaningful sense. They are not practically redeemable and not easily traded for cash or other assets. Even if they can be traded, their value *relative* to money is subject to fluctuation—like finance company bonds. Such instruments are deposits in name only. In substance, they are distressed debt claims of uncertain duration. Even if the bank will ultimately honor its deposits, the default itself *instantly* reduces the money supply—it turns money into something other than money.

Changes in the money supply have real economic consequences. This is, after all, how monetary policy works. Under the textbook model, the supply and demand for money determine interest rates, at least in the short run. A contraction in the money supply (a monetary *tightening*) increases interest rates and dampens economic growth. We usually think of monetary contractions as being brought about by deliberate policy action. The Federal Reserve shrinks the money supply when it wishes to combat inflation. Ordinarily it does so through open market operations: it sells Treasury securities to the public, receiving money in return. These sales are commonly said to "soak up" or "drain" money from the financial system. Such metaphors are a little misleading, or at least incomplete; they suggest that the public relinquishes money without getting anything else in return. In reality, the public surrenders money voluntarily, in exchange for debt securities. Still, these voluntary exchanges have real effects on aggregate economic activity. With money scarcer, the price of money (the interest rate) rises, and the rate of economic growth declines.

It is apparent that a bank default gives rise to a similar "exchange." Depositors lose their claims to immediate cash. In return they get promises of future payment. This exchange reduces the money supply—just like a deliberate monetary tightening by the central bank. If the failed bank's depositors wish to restore their *money* balances, they must monetize some of their assets or future income, which means they must persuade third parties to part with money. Money is scarcer, interest rates rise, and aggregate de-

mand for goods and services correspondingly falls. There is, however, one obvious difference between a bank default and a deliberate monetary contraction. When the Federal Reserve tightens monetary conditions, its counterparties *willingly* surrender money in exchange for bonds. By contrast, when a bank defaults, its depositors are unwilling participants in the resulting "exchange." So a bank default might be thought to represent a particularly disruptive form of monetary contraction.

By extension, large numbers of near-simultaneous bank failures can lead to a sudden and severe reduction in the money supply—with correspondingly severe economic repercussions. This was Milton Friedman's revolutionary insight: he and Anna Schwartz located the cause of the Great Depression in this very phenomenon. "[T]he [bank] failures," they wrote, "were the mechanism through which a drastic decline was produced in the stock of money."[3] And the economic devastation that followed was "a tragic testimonial to the importance of *monetary* forces."[4]

In recognition of their special role in money creation, depository banks have long been required to submit to a uniquely extensive regulatory regime. No other competitive industry is subject to remotely comparable regulatory constraints and oversight. In the United States, banks face extensive chartering criteria; strict limitations on permissible activities and investments; leverage limits (capital requirements); special restrictions on affiliations and affiliate transactions; cash reserve requirements; extensive onsite supervision; a vigorous enforcement regime; a special receivership regime in the event of failure; and so on. Banks are also the beneficiaries of extraordinary government stabilization facilities—namely, central bank loans and deposit insurance—that are (normally) unavailable to other firms. These regulatory constraints and support facilities are designed to reduce the likelihood that banks will default on their deposit obligations, thereby triggering adverse monetary consequences.

By virtue of submitting to this regulatory regime, banks are endowed with an extraordinary legal privilege: they are licensed to issue deposit obligations. This privilege is accompanied by a logical corollary: enterprises *other* than banks are legally *disallowed* from issuing deposits.[5] This remarkable prohibition might be described, both logically and historically, as the

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[3] MILTON FRIEDMAN & ANNA J. SCHWARTZ, A MONETARY HISTORY OF THE UNITED STATES, 1867–1960, at 351 (1963).

[4] *Id.* at 300 (emphasis added). Of course, this is not to say that monetary forces are the *only* channel through which bank defaults affect the real economy. As discussed below, Ben Bernanke has influentially argued that the bank failures of the early 1930s also had a significant *nonmonetary* impact, by disrupting channels of credit. *See* Ben Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 AM. ECON. REV. 257 (1983).

[5] This prohibition is embodied in state law. *See, e.g.*, N.Y. BANKING LAW § 131 (West 2010) ("No corporation, domestic or foreign, other than a national bank or a federal reserve bank, unless expressly authorized by the laws of this state, shall employ any part of its property, or be in any way interested in any fund which shall be employed for the purpose of receiving deposits . . . .").

"first law of banking." It is worth dwelling on this point for a moment. In formal terms, a deposit is merely a variety of IOU—a private contract pursuant to which one party agrees to deliver cash to another party in the future. The law prohibiting unlicensed firms from issuing deposit liabilities establishes a sweeping limitation on freedom of contract: parties not licensed as banks are legally ineligible to be obligors under this particular type of IOU. Conversely, firms that do not finance themselves with "deposits" are free from the extraordinary regulatory and supervisory regime to which banks must submit. Thus, the criterion for the applicability of banking regulation is the issuance of deposit liabilities. (Indeed, the formal legal and regulatory term for banks is "depository.")

But this legal distinction raises an important question: are there other types of contractual IOUs that, like deposits, function as "money"? After all, the reason that deposits are treated as money is surely not that the Federal Reserve includes deposits in its monetary aggregates. The causality, of course, works the other way around: deposits are included in monetary aggregates because they are generally treated as money. If *other* instruments also function as "money," then defaults on those other instruments should be expected to carry monetary implications, just like defaults on deposits.

As a matter of fact, there does exist a well-established, multi-trillion dollar market for financial instruments that serve a function similar in many ways to that of deposits. Not coincidentally, this market is called the *money* market—to distinguish it from the more familiar *capital* market in which stocks and bonds are traded. Money market instruments come in a variety of forms—with names like asset-backed commercial paper, "repo," and money market mutual fund "shares"—but they share a set of common features: all of them are high-quality, highly liquid, short-term IOUs.[6] As a result of these characteristics, money market instruments are subject to negligible price fluctuation. That is, like deposits, their value *in terms of* currency is extremely stable, and uniquely so. Importantly, the short-term nature of these instruments is an essential precondition to this price-stability. (All long-term instruments—even high-quality, highly liquid instruments like Treasury bonds—are subject to significant price volatility arising from changes in market interest rates.) We might even think of a bank deposit as the quintessential money market instrument: it is a high-quality IOU of *instantaneous* (or continuous) maturity whose price never falls below its carrying value, except in the event of default.

It is true that money market instruments, unlike deposits, are seldom used *directly* to pay for goods and services. (The importance of this distinction will turn out to be a central question.) But, for practical purposes, most money market instruments can be instantly converted into the "medium of

[6] Conventionally, the term "money market" applies to high-quality credit instruments that mature within a year of issuance. In reality, the money market is highly concentrated in instruments that mature within three months, with a large proportion maturing within one *week*.

exchange" at virtually no cost. The combination of these instruments' liquidity and their negligible price fluctuation makes them a close substitute for deposits from the standpoint of their holders. Tellingly, financial managers usually refer to these instruments, together with deposits, simply as "cash," and money market investors are referred to in the industry as "cash investors." Nor is this terminology just a matter of market convention. Unlike other debt instruments, money market instruments are designated as "cash equivalents" under generally accepted accounting principles. Furthermore, as we will see, they are recognized as being equivalent to deposits—and *different* from ordinary debt instruments—in a variety of legal contexts.

If money market instruments function as a close substitute for deposits, then perhaps they also have qualities of "money" that are not shared by ordinary debt instruments. Actually, economists do sometimes refer to money market instruments as "near money" or "quasi money." The Federal Reserve even includes some of the most important categories of money market instruments in its monetary aggregates.[7] But if this is the case, then defaults on money market instruments, like defaults on deposits, turn something that functions like money into something that does not. And it is an axiom of macroeconomics that money is special: when money becomes suddenly scarcer, interest rates go up and the rate of economic growth goes down.

This line of reasoning poses a problem for traditional financial regulation. Suppose for the moment that money market instruments do indeed serve an important "monetary" function. (This Article will argue that they do, in every sense that matters.) Suppose also that defaults on money market instruments, like defaults on deposits, amount to a contraction in the money supply, with the attendant macroeconomic consequences that Friedman and Schwartz identified. If these consequences provide a sound economic justification for the extraordinary regulation of depositories—not to mention the special support facilities to which they have access—does that rationale not apply with equal force to issuers of money market instruments? In other words, does our special regulatory system for depository firms rest on an arbitrary and formalistic distinction?

These questions are only reinforced when we examine the types of firms that dominate money market issuance. The money market is sometimes described as though it consisted mostly of short-term paper issued by commercial and industrial firms to finance their working capital. But that activity is, in actuality, only a trivial component of the money market. The vast majority of money market instruments are IOUs of *financial* issuers, not

[7] Retail money market mutual fund balances are included in M2; institutional money market mutual fund balances, repurchase agreements, and Eurodollars (dollar-denominated short-term obligations of non-U.S. financial institutions) are included in M3. *See* BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, THE FEDERAL RESERVE SYSTEM: PURPOSES AND FUNCTIONS 22 (9th ed. 2005).

commercial or industrial ones.[8] Moreover, without exception, these financial issuers use the proceeds they raise through the money market to invest in *longer-term* financial assets, mostly in the credit markets. It is immediately apparent that these entities look very much like depository banks: they raise money by issuing instruments that serve a function similar to that of deposits, and they invest the proceeds mostly in various forms of credit. Simply put, they finance themselves in the money market, and they invest the proceeds in the capital markets. This distinctive activity is referred to in the financial world as "maturity transformation"—a fancy term for borrowing very short and investing long (or at least longer). And maturity transformation has traditionally been viewed as the distinctive economic function of depository banks.

This phenomenon has not gone unnoticed. Over the past several years, a number of scholars, market participants, and policymakers have noted that the existence of maturity transformation outside the regulated depository sector raises serious policy concerns. The firms engaged in this activity—the issuers of the vast majority of outstanding money market instruments—have even come to be known by a distinctive name: the "shadow banking system." Moreover, it is increasingly recognized that this giant system was at the center of the recent financial crisis. Indeed, as we will see, very nearly the *entire* emergency policy response to the crisis was directed at stabilizing this system. But there has yet to emerge a consensus as to how the shadow banking system should be regulated, if at all, to reduce the likelihood of future crises. Nor is there any consensus as to how the government ought to respond in the event of a future panic in the money market.

This Article sketches possible answers to these questions—and, in so doing, offers a qualified critique of certain aspects of the reform measures embodied in the recently enacted Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act).[9] Arguably, the problem sketched above represents *the* central problem of financial stability regulation. This Article proceeds from the assumption that a sound case for government intervention ought to rest on an identifiable market failure. And it should be specific: vague notions about "systemic risk," for example, are not easily translated into meaningful policy guidance. Unless they can be formulated in

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[8] As of the end of 2010, outstanding commercial paper issued by *non-financial* firms was $100 billion, a figure representing only 13% of the $787 billion in total outstanding domestic commercial paper. *See* Federal Reserve Release, Commercial Paper Outstanding, *available at* http://www.federalreserve.gov/releases/cp/outstandings.htm. Moreover, the commercial paper market is just one part of a much bigger money market. As will be shown below, U.S. *financial* issuers had at least $6.2 trillion in non-deposit short-term liabilities outstanding prior to the crisis; non-financial commercial paper outstanding at that time was about 2% of this figure. *See infra* Figure 1. Incidentally, non-financial commercial paper was also less than 2% of the $6.7 trillion in total non-financial corporate debt that was outstanding at that time. *See* Flow of Funds Accounts of the United States, Federal Reserve Statistical Release, Tables D.3, L.2 (Dec. 9, 2010), *available at* http://www.federalreserve.gov/releases/z1/20101209/z1.pdf.

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

operational terms, they are of little practical use. The costs and benefits of various policy alternatives can be weighed only by arriving at a clear conception of why market outcomes are inefficient and what the government can realistically do to improve upon them.

One of the great economists of the past century, Kenneth Arrow, has said that "[t]he creation of money is in many respects an example of a public good."[10] More recently, James Buchanan, another Nobel-laureate economist (albeit one of a decidedly different intellectual stripe), has described our present system as one of "monetary anarchy." "Economists," he observed, "should know that anarchy can only generate disorder rather than its opposite."[11] Our present system entrusts the production of this public good to private actors, with predictable results. This Article offers reasons to think that we might be better off establishing money creation as a sovereign responsibility, by means of a public-private partnership system. (This is just what modern bank regulation has done for decades.) For better or worse, this is not the regulatory approach we have chosen.

Overview

Part I of this Article argues that money market instruments have important properties of "money." To set the stage for this discussion, it begins with a brief overview of the shadow banking system—the source of the vast majority of the financial system's non-deposit, short-term IOUs. That system, which came to rival the depository banking system in size, was at the epicenter of the recent crisis, and the panic that engulfed that system was the primary focus of the government's crisis response initiatives.

Part I then examines why economic agents hold money market instruments. What purpose do they serve? These instruments, it is argued, are different from ordinary debt instruments in that they have *instrumental* value to their holders: like deposits, they satisfy what economists call the "transactions motive." (Inasmuch as money market instruments typically do *not* serve as a medium of exchange, this proposition is counterintuitive—but it finds both theoretical and empirical support.) This is another way of saying that money market instruments are subject to *money demand.* Because deposits and money market instruments share this special property, this Article refers to them together as "money-claims."

Turning from demand to supply, Part I then examines the issuers of money-claims. It is seen that these institutions—which this Article calls "maturity-transformation firms" or "money-claim issuers," terms that encompass both depository banks as well as shadow banking entities—gener-

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[10] Kenneth J. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-market Allocations, in* Analysis and Evaluation of Public Expenditures: The PPP System 48 (J. Econ. Comm. of Cong. 1969).

[11] James M. Buchanan, *The Constitutionalization of Money,* 30 Cato J. 251, 251 (2010).

ate economic value by channeling otherwise idle money balances into the capital markets. These firms, it is shown, differ fundamentally from other types of financial intermediary. They are unique in that they actually *increase*, rather than draw upon, the aggregate supply of investment capital available to other economic agents. Part I suggests that the economic value arising from this activity is probably enormous.

In Part II, this Article argues that maturity transformation is nevertheless associated with a recognizable kind of market failure—presenting a prima facie case for government intervention. Part II observes that defaults on money-claims present special problems not associated with defaults on other types of financial obligations. Specifically, because these instruments serve a monetary function, their creation and destruction have *monetary* consequences: defaults on money-claims instantly shrink the money supply. Relatedly, because money-claims are held for *instrumental* purposes, their defaults cause *consequential* losses to their holders—opportunity costs, operational disruption, reputational damage, or even default. (Critically, these losses are distinct from, and might far exceed, any *investment* losses that their holders may experience.) Part II contends that an insuperable collective action problem prevents money-claimants from reaching a simple bargain to avoid these consequential losses—a circumstance that amounts to a classic market failure.

Part II concludes by examining policy alternatives for addressing this market failure, drawing on the history of U.S. bank regulation as a guide. That history, it is shown, reflects three distinct (and cumulative) approaches to addressing the problem of money-claim defaults: first, risk-constraint regulation; second, *discretionary* public support in the form of lender-of-last-resort powers; and third, *non*-discretionary public support in the form of deposit insurance. With the establishment of deposit insurance, honoring money-claims (in the form of insured deposits) became an unconditional sovereign obligation, not just a private one. At the same time, the basic purpose of risk-constraint regulation changed: its aim was no longer primarily to prevent runs and panics, but rather to counteract the inevitable incentives for resource misallocation that arise from the commitment of public resources.

The combination of unconditional support (via deposit insurance) and risk-constraint regulation amounted, in effect, to a public-private partnership approach to money creation. The goal was to simultaneously (i) realize the immense economic value that arises from entrusting to private actors the *investment* of the financial system's pooled money reserves; (ii) bring about stable monetary and financial conditions by publicly underwriting the money supply (or the largest component of it anyway); and (iii) counteract through risk constraints the incentives for resource misallocation that arise from pursuing the first two goals. As a historical matter, the emergence of this public-private partnership system coincided with the beginning of an unprecedented

period of panic-free financial conditions. Only after this regime was bypassed by the shadow banking system did unstable conditions re-emerge.

Part III of this Article examines the Dodd-Frank Act's approach to the regulation of money creation. That approach is shown to represent a departure from the historical progression described in Part II. The new "Orderly Liquidation Authority" (OLA), a centerpiece of the new law, was not designed to address the problem of money-claim defaults. (On the contrary, the FDIC insists that money-claimants will experience default "in virtually all cases."[12]) Instead, OLA was designed to preserve the value of the *assets* of failed financial firms until they are liquidated—a worthy aim, but a very different one. At the same time, the Dodd-Frank Act has imposed significant new limitations on the government's freestanding panic-fighting tools. These limitations, absent future congressional action, would render next to impossible the kind of aggressive government rescue operation that was staged during the recent crisis.

Part III concludes with an analysis of the likely implications of this regulatory realignment. It finds grounds for thinking that our most basic financial stability problems remain unresolved.

I. Taking the Money Market Seriously

A. *Prelude: "Shadow Banking" and the Panic of 2008*

It is often said that the recent crisis witnessed a widespread "run" on the financial system. It is important to be clear about what this means. Not all financial institutions are susceptible to runs. Rather, runs are a product of a particular configuration of contractual arrangements. They occur when large numbers of funding providers with near-term maturities decline to renew their contracts upon expiration. (In industry parlance, they decline to "roll over.") That is to say, runs are inherently money market phenomena. Firms that finance themselves solely in the *capital* markets—with long-term (debt) or perpetual (equity) sources of financing—are not vulnerable to runs. Such firms can *default* of course, but the concept of a run implies something more than just a default.

In the recent crisis, runs were experienced by a specific and identifiable set of financial institutions. These firms have come to be known, collectively, as the "shadow banking system." It is beyond the scope of this Article to examine the anatomy of the shadow banking system in detail.[13] But a brief description of that system—and of the policy response that was re-

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[12] *See infra* Part III.A.

[13] For a detailed description of the anatomy of the shadow banking system, a useful resource is Zoltan Poszar et al., *Shadow Banking*, Federal Reserve Bank of New York Staff Report No. 458 (2010).

quired to prevent its unraveling—will serve as a useful introduction to the discussion that follows.

Various components of the shadow banking system arose over the course of several decades. However, only in the most recent decade did that system achieve full bloom. In shadow banking, pools of long-term financial assets are financed with money market liabilities through a variety of channels. Various types of consumer and business loans are warehoused in conduits after origination, where they are financed with asset-backed commercial paper (ABCP) with typical maturities of four weeks or less. After warehousing, these loans are packaged into asset-backed securities (ABS), including mortgage-backed securities. Along with other types of financial assets, many of these ABS are funded on broker-dealer balance sheets through short-term repurchase agreements (repos), which usually mature the next business day. To generate additional high-quality collateral, ABS tranches are often combined and re-securitized into complex structured credit instruments. Senior tranches of structured credit are often funded on dealer balance sheets through short-term repo or held by structured investment vehicles (SIVs), highly leveraged credit hedge funds, or similar entities that finance themselves in the short-term markets. Major broker-dealers and finance companies also commonly issue garden-variety commercial paper, a long-established form of unsecured short-term credit, as an important source of funding.

Many of these short-term instruments (commercial paper, ABCP, and repo) make their way to money market mutual funds. Here, in a final step of maturity transformation, they serve as the basis for the creation of demandable money for retail and institutional customers. Money market fund "shares" are fixed in value and redeemable at will. As such, they are functionally indistinguishable from interest-bearing demand deposits. These funds often serve as the final step in the chain of shadow banking: the transformation of long-term assets into demandable obligations, redeemable at any time at the holder's option.

The shadow banking system was huge prior to the crisis, and it remains so. As of 2007, the aggregate *known* short-term liabilities of this system were about $6.2 trillion, far exceeding outstanding FDIC-insured deposits of $4.3 trillion:

FIGURE 1:
KNOWN SHORT-TERM LIABILITIES
OF U.S. FINANCIAL ISSUERS (2007)[14]

	(trillions)
Broker-Dealer Repo	$2.5
Asset-Backed Commercial Paper	1.2
Finance Company Commercial Paper	0.4
"Liquidity Put" Bonds[15]	0.7
Money Market Mutual Fund "Shares"	3.1
Less: Double-Counting Adjustment[16]	(1.7)
Total Non-Deposit Short-Term Liabilities of U.S. Financial Issuers	**$6.2**
Bank Deposits	$6.9
Less: Uninsured Bank Deposits	(2.6)
Total FDIC-Insured Bank Deposits	**$4.3**
Memorandum Items (2007):[17]	
Commercial Paper of Non-Financial Issuers	$0.1
U.S. Treasury Bills (Short-Term Treasuries)	$1.0
Currency in Circulation	$0.8

This $6.2 trillion figure is conservative; it excludes significant categories of instruments for which no reliable figures are available.[18] The precise mechanics of these instruments are not important for present purposes. What

[14] *See* Adam B. Ashcraft, Discussion of "Do Global Banks Spread Global Imbalances?", Remarks at the Jacques Polak Research Conference 3 (Nov. 6, 2009), *available at* http://imf.org/external/np/res/seminars/2009/arc/pdf/ashcraft1.pdf (estimates as of July 2007); INVESTMENT COMPANY INSTITUTE, 2010 INVESTMENT COMPANY FACT BOOK 162 (2010) (showing 2007 levels); FDIC, *Quarterly Banking Profile*, 2 FDIC Q. no. 1, at 17 (2008).

[15] This category includes tender option bonds, variable rate demand notes, and auction rate securities; these instruments are typically backed by municipal securities.

[16] This adjustment reflects an estimate of the amount of broker-dealer repo, asset-backed commercial paper, finance company commercial paper, and liquidity put bonds that were owned by money market mutual funds in 2007. The estimate is derived from Investment Company Institute data. *See* INVESTMENT COMPANY INSTITUTE, 2008 INVESTMENT COMPANY FACT BOOK 147 (2008); *see also* Letter from Paul Schott Stevens, President & CEO, Inv. Co. Institute, to Elizabeth M. Murphy, Sec'y, U.S. Secs. and Exch. Comm'n, regarding President's Working Group Report on Money Market Fund Reform (File No. 4-619) (Jan. 10, 2011), at 17, *available at* http://www.sec.gov/comments/4-619/4619-49.pdf.

[17] *See* Flow of Funds Accounts of the United States, Federal Reserve Statistical Release, Table L.2 (Dec. 9, 2010), *available at* http://www.federalreserve.gov/releases/z1/20101209/z1.pdf (showing 2007 levels); ECONOMIC REPORT OF THE PRESIDENT 328 (Feb. 2008); Factors Affecting Reserve Balances, Federal Reserve Statistical Release (Dec. 27, 2007), *available at* http://www.federalreserve.gov/releases/h41/20071227/.

[18] The most important of these are probably (1) "bilateral" repo and (2) unregistered institutional cash pools (an alternative to money market funds).

is important is that they all represent short-term claims on private entities that invest in longer-term financial assets.

The shadow banking system has existed outside the explicit banking safety net and, in most cases, with minimal regulatory constraints. Naturally this freedom has been conducive to high returns. But this system has also proved fragile. The crisis that began in 2007 eventually tore through the entire shadow banking sector. ABCP conduits (including SIVs), dealer repo markets, commercial paper markets, "liquidity put" bonds, money market mutual funds, repo-financed credit hedge funds, and uninsured bank deposits all experienced modern-day bank runs.

The role of the shadow banking system in the crisis is fairly widely acknowledged. The term "shadow banking" was coined in 2007 by Paul McCulley of PIMCO, the giant bond fund manager.[19] Since then, the concept has achieved wide currency. Timothy Geithner used the term "parallel financial system" to describe the same phenomenon in a June 2008 speech, when he was still President of the Federal Reserve Bank of New York.[20] Economist Paul Krugman has argued that shadow banking was central to the recent crisis.[21] Paul Tucker of the Bank of England has given an influential and perceptive speech on shadow banking.[22] Within the academic literature, economists Gary Gorton and Andrew Metrick have studied the policy implications of shadow banking.[23] Gorton in particular has insisted that the distinction between shadow banking and depository banking is in many ways an artificial one. In Gorton's words, "the 'shadow banking system' is, in fact, real banking."[24]

It should however be pointed out that the idea of shadow banking is not remotely new. The concept was presaged well over a century ago by Walter Bagehot, the legendary English banker, essayist, and theorist. In 1873, Bagehot wrote *Lombard Street: A Description of the Money Market*,[25] his canonical work on the money market and central banking. In it, he observed that the great London banks were accompanied by a parallel set of financial firms, known as "bill brokers," which in many ways resembled modern-day

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[19] *See* Paul McCulley, *Teton Reflections*, GLOBAL CENTRAL BANK FOCUS (PIMCO), Sept. 2007, at 2.

[20] *See* Timothy F. Geithner, President and Chief Exec. Officer, Fed. Reserve Bank of N.Y., Remarks at the Econ. Club of N.Y.: Reducing Systemic Risk in a Dynamic Financial System 1 (June 9, 2008).

[21] *See generally* PAUL KRUGMAN, THE RETURN OF DEPRESSION ECONOMICS AND THE CRISIS OF 2008 (2009).

[22] *See* Paul Tucker, Deputy Governor for Fin. Stability, Bank of Eng., Remarks at the Bernie Gerald Cantor Partners Seminar: Shadow Banking, Financing Markets and Financial Stability (Jan. 21, 2010).

[23] *See, e.g.*, Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System* (Nat'l Bureau of Econ. Research, Working Paper, Sept. 1, 2010).

[24] Gary Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007*, at 3 (May 9, 2009) (prepared for the Fed. Reserve Bank of Atlanta's 2009 Fin. Mkt. Conference).

[25] WALTER BAGEHOT, LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET (John Wiley & Sons 1999) (1873).

securities dealers. Like today's dealers, these bill-brokers financed themselves with borrowings that, Bagehot informs us, were "repayable at demand, or at very short notice."[26] Formally speaking these firms were not banks—but to Bagehot they might as well be. "The London bill brokers," he observes, "do much the same [as banks]. Indeed, they are only a *special sort of bankers* who allow daily interest on deposits, and who for most of their money give security [i.e., collateral]. But we have no concern now with these *differences of detail*."[27] At times, Bagehot is careful to note that the short-term obligations of bill-brokers were not technically deposits; he observes that the maturing of these liabilities "is not indeed a direct withdrawal of money on deposit," although "its principal effect is identical."[28] Other times, however, Bagehot dispenses even with this distinction: "It was also most natural that the bill-brokers . . . *should become, more or less, bankers too*, and should receive money *on deposit* without giving any security for it."[29] Here we have an unambiguous identification of the shadow banking phenomenon—about 140 years ago. (As we will see, in more ways than one, Bagehot diagnosed our modern ills with eerie prescience.)

If the shadow banking system played a prominent role in the recent crisis, it was also at the center of the government's emergency policy response. At the height of the crisis, the government's paramount objective was to halt the spreading panic by holders of money market instruments—the vast majority of which were issued by shadow banking institutions.[30] The scale of these policy measures was staggering. At its peak, the Federal Reserve extended about $1 trillion of liquidity through an arsenal of emergency lending programs. The FDIC issued over $1 trillion in guarantees of financial firm liabilities, including non-deposit obligations. The Treasury Department supplied $0.3 trillion in capital infusions, which were designed mainly to stabilize diversified financial firms that relied heavily on short-term wholesale funding. Finally, Treasury officials engineered a dramatic, $3 trillion guarantee of the money market mutual fund industry.

The success of these policy measures in stabilizing the financial system was a remarkable achievement—but a controversial one. The stated purpose of these measures was not to protect the financial system for its own sake. Rather, it was to protect the broader economy. Naturally, however, these measures have been subject to criticism on grounds of moral hazard: the use of these tools creates the expectation that they may be used again. And moral hazard gives rise to costly subsidies and resource misallocation.

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[26] *Id.* at 292–93.

[27] *Id.* at 28 (emphasis added).

[28] *Id.* at 295.

[29] *Id.* at 290 (emphasis added).

[30] The fact that this policy response also touched regulated bank holding companies does not contradict this conclusion. The most urgent problems for the big bank holding companies were in their repo-financed broker-dealer operations—which are housed in separate subsidiaries from their regulated depositories—and in their off-balance-sheet ABCP conduits.

As we will see in Part III, the Dodd-Frank Act has imposed major new substantive and procedural constraints on the ability of the government to stage this kind of intervention in the future. It has also created a new Orderly Liquidation Authority with the objective, in part, of making these types of ad hoc rescues unnecessary. In order to assess the likely impact of this regulatory transformation, we need to address a threshold issue: Why intervene in the first place? What, exactly, would have been so bad about widespread defaults by issuers of money market instruments? To answer these questions, we first need to examine the economic function of the money market.

B. What's Different About the Money Market?

This Article contends that money market instruments—such as commercial paper, ABCP, short-term repo, and money market fund "shares"—possess basic properties of *money*. What does this mean exactly? Economists conventionally define money as the set of assets that are widely used as a "medium of exchange"—that is, used as payment for goods and services. Right away there seems to be a definitional problem. Unlike bank deposits, money market instruments generally do not function as a medium of exchange. Rather, like most other financial instruments, they must be *converted into* the medium of exchange—by selling them or waiting for them to mature—before they can be traded for goods and services.

But then why are these instruments widely recognized as having "money"-like attributes? It is called the *money* market, after all. As mentioned above, economists sometimes refer to money market instruments as "near money" or "quasi money"; the Federal Reserve includes some of them in its *monetary* aggregates;[31] institutional investors and corporate Treasurers refer to them as "cash"; and accounting standards designate them as "cash equivalents."[32] Nor is this just a matter of terminology. As a substantive matter, money market instruments are accorded special status (like de-

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[31] *See supra* note 7.

[32] The standard for cash equivalents under U.S. generally accepted accounting principles is as follows:

> For purposes of this Statement, cash equivalents are short-term, highly liquid investments that are both: (a) Readily convertible to known amounts of cash [and] (b) So near their maturity that they present insignificant risk of changes in value because of changes in interest rates. Generally, only investments with original maturities of three months or less qualify under that definition. Examples of items commonly considered to be cash equivalents are Treasury bills, commercial paper, money market funds, and federal funds sold (for an enterprise with banking operations). Cash purchases and sales of those investments generally are part of the enterprise's cash management activities rather than part of its operating, investing, and financing activities, and details of those transactions need not be reported in a statement of cash flows.

STATEMENT OF CASH FLOWS, Statement of Fin. Accounting Standards No. 95, § 6 (Fin. Accounting Standards Bd. 1987) [hereinafter F.A.S. 95]. The corresponding international financial reporting standard is as follows:

posits, and unlike capital-market debt claims) in a variety of legal contexts. In bankruptcy, these instruments receive special treatment as "cash collateral."[33] Under the federal securities laws, they are exempt from SEC registration.[34] Under the laws governing asset management, they are *not* counted as investments in securities for purposes of determining whether an operating firm must register as an investment company.[35] In area after area, these instruments are treated like deposits—a classic form of "money"—rather than ordinary debt securities.

So are these instruments "money" or are they not? Here we run the risk of engaging in a semantic debate. Different definitions of money may suit different purposes; we should eschew an essentialist approach in favor of a functional one. So let us approach the issue from a different direction. It is evident that money market instruments are treated like deposits in a number of disparate contexts. Why might this be the case? What functional attributes do deposits and money market instruments have in common that are not shared by other financial instruments? Is it just a matter of "liquidity"—that is, of being easily convertible into currency? Or is there something else going on?

It is useful to start by asking why economic agents allocate a portion of their wealth to the medium of exchange in the first place. Economists have an intuitive answer: the "transactions motive."[36] Economic agents can make

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> Cash equivalents are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes. For an investment to qualify as a cash equivalent it must be readily convertible to a known amount of cash and be subject to an insignificant risk of changes in value. Therefore, an investment normally qualifies as a cash equivalent only when it has a short maturity of, say, three months or less from the date of acquisition. Equity investments are excluded from cash equivalents unless they are, in substance, cash equivalents, for example in the case of preferred shares acquired within a short period of their maturity and with a specified redemption date.

CASH FLOW STATEMENTS, Int'l Accounting Standard No. 7, § 7 (Int'l Accounting Standards Bd. 1997).

[33] *See* 11 U.S.C. § 363(a) (2006). Unlike other forms of collateral, cash collateral may not be used by a debtor in bankruptcy without the consent of the secured party or approval by the court.

[34] *See* 15 U.S.C. § 77c(a)(3) (2006) (exempting from registration certain classes of instruments with maturities not exceeding nine months).

[35] Even if its capitalized assets are predominantly financial in nature, an issuer "will not be deemed to be an investment company" if, among other things, its investments in securities are limited to "capital preservation investments" (subject to certain exceptions for de minimis and strategic investments). 17 C.F.R. 270.3a-8(a). "Capital preservation investment" is defined as "an investment that is made to conserve capital and liquidity until the funds are used in the issuer's primary business or businesses." 17 C.F.R. 270.3a-8(b). The original order from which this exemption originated involved a biotechnology firm whose balance sheet assets consisted primarily of "high-quality, short-term Government and commercial debt instruments"—i.e., money market instruments. ICOS Corp., 51 S.E.C. 322, 53 S.E.C. Docket 1812, Investment Company Act Release No. 19334 (Mar. 16, 1993).

[36] This concept originated from John Maynard Keynes. *See* JOHN M. KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY 170 (First Harvest/Harcourt 1964) (1936). The classic formal model of the transactions motive was developed by William Baumol. *See* William J. Baumol, *The Transactions Demand for Cash: An Inventory Theoretic*

themselves better off by buying and selling various goods and services, and the existence of a common medium of exchange facilitates these trades. (If barter were easy, there would be no need for money.[37]) So deposits serve an instrumental purpose: as a medium of exchange, they make trade easier. We might say that deposits are a component of an economic agent's *transaction reserve*—the set of assets that the agent holds primarily to facilitate desired exchanges.

On reflection, though, there is no reason why transaction reserves must be held in the medium of exchange *itself*. For practical purposes, any asset that can be converted into the medium of exchange quickly and cheaply—any asset that is highly *liquid*—can be used to meet transactional needs. And all sorts of capital market instruments, including many publicly traded equities, not to mention long-term Treasury securities, are extremely liquid. They can be converted into deposits (and by extension into currency) on a moment's notice and at negligible cost. These liquid capital market instruments might therefore seem like promising candidates to serve as a component of economic agents' transaction reserves.

When it comes to transaction reserves, however, there is reason to think that liquidity is not the only characteristic that matters. We can see why with a simple example. Consider a firm whose main productive assets are illiquid. Like all firms, it has transactional needs; it must pay suppliers and employees, for example. It holds a transaction reserve to enable it to meet those needs and continue production. Allocating resources to transaction reserves is costly: these resources are both diverted from the firm's operating activities (its comparative advantage) and withheld from distributions to shareholders. On the other hand, shortfalls in transaction reserves are expensive too: such shortages can interfere with production or even lead to default. To determine the optimal size of its transaction reserve, the firm makes its best estimate of foreseeable transactional needs and seeks to minimize its total expected carrying costs and shortage costs. This is the discipline of cash management—one of the core financial management functions of any enterprise.

Approach, 66 Q. J. ECON. 545 (1952). According to Baumol, "[a] stock of cash is its holder's inventory of the medium of exchange, and like an inventory of a commodity, cash is held because it can be given up at the appropriate moment, serving then as its possessor's part of the bargain in an exchange." *Id.* at 545. Of course, economic agents may choose to hold the medium of exchange in order to enable them to engage in potential transactions to which they ascribe a low likelihood of occurrence. Keynes viewed this "precautionary motive" to be an important aspect of the transactions motive. This article's use of "transactions motive" should likewise be understood to incorporate the precautionary motive, which is really just a special case of the transactions motive (for low-probability transactions).

[37] In a primitive economy with no money, exchanges take place through barter, which requires that each party to every exchange possess a *real* asset that the other party desires. The circulation of money facilitates trade by making this so-called "double coincidence of wants" unnecessary. This is the textbook account of the function of money. *See, e.g.*, N. GREGORY MANKIW, MACROECONOMICS 81 (7th ed. 2010).

Why not invest transaction reserves in very liquid equity securities? The problem should be apparent. Prices of equity securities often fluctuate significantly from day to day. (By "price" we just mean value *relative* to money.) By putting its transaction reserves in, say, Google stock, the firm would run a material risk of experiencing a costly shortfall. In theory, the firm could reduce this risk by simply increasing the size of its transaction reserve—holding *more* Google stock. But this strategy would consume firm resources that could be put to better use. Not every firm can be a capital markets specialist. Presumably the firm's shareholders are equally well-equipped to invest in liquid equities. Actually, shareholders probably have non-uniform preferences in this regard. They would be better off if these resources were returned to them. So there is a real economic cost associated with this approach.

True, firms' near-term transactional expectations are not totally constant either—they also change from day to day. If there were a liquid asset whose value tended to track these changes, it would be the ideal place to store transaction reserves. But, generally speaking, no such asset exists. More precisely, the asset whose value is likely to be most closely correlated over time with the value of near-term transactional expectations is . . . the medium of exchange itself. This is just another way of saying, as economists do, that "prices are sticky" in the short run. That is to say, the prices of most goods and services generally do not fluctuate wildly over short periods of time.

To be sure, price-stickiness is not a characteristic of *all* goods and services. For instance, many firms rely on marketable commodities for production, and commodity prices can be quite volatile. However, firms typically shield themselves from commodity and other price risks through contractual arrangements: they sign long-term supply contracts with fixed prices, for example, or they lock in their input prices through futures markets. These kinds of contractual precautions ensure that, from individual firms' perspectives, key input prices will remain pretty predictable for the foreseeable future. Indeed, that is exactly the point: these (often costly) contractual measures enable firms to manage transaction reserves efficiently and avoid the operational disruptions that can arise from sudden swings in input prices. The point here is that even firms whose operations rely on volatile commodities can typically count on fairly sticky prices in the short run. (And these sticky prices are denominated not in shares of Google stock, but in *money*.) As a result, it would be risky for these firms to allocate their transaction reserves to assets whose prices are volatile—no matter how liquid those assets might be.

This discussion suggests why money market instruments—high-quality IOUs that mature in the near term—might be particularly well-suited to serve as transaction-reserve assets. Not only are they extremely liquid (i.e., convertible into the medium of exchange on very short notice and at practically no cost), but, like deposits, their value *in terms of* money is almost always extremely stable. Money market instruments seldom fall more than a

few basis points (hundredths of a percentage point) below the price at which they were purchased. Critically, this "price-protection" feature is not just a matter of high credit quality.[38] Even debt securities that are free from credit risk, such as long-term Treasuries, often fluctuate significantly in price due to changes in market interest rates. By contrast, because they mature so soon, money market instruments are subject to negligible interest rate risk—zero if they mature before they need to be tapped for transactional purposes. If liquidity and price-protection are in fact the key criteria, then money market instruments would appear to be an excellent place to put transaction reserves.

This hypothesis finds validation in actual market practice. Economic agents generally do not invest their transaction reserves in liquid equities or even in long-term Treasuries. Instead, they park them in bank deposits and in the money market, where their value relative to currency is extremely stable. According to the leading treatise in this area, *Stigum's Money Market*,[39] "conservative" money market portfolio managers "believe that the correct way to manage a portfolio is to reduce their accounting risk to *zero*. In other words, they attempt to run the portfolio in such a way that they will *never* book a loss."[40] This goal can be accomplished only by allocating transaction reserves to liquid assets whose prices virtually never decline. For practical purposes, such instruments serve a function very similar to that of bank deposits. They are, literally, "cash equivalents"—an accounting term that denotes "short-term, highly liquid investments that are both: (a) readily convertible to known amounts of cash [and] (b) so near their maturity that they present insignificant risk of changes in value because of changes in interest rates."[41] The more a financial asset exhibits these two characteristics—liquidity and price-protection—the more it resembles just another form of cash.[42]

If these conclusions are accurate, they imply a fundamental point: that there is *instrumental* value associated with holding money market instru-

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[38] The term "principal-protection" is occasionally used to describe this characteristic. This article uses the less conventional term "price-protection," as the term "principal-protection" can cause confusion. (A thirty-year Treasury bond is *principal*-protected so long as it is held to maturity—but it is not *price*-protected in the meantime.) In finance terminology, this feature is known as a "par put option."

[39] MARCIA STIGUM & ANTHONY CRESCENZI, STIGUM'S MONEY MARKET (4th ed. 2007).

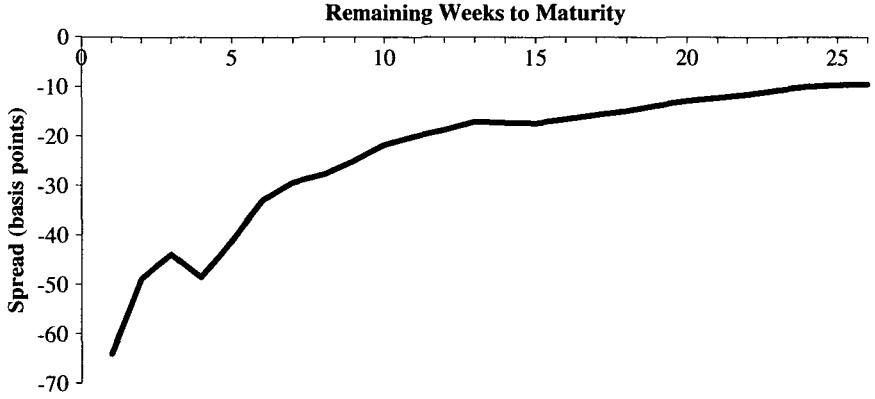
[40] *Id.* at 479. Money market portfolio managers can eliminate interest rate risk by simply matching the maturity of the instrument with the timing of projected transactions: "when they need cash three months hence, they buy a 3-month instrument . . . ." *Id.* at 481.

[41] *See* F.A.S. 95, *supra* note 32.

[42] *See, e.g.*, INSTRUMENTS OF THE MONEY MARKET 1 (Timothy Q. Cook & Robert K. Laroche, eds. 1998) (noting that "economic units . . . supplement [bank transaction account balances] with holdings of money market instruments that *can be converted to cash quickly and at a relatively low cost* and that have *low price risk* due to their short maturities") (emphasis added). Similarly, the Federal Reserve describes M2 as consisting of assets"that generally are similar to transaction accounts and that, for the most part, can be converted fairly readily to M1 with little or no loss of principal." BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, *supra* note 7, at 22.

ments—value that is distinct from their *intrinsic* value as investments. This is not just a theoretical conjecture. According to a recent study, "[a] growing body of empirical evidence suggests that low-risk short-term debt securities provide significant *monetary services* to investors."[43] This inference is drawn from the fact that "[y]ields on short-term T-bills are on average strikingly low relative to those on longer-term notes and bonds."[44] The authors provide a figure illustrating this phenomenon, reproduced here:

FIGURE 2: "MONEY DEMAND" IN U.S. TREASURIES[45]



It is important to interpret this figure correctly. This is not a conventional "yield curve"—a standard plot of yields on Treasury securities of various maturities. Rather, this figure depicts the extent to which yields on short-term instruments *differ* from "what one would expect based on an *extrapolation of the rest* of the yield curve."[46] It shows that yields on short-term Treasuries are much lower (i.e., prices are higher) than such an extrapolation would predict. "As can be seen," the authors conclude, "the differences are large. . . . Our preferred interpretation of these spreads is that they reflect the extra 'moneyness' of short-term T-bills, above and beyond

[43] Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *A Comparative-Advantage Approach to Government Debt Maturity* 35 (HBS Working Paper No. 11-035, revised version Dec. 2010) (emphasis added).

[44] *Id.* at 6.

[45] *Id.* at 49. This figure shows "the average spread, over the period 1980–2009, between actual Treasury-bill yields ('on-cycle' Treasury bills with maturities from 1 to 26 weeks) and fitted yields, where the fitted yields are based on a flexible extrapolation of the Treasury yield curve" derived from "a parametric model of the instantaneous forward rate curve . . . . The set of sample securities used to estimate the curve each day includes almost all 'off-the-run' Treasury notes and bonds with a remaining maturity of more than 3 months." *Id.*

[46] *Id.* at 6 (emphasis added).

whatever money-like attributes longer-term Treasuries may already have."[47] If the authors' interpretation is correct, then holders of money market instruments sacrifice investment yield for an instrumental purpose—for what the authors call "moneyness." Because yields and prices are inversely related, this is just another way of saying that the prices of these instruments *exceed* their intrinsic value because investors derive additional, instrumental value from them.

The idea that there is a tradeoff between holding money and earning investment returns is standard in economics. It traces its lineage back at least to John Maynard Keynes, who *defined* the interest rate as the "reward for parting with" money.[48] The important point here is that both logic and empirical evidence suggest that money demand applies not just to currency and bank deposits, but also to high-quality, short-term credit instruments that are *not* a medium of exchange. In this light, calling the holders of these instruments "investors" is somewhat misleading. Holders of money market instruments usually think of them, together with deposits and currency, as precisely the set of assets they are *not* investing. As specified in the relevant accounting standard, "purchases and sales of [these instruments] generally are part of the enterprise's cash management activities rather than part of its operating, investing, and financing activities."[49] Thus, the priorities of money market investors sound quite a bit like the priorities of "investors" in deposit accounts—and quite different from those of capital-markets investors.[50]

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[47] *Id.* at 6–7. The authors stress that "moneyness" is a function of low interest rate risk: "[S]hort-term bills not only offer absolute security of ultimate nominal return . . . but also have no interest-rate exposure—so they are completely riskless at short horizons." *Id.*

[48] KEYNES, *supra* note 36, at 167. This quotation commits a small act of poetic license: Keynes actually defined the interest rate as the reward for parting with "liquidity." Yet, in this context anyway, he used the term "liquidity" to refer to money-like assets:

> [The individual must decide] in *what form* he will hold the command over future consumption which he has reserved . . . . Does he want to hold it in the form of immediate, liquid command (i.e. in money or its equivalent)? Or is he prepared to part with immediate command for a specified or indefinite period, leaving it to future market conditions to determine on what terms he can, if necessary, convert deferred command over specific goods into immediate command over goods in general? In other words, what is the degree of his *liquidity-preference*—where an individual's liquidity-preference is given by a schedule of the amounts of his resources, valued in terms of money or of wage-units, which he will wish to retain in the form of money in different sets of circumstances?

Id. at 166.

[49] F.A.S. 95, *supra* note 32. Likewise, *Stigum's Money Market* notes that the money market portfolio manager makes investment decisions based on "the cash forecasts the firm gives him—their frequency, the periods for which they are available (these might be tomorrow, the next week, the next month, and the current quarter), and the confidence that experience suggests he can place in these forecasts." STIGUM & CRESCENZI, *supra* note 39, at 458.

[50] A final observation may underscore this point. It is commonly said that investors engage in a "flight to safety" during periods of acute market stress; that is, they liquidate assets perceived as risky and invest in the safest assets available. To what assets did investors flock during the most acute phase of the recent crisis—September and October of 2008? Yields on three-month Treasuries dropped dramatically from 1.71% to 0.44% from the beginning of Sep-

As is usually the case, the story is a little more complicated than this. All else equal, economic agents would prefer to earn investment returns on their transaction-reserve assets. And money market instruments, like many bank deposits, do offer modest rates of interest. Yet it does not follow that these assets are primarily held for reasons other than satisfying the transactions motive. As *Stigum's Money Market* observes, "the [money market] portfolio manager's job is first to ensure that the funds he invests will be available whenever his firm needs them and *only second* to maximize the return he earns on those funds."[51] In fact, there is really no good reason for any economic agent to hold these instruments *unless* it thinks it might engage in near-term transactions. These instruments carry a price premium (reduced yield) by virtue of the monetary services that they offer; why pay extra for a feature that one knows one will never use?[52] It follows that these instruments are held primarily due to the expectation of potential near-term transactions—in short, to satisfy the transactions motive. The fact that they are not used *directly* as a medium of exchange hardly diminishes their utility in this regard; they can easily be converted into deposits if and when needed.

In a certain sense, the proposition that money market instruments have basic properties of money is conventional wisdom. Yet there is also a degree of cognitive dissonance about this proposition—a conceptual tendency to group these instruments with ordinary debt instruments, rather than with acknowledged forms of money such as deposits. At any rate, if money market instruments are indeed a form of money, then we have failed to take this proposition seriously as a regulatory matter. Macroeconomic theory attests to the specialness of money—and financial history illustrates the problems that can arise from entrusting its creation and destruction to private actors. But in the case of money market instruments, that is just what our regulatory system has done. The casual acceptance of this state of affairs, it will be argued, has been a source of serious problems—problems that have not been rectified by recent reform measures.

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tember to the end of October, reflecting a massive surge in demand for these short-term claims. By contrast, yields on ten-year Treasuries actually *increased* from 3.81% to 3.95% over this same period—that is, their prices *fell*. The "flight to safety" witnessed during this systemic crisis was, in fact, a flight to *money*. (Yield quotes from Bloomberg: USGG3M Index and USGG10YR Index.)

[51] STIGUM & CRESCENZI, *supra* note 39, at 456 (emphasis added). A research report issued by a leading brokerage firm during the early stages of the recent crisis makes the same point: "[A]ctions that short-term investors view as rational behavior does not always align with what other investors might view as rational," because "the liquidity focused investors that control most of the money in the short-term markets care mainly about being able to get their money back when they want it." The actions of money market creditors, the report says, must be "viewed through the lens of different priorities." JP Morgan Securities Inc., *Short-Term Fixed Income Research Note*, U.S. FIXED INCOME MARKETS WEEKLY (June 6, 2008) (unpublished research report on file with the author).

[52] If an economic agent knew with certainty that it would engage in no transactions at all for, say, the next ten years, it would be very unlikely to allocate any of its wealth to money market instruments. Such an agent would almost certainly be better off buying ten-year Treasuries and holding them to maturity.

From this point forward, this Article will refer to all non-government money market instruments (commercial paper, ABCP, repo, money market fund "shares," and the like), together with bank deposits, simply as "money-claims." This functional term is intended to encompass *all* the high-quality, short-term funding instruments in the financial system—whether or not collateralized, and irrespective of the identity of the issuer. In other words, it encompasses all privately issued instruments that are subject to money demand. Likewise, the issuers of these instruments—depository firms as well as other financial firms that fund themselves with money-claims (such as repo-funded dealers, ABCP conduits, and money market funds)—will hereinafter be referred to as "money-claim issuers" or "maturity-transformation firms"; these are equivalent expressions. Functionally speaking, all of these firms are engaged in the activity of fractional-reserve banking (or money creation), whether they are called "banks" or not. As we will see presently, these firms play a distinctive role in the financial markets—and are associated with a recognizable kind of market failure.

C. The Economic Value of Maturity Transformation

The discussion so far has centered on the *demand* for money-claims. We now turn to the supply. Money-claims are just high-quality, short-term IOUs. In an ideal financial system, such instruments presumably would be issued by creditworthy borrowers with short-term cash needs. The demand for money-claims would thereby be satisfied by the natural, least-cost producers—an efficient outcome.

There is, however, a problem with this ideal story. The typical *real* borrower—the firm building a new factory, or the household selling a claim on its future income in order to buy a home today—has little use for a loan that must be paid back tomorrow or next week. It wants the *option*, at least, to pay the loan back over a much longer period of time. Such economic agents do not rely on money-claim financing. And the problem goes deeper than that. Even economic agents that appear to have short-term cash needs—say, to finance purchases of inventory that they expect to sell in the near term—generally do not want to rely on short-term liabilities. They, too, want the option to pay the loan back over a longer period; they do not want to be forced into contractual default in the event that expected near-term inflows do not materialize in time. Such firms seldom rely on short-term borrowings. (Even when they appear to do so, they invariably keep backstop options to extend into longer-term loans.[53]) In short, real borrowers typically want

[53] For non-financial issuers in the commercial paper market, having a backstop credit facility from a bank is a de facto condition of access. The issuer pays a commitment fee to the bank for the undrawn line of credit, and the bank holds cash reserves and capital against its contingent commitments. These arrangements amount to the functional equivalent of a *long-term* revolving line of credit to the issuer from the bank itself. Incidentally, viewed in relation

long-term credit. And we have seen that long-term instruments are not suitable as transaction-reserve assets.

Economic theorist John Hicks described this basic disconnect—the fact that savers want to hold significant amounts of short-term (money-like) assets, while borrowers want to issue long-term (capital) obligations—as a "constitutional weakness" of the financial system.[54] Bridging this divide is one of the financial industry's core functions. It is accomplished through *maturity transformation*: the issuance of short-term (money market) claims to finance long-term (capital market) assets. The firms that perform this function—banks and other maturity-transformation firms—reside at the core of every modern financial system. As we will see, these firms are unique in that they actually *add to* (rather than subtract from) the supply of investment capital available to other economic agents. In a very real sense, they "create money." This unique property means that we must be cautious about applying ordinary corporate finance principles to these firms.

To appreciate the peculiar and unique role of maturity-transformation firms, it is useful to imagine a world with no money-claims. In this primitive financial system, economic agents that wish to park their transaction reserves in liquid, price-protected assets have only one option: currency. Holding currency is expensive. It must be kept physically secure; it must be counted manually; its authenticity must be verified to exclude counterfeit bills; it must be physically transported to counterparties to serve as a basis for exchange. Making large payments, particularly across long distances, is a risky, time-consuming, and costly undertaking. Trade is very difficult.

Given the impediments to trade in this hypothetical world, it would only be natural if a market innovation arose to make trade easier. As a first step, households and businesses might place their currency with specialist custodial firms—experts in the secure storage and transportation of legal tender. For a fee, these specialists would hold currency in trust for their customers in secure vaults. Customers would no longer need to engage in costly storage, counting, authentication, and transportation of bills and coins; these tasks would be outsourced to the specialists. And if large numbers of economic agents began to use these specialist firms, a collateral benefit would arise: transfers of currency could be accomplished through simple bookkeeping entries. To make a payment, a buyer would simply instruct the custodial firm to transfer funds from the buyer's account to the seller's account. Currency is fungible, so no physical transfer would be necessary; payments could be made through ledger entries. These "currency warehouses"[55]

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to the broader corporate credit markets, the non-financial commercial paper market is tiny. *See supra* note 8.

[54] JOHN HICKS, VALUE AND CAPITAL 146–47 (2d ed. 1946) (1939) (noting that borrowers "will have a strong propensity to borrow long" in order to "hedge their future supplies of loan capital," but that many "people (and institutions) would prefer to lend short, at least in the sense that they would prefer to hold their money on deposit in some way or other").

[55] The author first encountered the concept of currency warehouses in his undergraduate financial institutions textbook; the latest edition is MEIR KOHN, FINANCIAL INSTITUTIONS AND

would relieve economic agents of the problems of currency management and delivery, thereby facilitating trade. However, even after the introduction of these warehousing firms, our hypothetical financial system still has no short-term IOUs. The specialist firms described here are not creditors; they are only custodians. They merely hold currency for safekeeping, just like any other provider of warehousing services.

These currency warehouses will do business only if it is profitable. At first, they will make money by charging their customers fees. Inevitably, though, the currency warehouses will perceive a second source of potential income. Once a currency warehouse has a large customer base—with no single customer accounting for more than a small fraction of its business—it will naturally find that its aggregate holdings of currency are remarkably stable from day to day. That is, even though each customer may withdraw all of its funds at any moment, the warehouse will seldom experience big, sudden swings in total cash on hand. This stability is a byproduct of the "law of large numbers"—which simply says that a very large number of independent events (such as coin tosses) will converge toward an expected outcome (fifty percent heads). The law of large numbers ensures that, so long as the firm collects funds from many savers, and so long as those savers make *independent* deposit and withdrawal decisions, the firm can be very confident that its currency holdings will stay within a specified range for the foreseeable future.

For currency warehouses, this stable supply of inert currency will present a compelling profit opportunity. These firms will find that they can rent out (invest) a substantial portion of their customers' funds without running a material risk of failing to meet withdrawal orders. That is to say, they can deploy much of their customers' money into the *capital* markets. The expected returns from this business innovation might be very substantial. Moreover, a portion of this value can be passed along to depositors to induce them to consent to this arrangement. (More on this in a moment.)

It is important to emphasize that this business innovation actually creates *new* investment capital (what economists sometimes call "loanable funds"). Previously these had been idle resources, resting outside the capital markets.[56] The economic effect of this new technology can be illustrated in a

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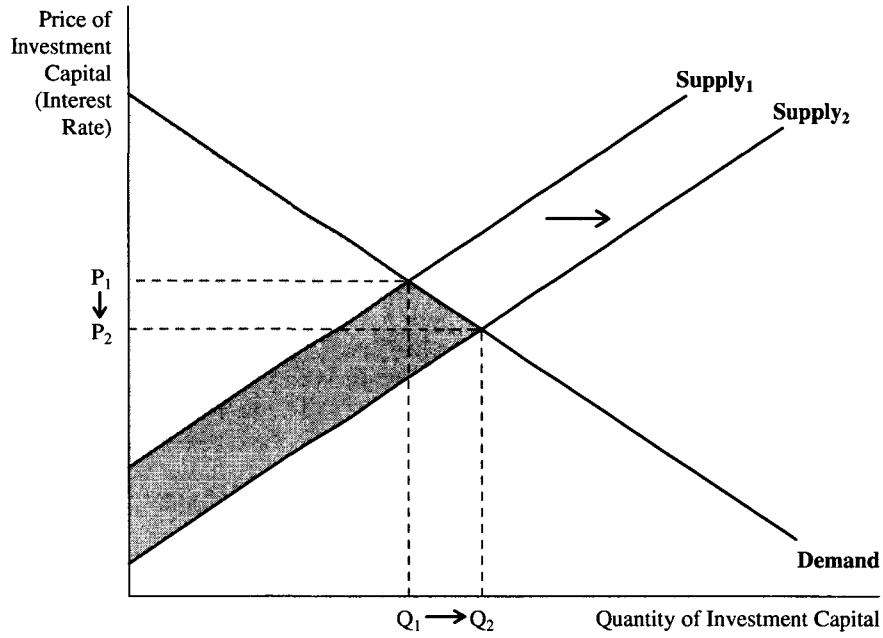
MARKETS 21–22 (2d. ed. 2004). The account provided here draws liberally upon Kohn's lucid description. Economists sometimes refer to this activity as "100% reserve banking." *See, e.g.*, MANKIW, *supra* note 37, at 548.

[56] Walter Bagehot makes this point in vivid terms:

> [M]uch more cash exists out of banks in France and Germany, and in all non-banking countries, than could be found in England or Scotland, where banking is developed. But that cash is not, so to speak, 'money market money:' it is not attainable . . . . But the English money is 'borrowable' money . . . . [T]he mere fact that their money is deposited in a bank makes it far more obtainable. A million in the hands of a single banker is a great power; he can at once lend it where he will . . . . But the same sum scattered in tens and fifties through a whole nation is no power at all: no one knows where to find it or whom to ask for it.

standard supply-and-demand framework, familiar from basic microeconomic analysis. The new technology causes a rightward shift in the supply curve for investment capital (from $Supply_1$ to $Supply_2$):

FIGURE 3: ECONOMIC SURPLUS FROM MATURITY TRANSFORMATION



In a competitive market, the effects of a rightward supply curve shift are straightforward. The equilibrium quantity of investment capital increases (from Q_1 to Q_2). Given a typical downward-sloping demand curve, the equilibrium price of capital (the interest rate) declines (from P_1 to P_2). Economic surplus—the difference between the respective "reservation prices" of capital consumers and capital providers—increases by an amount equal to the dark gray area.

This new surplus represents real economic value—value that did not exist when the specialist firms were just custodians. Thus, the specialist firms generate new gains from trade by pooling savers' otherwise idle transaction reserves and deploying them into the capital markets. If the economy's aggregate transaction reserves are substantial, the economic surplus arising from this technology could be huge. (Casual empiricism suggests that it is.) Clearly, though, once they have taken this step, these specialist firms are no longer in the warehousing business. They have ceased to be mere custodians or trustees. These firms are now engaged in maturity transforma-

BAGEHOT, *supra* note 25, at 5–6.

tion: the deployment of pooled transaction reserves into long-term (capital market) investments.

It should be apparent that the technology described here is not just "financial intermediation" in any general sense.[57] Financial intermediation does not necessarily entail the issuance of money-claims. Hedge funds, mutual funds, and finance companies, for instance, are all in the business of financial intermediation. They all gather funds from savers and invest those funds in financial assets. But such firms are not typically in the business of maturity transformation. They usually finance themselves in the capital markets, not the money market. Those firms create value by allocating *existing* investment capital toward valuable investment opportunities; they do not *increase* the supply of investment capital. By contrast, maturity-transformation firms—depository banks and other financial firms that issue money-claims—are unique in that they actually do augment the supply of credit. To use an equivalent expression, they *create money*. These firms address Hicks's constitutional weakness by putting the economy's pooled transaction reserves to productive use.

In Part II of this Article, it will be argued that this maturity-transformation technology is associated with an identifiable market failure. Before exploring this topic, however, it is worth noting one aspect of the foregoing analysis that has crucial implications for regulatory policy: the value of maturity-transformation firms depends on their financing structure! This almost goes without saying. However, students of corporate finance will immediately recognize a problem. This proposition appears to contradict one of the cornerstones of modern finance theory: the famous Modigliani-Miller theorem.[58] The essence of that theorem is that, in the absence of tax and other distortions, the financing structure of a firm does not affect its value. To use the (somewhat simplistic) slogan, "capital structure doesn't matter." Replacing debt with equity, or equity with debt, cannot affect the value of a firm or its overall cost of funds. Such adjustments merely redistribute the returns generated by the firm's assets among various financial claimants.

Does the Modigliani-Miller theorem hold true for maturity-transformation firms? Imagine that these firms were forced to replace all their money-claim funding with equity or long-term debt financing. (In finance-speak, imagine they were required to "term out" their financing.) In that case, the obligations of these firms would no longer have instrumental value as transaction-reserve assets. If these firms stayed in business, they would be transformed into ordinary finance companies issuing ordinary debt claims. The technology of maturity transformation would be undone; economic agents

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[57] For a contrary point of view, see RICHARD A. POSNER, A FAILURE OF CAPITALISM 19 (2009) ("[F]or most of my purposes in this book, all financial intermediaries can be regarded as 'banks' . . . . There isn't that much difference anymore even between a commercial bank and a hedge fund.").

[58] *See* Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958).

would park their transaction reserves at custodial firms or in currency hoards, where these resources would rest outside the capital markets; the supply curve for investable capital would shift back to the left; interest rates would go up; the equilibrium quantity of credit would decline; economic surplus would shrink. In other words, the value of this industry depends critically on money-claim issuance. The identical point can be put in a slightly different way. If the Modigliani-Miller theorem holds, then a firm's overall cost of financing must remain constant, regardless of its financing structure (again, in the absence of tax or other artificial distortions). But we have seen that money-claims have instrumental value to their holders that is distinct from their intrinsic value. Because they are subject to money demand, they pay extraordinarily low rates of interest. Necessarily, then, replacing money-claims with capital market financing would *increase* these firms' overall financing costs and shift the supply curve for investable capital back to the left. If this analysis is correct, then the financing structure of these firms does indeed affect their value.

On closer examination, this analysis does not actually contradict the Modigliani-Miller theorem. That theorem rests on explicit assumptions, one of which is that the firm's suppliers of funds are able to finance *themselves* on the same terms as the firm. And this condition cannot hold true in the case of maturity-transformation firms. The market will not fund just any economic agent with money-claims; the "moneyness" of a money-claim depends on its price-protection, which requires exceptionally high credit quality. For this reason, maturity-transformation firms invariably invest the vast majority of their assets in credit instruments—that is, in *senior* claims on *other* economic agents. As a logical matter, not every economic agent can limit its assets to senior claims on other economic agents. (Nor should they want to!) Thus, very few savers seeking to store transaction reserves are able to issue low-yield money-claims themselves. Otherwise it would happen all the time.

This discussion illustrates the potential errors that can result from the casual application of ordinary corporate finance concepts to maturity-transformation firms.[59] Standard capital structure principles do not necessarily

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[59] A widely cited recent article presents an interesting example in this regard. *See* Anat R. Admati et al., *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is* Not *Expensive* (Stanford Graduate Sch. of Bus. Research Paper No. 206, 2010). The authors argue that the "social costs of significantly increasing equity requirements for large financial institutions would be, if there were any at all, very small." *Id.* at 1. Relying explicitly on a Modigliani-Miller framework, they reject the notion that increased equity requirements would "raise the banks' overall funding costs." *Id.* at 12. Nor would such requirements "restrict the provision of credit" or "impede economic growth." *Id.* at abstract. The authors do concede that "there is some truth to the notion that *deposits* are different," *id.* at 14 (emphasis added), noting that they are "part of a bank's 'production function'" and that "cutting back on these securities may not be desirable," *id.* at 9. But they insist that "[t]here is *no reason for presuming* that . . . borrowing in the wholesale [money] markets is exempt from" their more general point. *Id.* at 14 (emphasis added). The authors' analysis was recently cited approvingly by the governor of the Bank of England. *See* Mervyn King, Governor, Bank of

apply to these firms, because most of their funding comes not from the capital markets, but from the money market. The financing structure of a maturity-transformation firm—unlike a manufacturing firm or even a finance company—is a critical part of its business model. Indeed, the money-claims themselves are one of this industry's main "products." On a net basis, maturity-transformation firms are a source of *supply*, not of demand, for capital funding. (Needless to say, these conclusions apply to all maturity-transformation firms—not just institutions formally styled as "depositories.")

From a policy standpoint, it would no doubt be convenient if replacing money-claims with equity or long-term debt financing, or (alternatively) requiring money-claims to be fully backed by cash reserves, would give rise to substantial social benefits at negligible social cost.[60] However, the analysis of this section has suggested that there is indeed a real tradeoff. Without understanding this tradeoff, no realistic appraisal of the costs and benefits of government intervention in this area is possible. But this leads us back to the threshold question: what is the rationale for government intervention in the first place?

II. Market Failure and the Case for Government Intervention

A. The Trouble with Money-Claim Defaults

The foregoing account of maturity transformation neglected a key question: why would customers consent to this arrangement? So long as the specialist firms just hold currency in custody, there is no risk of default. But once the specialist firms start investing their customers' funds, the risk of default arises. Rational customers would not expose themselves to this risk without compensation.

To induce its customers to consent, a specialist firm must reduce the fees it charges them. So long as its expected investment earnings exceed the amount of the required fee reduction, an efficient bargain can be reached.

Eng., Address at the Second Bagehot Lecture, Buttonwood Gathering: Banking: From Bagehot to Basel, and Back Again (Oct. 25, 2010).

[60] Economist Gregory Mankiw recently seemed to suggest something along these lines:

> I think it is possible to imagine a bank with almost no leverage at all. Suppose we were to require banks to hold 100 percent reserves against demand deposits. And suppose that all bank loans had to be financed 100 percent with bank capital. A bank would, in essence, be a marriage of a super-safe money market mutual fund with an unlevered finance company . . . . It seems to me that a banking system operating under such strict regulations could well perform the crucial economic function of financial intermediation. No leverage would be required.

Gregory Mankiw, *Comments on Alan Greenspan's "The Crisis,"* Greg Mankiw's Blog (Mar. 19, 2010), http://gregmankiw.blogspot.com/2010/03/comments-on-alan-greenspans-crisis.html. It is true that the banking system Mankiw describes could perform financial *intermediation*. But the social cost of prohibiting *maturity transformation*—which appears to be the suggestion—could be astronomical.

Conceivably this fee reduction might even exceed the amount of the original custodial fee—in which case the specialist firm would need to make a net *payment* to customers to bring them on board. In that case, money-claims would superficially resemble ordinary debt securities (albeit ones offering exceptionally low yields), concealing their basic economic character.

Still, money-claimants will not tolerate significant default risk. In order for money-claims to have instrumental value they must have price-protection, which necessarily entails a very high degree of reliability. If the specialist's short-term obligations become too risky, they will no longer be suitable as transaction-reserve assets. Yet it does not follow that money-claims must be *perfectly* safe.[61] Even currency warehouses are subject to security risks. And money-claimants can condition their funding on specialist firms' compliance with safety parameters that limit the risk of default to an acceptably low level. For instance, they can require that issuers keep sizable currency reserves on hand; they can require that issuers invest only in high-quality credit instruments; they can require a significant layer of "first-loss" equity capital; and so on. If the likelihood of default is perceived to be sufficiently remote, the short-term liabilities of these firms will continue to have instrumental value as transaction-reserve assets.

Even so, once the specialists begin investing their customers' funds, the risk of default can no longer be zero. Maturity-transformation firms by their very nature do not carry enough currency reserves to honor all obligations that are contractually "due." In a world characterized by imperfect liquidity, a maturity-transformation firm cannot monetize all its assets instantaneously. If the firm experiences an unexpected surge of withdrawal orders within a short period of time, it may find itself unable to meet its obligations. Under normal conditions, as we have seen, this problem does not arise—on account of the law of large numbers. So long as the firm collects funds from a large number of savers, and so long as those savers make *independent* deposit and withdrawal decisions, the firm's currency supply stays relatively stable. (Adequate currency reserves and sound liquidity management allow firms to meet withdrawal obligations even on most outlier days.) However, if withdrawals by individual savers cease to be independent events—if they become *correlated*—then the law of large numbers no longer applies. Under these circumstances, contractual payment obligations can quickly overwhelm liquid resources, leading to default.

Defaults by maturity-transformation firms tend to follow a well-known pattern. When money-claimants perceive the possibility of liquidity strains, they begin to withdraw funds to the extent permitted by their contractual rights. These initial withdrawals escalate the (real or perceived) liquidity

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[61] According to one of the leading works of economic theory in this area, "[a]gents will choose to deposit at least some of their wealth in the bank even if they anticipate a positive probability of a run, provided that the probability is small enough." Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401, 409 (1983).

strains, triggering additional withdrawals—and the initial concerns become self-fulfilling.[62] Left unchecked, this run-dynamic leads to default and insolvency proceedings. In severe cases, runs become widespread and seemingly indiscriminate. The resulting contagion is known as a panic.

Two common observations about runs and panics merit emphasis here. The first is that it is entirely possible for a well-capitalized money-claim issuer—one whose assets exceed its liabilities in value—to experience correlated outflows and payment default. Running out of cash and running out of equity are not the same thing; "cash flow insolvency" and "balance sheet insolvency" are logically distinct. The second point is that these phenomena are not limited to institutions formally styled as "depositories." Runs and panics do not observe such formalities. All firms that finance themselves with money-claims are inherently vulnerable to runs.

What is so bad about runs and panics—that is, about defaults by maturity-transformation firms? Why do governments feel compelled to intervene, as they did in the recent crisis? It is often said that such defaults will damage the real economy. (Federal Reserve Chairman Ben Bernanke reportedly warned congressional leaders at the height of the recent crisis that, if they did not pass a rescue bill, "we may not have an economy on Monday."[63]) But we should try to be more specific. A default by another type of financial intermediary, or by a big commercial firm for that matter, might be economically disruptive too. What if anything is different about defaults by maturity-transformation firms?

The analysis so far suggests a preliminary answer. We have seen that money-claims serve an instrumental purpose for their holders as transaction-reserve assets; in this sense they function as "money." But when their issuers default, the character of these instruments instantly changes. For an indefinite period the issuing firm will be unable to redeem them at face value. These defaulted money-claims probably cannot easily be traded—they are no longer liquid. There may be doubt as to whether they will ever be paid in full. Even if there is no such doubt, these instruments no longer "mature" in the near term, so their prices may be affected by changes in interest rates. The value of these distressed instruments is therefore now subject to significant fluctuation *relative to* the medium of exchange. Under these circumstances, the two key requirements for transaction reserves—liquidity and price-protection—are no longer satisfied. Whatever "money" content these instruments had prior to default is immediately lost.[64]

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[62] Diamond and Dybvig note that "[t]he observed variable need not convey anything fundamental about the bank's condition. The problem is that once agents have deposited, anything that causes them to anticipate a run will lead to a run." *Id.* at 410.

[63] Joe Nocera, *As Credit Crisis Spiraled, Alarm Led to Action*, N.Y. TIMES, Oct. 1, 2008, at A1.

[64] Money is destroyed even if the money-claim is secured by collateral that the creditor is legally permitted to seize and liquidate immediately. *See infra* Section III.A. Moreover, for the secured money-claimant, there is never any upside in default. If an over-collateralized repo creditor liquidates its collateral and thereby generates proceeds in excess of the face amount of

Accordingly, failures of maturity-transformation firms instantly reduce the money supply. And sudden, unanticipated monetary contractions should be expected to negatively affect economic output. When money is scarcer, more compensation is required to induce economic agents to part with it—that is, interest rates rise. In this environment, economic agents seeking to borrow funds to finance production or consumption will find that the price of money has gone up in nominal terms. Unless the prices of all assets in the economy can adjust immediately in proportion to the reduction in the money supply, consumption and real investment will be lower than they would have been in the absence of the monetary adjustment. Simply put, when money becomes suddenly scarcer, interest rates go up, and higher interest rates translate into slower economic growth.

This monetary story is not just hypothetical. On the contrary, it is the most widely accepted account of the principal cause of the Great Depression. In their magisterial *Monetary History,* Milton Friedman and Anna Schwartz traced the origins of the Great Depression to a drastic monetary contraction brought about by successive waves of bank failures. In their view, this disaster stood as an indictment of central banking policy: the Federal Reserve's job, they said, was to lend to the banking system to prevent its collapse. It was supposed to serve as lender of last resort—the classic prescription for financial crises. Instead, Walter Bagehot's famous admonition to "lend freely against good collateral" (to use the common paraphrase) had gone unheeded. The Federal Reserve had failed in its basic mission of keeping the money supply stable.

The impact of Friedman and Schwartz's study was and remains profound. (Ben Bernanke in 2002 described their achievement as "nothing less than to provide what has become the leading and most persuasive explanation of the worst economic disaster in American history, the onset of the Great Depression."[65]) Their thesis is generally accepted within mainstream economics. To suggest that monetary conditions did not contribute to the Great Depression is to adhere to an extreme and ahistorical form of so-called "monetary neutrality." Few economists subscribe to that belief. Take Robert Lucas, a towering figure in the rational expectations school of macroeconomics. That school of thought generally questions the extent to which monetary adjustments affect the real economy. Yet even Lucas has

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the repo claim, it must turn those excess proceeds over to the estate. Accordingly, during the recent crisis, some dealers saw runs even on repo instruments that were fully collateralized by U.S. Treasury and agency securities—a development which apparently came as a shock to regulators. *See Recent Events in the Credit Markets: Testimony before the S. Comm. on Banking, Hous., & Urban Affairs,* 110th Cong. (2008) (statement of Christopher Cox, Chairman of the U.S. Sec. & Exch. Comm'n) ("[W]hat neither the [SEC's] regulatory approach nor any existing regulatory model has taken into account is the possibility that secured funding, even that backed by high-quality collateral such as U.S. Treasury and agency securities, could become unavailable.").

[65] Ben S. Bernanke, Governor, Fed. Reserve, Address at the Conference to Honor Milton Friedman: On Milton Friedman's Ninetieth Birthday (Nov. 8, 2002).

rejected monetary neutrality in its *absolute* form. In his Nobel Prize lecture—titled "Monetary Neutrality"—Lucas observed that "[m]onetary contractions are attractive as the key shocks in the 1929–1933 years, and in other severe depressions, because there do not seem to be any other candidates."[66]

Still, the inquiry need not stop here. There is something a little strange, or at least incomplete, about this generalized monetary account. In focusing only on *aggregate* monetary variables, it seems oddly disconnected from the failed issuers themselves. That is to say, it does not recognize any differential impact on those economic agents that are *directly* connected to the failed maturity-transformation firms. Instead, the Friedman-Schwartz monetary account treats failures of money-claim issuers as the functional equivalent of contractionary monetary policy: the money supply shrinks, interest rates go up, and the rate of economic growth declines. And this does not seem to capture the whole story. If *aggregate* monetary variables are all that matters, then the Federal Reserve has an easy solution: the central bank can always print more money. In that case there is no need for a lender of last resort. In the event of a financial panic, the Federal Reserve only needs to purchase Treasury securities on the open market—the textbook response to any downturn in the business cycle. This generalized monetary account seems to miss something important; it appears to be somewhat abstract and divorced from context.

Might there not be more *direct* forms of collateral damage arising from the failures of these firms? In his influential academic work, Ben Bernanke argued as much. He suggested that widespread bank failures during the Great Depression had a significant *nonmonetary* impact, by disrupting channels of credit.[67] According to Bernanke, widespread bank failures meant that much of the lending industry was no longer in operation for an extended period of time. As a result, businesses and individuals had a much harder time getting credit. Bernanke thus shifted the focus away from a highly generalized monetary view and toward a more contextualized and tangible account, one that stressed the institutional mechanisms of credit delivery. Even so, Bernanke has emphasized that his explanation was intended to be not a competing view, but a complementary one. "[A]s I have always tried to make clear," he has said, "my argument for nonmonetary influences of bank failures is simply an embellishment of the Friedman-Schwartz story; it in no way contradicts the basic logic of their analysis."[68]

Still, we have omitted one other obvious form of collateral damage from money-claim defaults. That is the direct harm to the *actual holders* of

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[66] Robert Lucas, *Monetary Neutrality,* Nobel Prize Lecture (Dec. 7, 1995). He went on: "The observation that money changes induce output changes in the same direction receives confirmation in some data sets . . . . Large scale reductions in money growth can be associated with large scale depressions . . . ." *Id.*

[67] *See* Bernanke, *supra* note 4.

[68] *See* Bernanke, *supra* note 65.

the now-distressed money-claims. These holders had allocated resources to money-claims for instrumental purposes: the now-distressed instruments had been part of their transaction reserves. Upon an issuer default, these holders might encounter serious practical problems. They might have payments due very soon to trade creditors, employees, or lenders, for example. Unless the affected money-claimants can monetize other assets right away, they might have trouble meeting their near-term transactional requirements. And a sudden inability to meet transactional needs may lead to *consequential* losses—opportunity costs, operational disruption, reputational damage, or even default. Critically, these consequential losses are *distinct* from any losses attributable to the impairment of the value of the instruments themselves. In fact, the consequential losses from default might far exceed any such investment losses. Nor will these consequential losses be retroactively mitigated if the money-claims are *ultimately* honored in full. Here again, Bagehot is a reliable guide: "[U]ltimate payment is not what the creditors of a bank want; they want present, not postponed, payment; they want to be repaid according to agreement; the contract was that they should be paid on demand, and if they are not paid on demand they may be ruined."[69] The instrumental value of money-claims and the consequential losses that arise when their issuers default are two sides of the same coin.

It is no answer to say that the affected economic agents will just monetize other assets. That is tantamount to assuming that all assets are liquid—that they can all be sold (or borrowed against) on a moment's notice. If all assets were perfectly liquid then there would be no need for economic agents to hold transaction reserves in the first place. In the real world, money-claim defaults cause real problems for their holders. Many affected money-claimants might need to immediately reduce consumption and investment in response to their reduced transaction reserves. In the event of widespread, simultaneous defaults by large numbers of maturity-transformation firms—the persistent historical pattern—the aggregate consequential losses conceivably could be very substantial.

In a sense, this is just another version of the Friedman-Schwartz story. The direct harm to affected money-claimants is unquestionably a *monetary* impact. It is, however, a more contextualized account: it involves not just aggregate monetary conditions, but rather direct collateral damage to a specific group of economic agents. Compared to these *direct* monetary consequences of an issuer default, the indirect harm to third parties through aggregate monetary forces appears rather diffuse and attenuated—almost incidental. And it is clear that ordinary monetary policy is ill-suited to the task of addressing the problems of these particular economic agents. Any newly printed money would need to "find" the affected money-claimants to alleviate their problems. A more promising approach would be to target the affected parties directly, with loans or other forms of government support for

[69] BAGEHOT, *supra* note 25, at 39–40.

the distressed issuers themselves. This of course is the traditional policy prescription for financial crises.

But why should we care about the direct harm to the affected money-claimants themselves? Did they not assume the risk? What is the basis for protecting them from the consequences of their own decisions? To justify government intervention, we need a cogent explanation for how it can improve upon market outcomes.

B. Collective Action and Market Failure

At first blush, consequential losses to money-claimants might not seem to provide a sound basis for regulating the maturity-transformation industry. It is no secret that maturity-transformation firms can fail. Money-claimants willingly assume this risk and, indeed, are compensated for it. This is a voluntary exchange—one that the money-claimants judged to be in their best interests. They decided the reward was worth the risk.

All of this is true, but so what? It only shows that money-claimants are no worse off in a world with maturity transformation than in a world without it. But this is not the question at hand. The pertinent question is whether government intervention can *improve* upon the laissez-faire outcome. We do not say that speed limits are unjustified because drivers "assume the risk" of getting on the highway. "Assumption of risk" per se does not constitute a valid basis for rejecting government intervention.

Still, the rebuttable presumption ought to be that markets produce better outcomes than governments. If the consequential losses from money-claim defaults were so serious, should we not expect the market to find an efficient solution? We can stipulate that there will always be *investment* losses in an uncertain world. But there is no necessary connection between an issuer's investment losses and its money-claimants' consequential losses. They are logically distinct. Might it be possible to realize the economic gains that arise from maturity transformation while avoiding the consequential losses that money-claimants experience when issuers default?

To illustrate this point, we can imagine a hypothetical bargain under which these consequential losses would not happen at all. Under this hypothetical deal, money-claimants would agree in advance never to "run" on an issuing firm, even if they feared that investment losses had wiped out its equity. In operational terms, they would simply agree never to alter their deposit and withdrawal behavior on account of perceptions about the issuing firm's solvency. If honored, this deal would ensure that the law of large numbers would remain operative so that the firm could continue to meet its obligations regardless of any investment losses. The deal would also specify that if at any point there turned out to be insufficient value (as ascertained by an agreed procedure) to make money-claimants whole, they would *each* take a haircut on their money-claims (perhaps a few pennies on the dollar) to recapitalize the firm. In the meantime they would each have full access to

their funds *as needed*. If it ever became apparent that a haircut might become necessary, money-claimants would have ample time to make alternative arrangements to restore their transaction reserves by monetizing other assets or future earnings.

The bargain described here is effectively just a pre-negotiated financial restructuring in which money-claimants agree not to exercise their contractual rights to withdraw outside the ordinary course. If the deal were honored, it would prevent an uncoordinated run on the issuer: individual money-claimants would be contractually barred from seeking to get to "the front of the line" if they perceived the firm to be experiencing difficulties. This bargain would of course have no effect on the issuer's investment losses. It would, however, avoid the *consequential* losses to money-claimants that arise from a sudden and unwelcome "exchange" of money assets for non-money assets. If such a bargain were possible, then money-claimants would have it within their collective power to avoid these consequential losses altogether. It would not be surprising if this bargain were significantly welfare-enhancing in the aggregate for holders of money-claims.

It is obvious that reaching such a bargain would be impossible in the real world. If money-claimants waited until liquidity strains emerged before starting to negotiate, it would be too late: bargains take time and runs are fast. More realistically, the issuing firm itself might require all its money-claimants to agree to the terms of this bargain prior to depositing. But there is an even more fundamental problem: any effort to monitor and enforce compliance with the terms of this bargain would encounter insuperable practical obstacles. The effectiveness of such an agreement would depend critically on money-claimants' not altering their deposit and withdrawal patterns, even if the issuing firm incurred substantial investment losses. But if any given money-claimant doubted that others would honor the deal, it would have an incentive to skew toward withdrawals. Even a modest skew by a substantial number of money-claimants would deplete the issuer's cash reserves, which are equal to only a small fraction of its outstanding money-claims. And the large number of money-claimants—a necessary precondition to the operation of the law of large numbers that makes maturity transformation possible in the first place—presents daunting problems when it comes to policing and enforcing compliance. Proving in court that any given money-claimant withdrew (or refrained from depositing!) more funds than it would have under normal conditions would be very challenging, to say the least. Such lawsuits might need to be pursued against tens of thousands of individual money-claimants, some with very small balances. Clearly this would not be realistic. Unless this contractual requirement could be effectively enforced—through ex ante judicial compulsion or through a meaningful threat of ex post damages—it would not do any good.

Because cooperation is impossible, money-claimants will rationally seek to improve their own positions at the expense of others. Each money-claimant has an incentive to withdraw once a run is underway—leading to

default and consequential losses and leaving money-claimants worse off in the aggregate. This is a well-recognized kind of economic problem. The situation resembles a "tragedy of the commons"—a classic collective action problem in which the uncoordinated actions of individual economic agents lead to an inefficient outcome.

The inability to reach a value-maximizing bargain is a signature of market failure. Indeed, it is arguably a characteristic of just about *every* market failure. In his classic *Problem of Social Cost,*[70] Ronald Coase famously illustrated this point by means of a simple thought experiment. In the absence of transaction costs, he reasoned, persons harmed through pollution could collectively bargain with producers to alter or even cease production. Coase demonstrated that, in a world with no bargaining frictions, efficient outcomes would be reached *regardless* of the initial allocation of legal rights. Where there are transactions costs, however, it is a different story: efficient bargains may not be achievable. In that case, Coase argued, government intervention may be warranted on efficiency grounds. The relevance of this simple insight to the present analysis is sufficient to merit quoting Coase at some length:

> In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost . . . .
>
> [T]here is no reason why, on occasion . . . governmental administrative regulation should not lead to an improvement in economic efficiency. This would seem particularly likely when . . . a large number of people are involved and in which therefore the costs of handling the problem through the market or the firm may be high . . . .
>
> Of course, if market transactions were costless, all that matters (questions of equity apart) is that the rights of the various parties should be well-defined and the results of legal actions easy to forecast. But as we have seen, the situation is quite different when market transactions are so costly as to make it difficult to change the arrangement of rights established by the law.[71]

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[70] Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).
[71] *Id.* at 15–19.

In other words, collective action problems represent *precisely* the kinds of circumstances under which government intervention might improve upon market outcomes.

This analysis has an instructive parallel in the laws governing corporate insolvency. Bankruptcy lawyers know that every corporate insolvency presents a collective action problem. The operation of ordinary debtor-creditor law would allow creditors to seize and liquidate the assets of an insolvent firm on a first-come, first-served basis. In the absence of bankruptcy law, the result would be a run by creditors on the insolvent firm's assets and a piecemeal dismantling of the firm. If there were value to be had in keeping some or all of the firm's assets together—as there often is—that value would be lost. Corporate bankruptcy law is designed to solve this collective action problem. [72] Creditors' claims are legally stayed and their contractual rights to terminate are abrogated. The whole point of this collective proceeding is to preserve the value of the firm's assets—value that would be impaired by the uncoordinated actions of individual creditors. This compulsory regime, which necessarily overrides *individual* creditors' contractual rights, makes creditors *as a whole* better off.

The purpose of corporate bankruptcy procedures (preserving the value of the firm's assets or enterprise) is very different from the purpose of the hypothetical bargain among money-claimants described above (preventing consequential losses arising from defaults by money-claim issuers). And it is equally clear that the bankruptcy regime does not provide a solution to the problem of money-claim defaults: imposing a legal stay on money-claims would instantly turn them into non-money, which is exactly what the hypothetical bargain is designed to avoid. The point here is that mandatory, collective solutions are not a foreign concept in the context of private firm insolvencies. It should not be surprising if government intervention could enhance efficiency in the context of maturity-transformation firm failures.

To be sure, it does not follow that government intervention *will* improve upon laissez-faire outcomes in this area. But this discussion does throw the question at issue into sharp relief. It is not the case that government intervention is unwarranted because money-claimants have "assumed the risk" of default. (No one would say that bankruptcy law is unjustified because creditors have "assumed the risk" of uncoordinated runs on insolvent firms' assets!) From the perspective of economic efficiency, assumption of risk is beside the point. We can see that a hypothetical bargain among money-claimants could theoretically enhance efficiency but is not practically attainable. The question is whether government intervention might improve upon market outcomes under these circumstances, which amount to a market failure.

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[72] *See generally* THOMAS H. JACKSON, THE LOGIC AND LIMITS OF BANKRUPTCY LAW (1986).

Before considering government intervention, however, we should ask whether any other *private* solutions to the problem of money-claim defaults suggest themselves. What about private insurance? Money-claimants know that they will experience consequential harm in the unlikely event of an issuer default. Presumably they would be willing to pay something to insure against this possible loss. This circumstance presents an opportunity for a trade in risk. In return for a fee, an insurance firm could agree to promptly deliver to money-claimants, in the event of an issuer default, "good" money-claims to replace their now-distressed, "bad" ones. If this insurance policy were reliable, then a market solution would be available to money-claimants without any need for government intervention.

No such insurance policy is available in the real world. It is not hard to see why. For insurance to be commercially viable, an insurance provider must be better equipped than its policyholders to bear the risk in question. Imagine the characteristics of this insurance firm. It would need to be able to provide "good" money-claims to policyholders immediately and reliably upon the default of a money-claim issuer. Such an insurance firm must therefore be prepared to experience sudden demands for large quantities of money-claims from its policyholders—particularly since maturity-transformation firms tend to fail in simultaneous fashion. To credibly withstand these demands, the insurance firm would need to hold large quantities of extremely safe money-claims on standby. It would also need to have a stable funding structure so that its *own* financing sources could not deplete those assets at an inopportune time, rendering the firm unable to meet its obligations to policyholders. This insurance firm would be the opposite of a maturity-transformation firm: it would finance itself in the capital markets and park the proceeds in the low-yielding money market (or in currency itself). To make this "negative carry" business model profitable, the fees charged to policyholders would need to be substantial.

More fundamentally, these insurance firms would defeat the whole purpose of maturity transformation. If maturity transformation generates economic value by funneling otherwise idle transaction reserves into the capital markets, these insurance firms would neutralize that function by issuing capital-market claims and parking the proceeds in money-claims. That is to say, these insurance firms would undo the very economic surplus created by maturity transformation: they would shift the supply curve for investable capital back to the left. If the expected damage from money-claim defaults were high enough to outweigh the entire benefit of maturity transformation, then maturity transformation would not have arisen in the first place. Money-claimants would have just stuck with custodial warehouses.

This analysis provides a useful transition to the topic of government intervention. For there is one party that is uniquely well-equipped to provide such an insurance policy: the issuer of legal tender, i.e., the government. The government does not need to remove money-claims from circulation in order to provide insurance to money-claimants. It can always create money if and

when needed. It therefore can write insurance policies for money-claimants without undoing the incalculable economic surplus that arises from maturity transformation. Perhaps it is no accident that, as we will see presently, such insurance has been a cornerstone of U.S. bank regulation since the 1930s.

C. Policy Alternatives (and a Brief History of U.S. Bank Regulation)

The fact that maturity transformation is associated with a market failure does not necessarily mean that government intervention will make matters better. Policy intervention is always costly, and it may well be the case that the social cost of intervention would exceed any likely benefit—even in an area where an identifiable collective action problem prevents the realization of gains from trade.

Nevertheless, it is worth noting that governments in the United States and abroad have virtually always treated banking firms (historically the predominant issuers of money-claims) as warranting special regulation. Indeed, the regulatory requirements applicable to banks have traditionally been simply of a different order of magnitude than those governing any other competitive industry. Whether this extraordinary degree of regulation has actually improved upon laissez-faire conditions is another question; maybe all this regulation has been economically unjustified. But the sheer persistence and ubiquity of these requirements, not to mention their early pedigree, suggest that they should not be lightly dismissed. Highly inefficient commercial rules would not normally be expected to weather the political process for centuries, and across every major jurisdiction.

But let us address the question directly. How, specifically, might the government improve upon market outcomes in this area? What policy measures suggest themselves? We can start by looking to history. Bank regulation in the United States has proceeded through three broad phases—reflecting three distinct (and cumulative) approaches to the regulation of money creation. It is instructive to consider these in turn.

Phase 1: Risk Constraints (and the "First Law of Banking"). If defaults on money-claims are problematic, one straightforward idea would be to impose regulatory risk constraints on money-claim issuers to make their failures less likely. These might include restrictions on risky activities (coupled with diversification requirements) to reduce the likelihood of a sudden diminution in asset value; leverage limits (i.e., capital requirements) to provide a cushion against losses to money-claimants; cash reserve requirements to reduce the chances of a liquidity shortfall; and a supervisory regime to monitor compliance with these regulations. Importantly, as a matter of logic, imposing these kinds of risk constraints would mean *disallowing* non-compliant firms from issuing money-claims. In other words, money-claim issuance would necessarily become a *privilege* rather than a general right: compliance with the applicable risk-constraint regulations would be the price of admission.

Unsurprisingly, this risk-constraint approach was the first to emerge historically. In the United States, legal constraints on bank risk-taking go back to the earliest days of the republic. Take New York, the most important banking jurisdiction in the United States since colonial times.[73] That state had enacted "restraining acts" against "unauthorized banking"—disallowing unlicensed persons from "receiving deposits" or issuing bank notes (redeemable instruments that circulated as a medium of exchange)—by 1804, and perhaps even earlier.[74] Moreover, those firms that *were* authorized to accept deposits and issue bank notes were subject to significant risk constraints: since 1791, banking firms in New York were prohibited from "trading in merchandize," owning stocks, and incurring debt that exceeded three times their capital.[75]

Later, this risk-constraint approach was embodied in federal law. The National Bank Act, enacted in 1863 and 1864,[76] established a federal Comptroller of the Currency and authorized it to create a new category of federally chartered banks.[77] From the start, these "national banks" were required to abide by a detailed and comprehensive array of regulatory risk constraints. These included strict limitations on authorized activities; diversification requirements; cash reserve requirements; capital requirements; and quarterly and monthly financial reporting requirements.[78] The National Bank Act also established a supervisory regime that gave the Comptroller the "power to make a thorough examination into all the affairs" of national banks.[79] (It is notable that these extensive requirements, established a century and a half ago, largely encompass the modern suite of regulatory risk constraints that are applied to the depository banking sector.)

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[73] The following account is drawn in part from Judge George Franklin Comstock's remarkable, ninety-one page opinion in the case of *Curtis v. Leavitt*, 15 N.Y. 9 (1857), which traces the history of early New York banking law.

[74] *Id.* at 68–9. According to the court, "[t]he particular object of the [restraining acts], it is well known, was to restrain all unincorporated persons and all corporations which had not a special authority of law from exercising banking powers. The most delicate and dangerous by far of all these powers was that of creating a paper currency." *Id.* at 69. The New York State Banking Department has indicated that restraining acts in New York go back to 1782. *See* STATE OF NEW YORK BANKING DEPARTMENT, *A Brief History of Financial Regulation in New York State*, http://www.banking.state.ny.us/auhistory.htm (last visited Mar. 26, 2011).

[75] *Curtis*, 15 N.Y. at 74–5. These risk restrictions, the court observed, were "designed of course to confine these institutions to the business for which they were chartered." *Id.* at 75. The court also noted that these restrictions were supplemented in 1828 with "a new and stringent series of regulations" designed to "prevent the insolvency" of banks, including reporting requirements to the state comptroller. *Id.* at 76–7.

[76] National Bank Act of 1864, ch. 106, 13 Stat. 99 (codified as amended in scattered sections of 12 U.S.C.).

[77] *See id.* §§ 17–18.

[78] *See id.* § 8 (activity restrictions); *id.* § 29 (diversification requirements); *id.* § 31 (cash reserve requirements); *id.* § 7 (capital requirements); *id.* § 34 (reporting requirements). The National Bank Act also included restrictions on ownership of real estate, *see id.* § 28, and restrictions on dividends and other capital withdrawals, *see id.* §§ 33, 38.

[79] *Id.* § 54.

Despite these state and federal risk constraints, banking panics were a recurring part of the financial landscape in the nineteenth and early twentieth centuries. Even after the enactment of the National Bank Act, the United States experienced banking panics in 1873, 1884, 1890, 1893, and 1907—episodes that were associated with major disruptions to the broader economy. Arguably, the fault lay not with the risk-constraint approach per se, but rather with its uneven implementation. In particular, the regulation of state banks (and state-chartered trust companies that funded themselves with money-claims) in this era was inconsistent and generally much more lenient than national bank regulation.[80] Perhaps a more stringent and uniform set of

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[80] This was a problem that Congress tried to solve: Congress attempted to *federalize* bank chartering and regulation soon after the passage of the National Bank Act. Fatefully, however, its chosen device to drive state banks out of existence was to impose a confiscatory tax on the issuance of *bank notes* by institutions other than federally chartered banks. *See* Act of March 3, 1865, ch. 78, 13 Stat. 484 (as amended by Act of February 8, 1875, ch. 36, 18 Stat. 311) ("[E]very person, firm, association other than a national bank association, and every corporation, State bank, or State banking association, shall pay a tax of ten per centum on the amount of their own notes used for circulation and paid out by them."). Once the tax was enacted, state banks quickly responded by simply replacing bank notes with a different type of money-claim—namely, checking deposits. *See* George E. Barnett, *State Banks and Trust Companies Since the Passage of the National-Bank Act*, 7 PUBLICATIONS OF THE NATIONAL MONETARY COMMISSION 11 (1911). Thus arose a classic instance of financial regulatory arbitrage.

Amazingly, a similar sequence of events had already played out in England. According to Walter Bagehot, in the early eighteenth century, Parliament gave the Bank of England the "privilege or power" of "exclusive banking," making it unlawful in England for any other "body politic or corporate" or any partnership exceeding six persons "to take up any sum or sums of money on their *bills or notes payable on demand or at any less time than six months* from the borrowing thereof . . . ." BAGEHOT, *supra* note 25, at 97–98 (emphasis added). Bagehot then observed that "*deposit* banking, in which no bills or promissory notes are issued, was not then known on a great scale, and was not called banking." *Id.* at 98 (emphasis added). The result should come as no surprise: "And then it was seen that the words I have quoted only forbid the issue of negotiable instruments, and not the receiving of money when no such instrument is given. Upon this construction . . . all our older joint stock banks were founded." *Id.* at 99.

In the United States, it was not until about the turn of the twentieth century that state legislatures came to the realization that deposits might pose more or less the same policy problems as bank notes—that issuing deposits might indeed be a form of money creation. As noted in a National Monetary Commission report in 1911:

> The increasing attention paid in recent years by the state legislatures to the regulation of the state banks has been partly due to the rapid growth of the banks in numbers and in financial importance; but it is to be accounted for primarily by a *change of view as to the purpose of banking regulation.* The antebellum state-bank regulations were intended to secure the safety of the bank note. Although the *depositor* was protected by many of the regulations, this protection was purely incidental. The view that note-issuing banks alone required governmental regulation persisted for a considerable time after the passage of the national-bank act. Since the national banks had a monopoly of the issue of bank notes, the regulation of state banks was considered needless. As the importance of note issue as a banking function decreased, banking regulation, as seen in the national-bank act, began to be considered desirable as a protection to *depositors.*

See Barnett, *supra,* at 11–12 (emphasis added). There is an irony here that cannot go unmentioned. Today, issuers of deposit obligations *are* subject to extensive regulation—but issuers of modern bank note-like instruments (short-term negotiable promissory notes, i.e., the instruments of the money market) are not!

regulatory risk constraints would have been more conducive to stable financial conditions.

Phase 2: Lender of Last Resort. At any rate, the persistence of bank defaults gave rise to a second policy approach to complement risk constraints: discretionary central bank support, i.e., "lender of last resort" powers. There was precedent for this approach abroad—notably in England. And the foremost theorist and advocate of the lender of last resort was none other than Walter Bagehot.[81] Bagehot had championed central bank lending as the antidote to panics: "Theory suggests, and experience proves," he had written, "that in a panic the holders of the ultimate Bank reserve (whether one bank or many) should lend to all that bring good securities quickly, freely, and readily. By that policy they allay the panic; by every other policy they intensify it."[82] In his view, the greatest risk to the public was that the central bank would *decline* to lend when money market creditors panicked: "The only safe plan for the Bank [of England] is the brave plan, to lend in a panic on every kind of current security, or every sort on which money is ordinarily and usually lent."[83] Moreover, Bagehot's view implied that the central bank must maintain readiness even in calm times: "[W]e must keep a great store of ready money always available, and advance out of it very freely in periods of panic, and in times of incipient alarm."[84]

In the aftermath of the Panic of 1907—a particularly disruptive episode—Congress finally adopted Bagehot's policy prescription. That panic brought the banking system to the brink of collapse, a calamity averted only through a series of bold initiatives orchestrated by the era's most prominent investment banker, John Pierpont Morgan. Congress, appalled to find the nation's financial stability at the mercy of one powerful individual with no public responsibilities, decided that another approach was needed. The result was the Federal Reserve Act of 1913.[85] That law established a quasi-public central bank and authorized it to supply liquidity to the banking system in times of stress. This new tool—the availability of *affirmative support* to prevent money-claim defaults—represented a significant departure from prior practice in the United States. Regulatory risk constraints were no longer the exclusive tool of panic-prevention; they were now supplemented by discre-

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[81] Friedman and Schwartz referred to *Lombard Street* as "the *locus classicus* of central bank policy." FRIEDMAN & SCHWARTZ, *supra* note 3, at 395; *see also* CHARLES P. KINDLEBERGER, MANIAS, PANICS, AND CRASHES 227 (5th ed. 2005) (1978) ("The role of the lender of last resort was not respectable among theorists until Bagehot's *Lombard Street* appeared in 1873."). Bagehot's influence persists. *See* DAVID WESSEL, IN FED WE TRUST 34 (2009) ("To an astounding degree, Bagehot's description remains the basic guide for central bankers more than 125 years later. They cite it as an authoritative guide to behavior and refer to it with the same reverence that ministers and rabbis use when quoting from the Bible.").

[82] BAGEHOT, *supra* note 25, at 173.

[83] *Id.* at 199.

[84] *Id.* at 56.

[85] Pub. L. No. 63-43, 38 Stat. 251.

tionary public liquidity facilities that could be tapped to support banks during a crisis.

Having an authority is one thing; *using* it is another. Despite the Federal Reserve's existence, waves of bank failures swept through the country in the early 1930s. Friedman and Schwartz attributed the Great Depression that followed to the Federal Reserve's hesitance to use its lending powers to support the banking system. "[P]ursuit of the policies outlined . . . by Bagehot in 1873," they wrote, "would have prevented the catastrophe."[86] Instead, despite "ample powers,"[87] the Federal Reserve followed a "passive, defensive, hesitant policy."[88] According to Friedman and Schwartz, it was a "plain description of fact" that monetary policy from 1929 to 1933 was "inept."[89] And they viewed the main obstacles to be faulty *ideas*: Federal Reserve officials of that era, they said, "tended to regard bank failures as regrettable consequences of bad management and bad banking practices, or as inevitable reactions to prior speculative excesses, or as a consequence but hardly a cause of the financial and economic collapse in process."[90] To Friedman and Schwartz this was a "confused and misguided" attitude,[91] one that defeated the very purpose of establishing a central bank:

> The leadership which an independent central banking system was supposed to give the market and the ability to withstand the pressures of politics and of profit alike and to act counter to the market as a whole, these—the justification for establishing a quasi-governmental institution with broad powers—were conspicuous by their absence.[92]

It should be noted, however, that the Federal Reserve's powers were limited. Its architects had envisioned that support for the banking industry would be both discretionary and subject to strict statutory constraints. In particular, the types of assets that could serve as collateral for central bank loans under the original Federal Reserve Act were quite narrow.[93] While it is true that the Federal Reserve did not exercise the full extent of its support powers in the early 1930s, it nevertheless is not obvious that a more vigorous exercise of the Federal Reserve's limited powers would have succeeded in avoiding economic catastrophe.[94]

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[86] FRIEDMAN & SCHWARTZ, *supra* note 3, at 407.
[87] *Id.* at 408.
[88] *Id.* at 411.
[89] *Id.* at 407.
[90] *Id.* at 358.
[91] *Id.* at 373.
[92] *Id.* at 391.
[93] The Federal Reserve Act codified the so-called "real bills" doctrine, which limited the Federal Reserve's discounting authority to short-term commercial bills. *See* Federal Reserve Act of 1913, Pub.L. No. 63-43, § 13, 38 Stat. 251.
[94] For a similar argument about the real-bills constraint, see PERRY MEHRLING, THE NEW LOMBARD STREET 43 (2010) ("In retrospect, the Fed certainly could have started its monetary

Phase 3: Deposit Insurance. Either way, Congress responded in 1933 with the third and final major step in the development of modern bank regulation.[95] That was to make federal support for the bulk of the financial system's money-claims, in effect, *non*-discretionary. The establishment of deposit insurance fundamentally altered the social contract between the banking system and the rest of society. Federal protection of eligible money-claimants was no longer contingent; it was guaranteed up-front. And coincident with the creation of this system, runs and panics disappeared from the financial scene. Gorton describes the era that followed as a "Quiet Period" that lasted for nearly three-quarters of a century:

> The period from 1934, when deposit insurance was enacted, until the current crisis is somewhat special in that there were no systemic banking crises in the U.S. It is the "Quiet Period" in U.S. banking. This Quiet Period led to the view that banking panics were a thing of the past . . . From a longer historical perspective, however, banking panics are the norm in American history.[96]

It is worth taking a moment to examine the salient institutional features of the modern deposit insurance regime. The apparent benefits of this system—the prevention of money-claim defaults and the associated monetary effects—are accompanied by an important cost. Specifically, deposit insurance entails the potential for a substantial commitment of public resources. (To be sure, so does lender-of-last-resort authority; but at least in that case the commitment is *discretionary*.) Like any government resource commitment, deposit insurance creates incentives for resource misallocation. Unless the government can price deposit insurance premiums perfectly and update them continuously, depository owners and management can extract value from the government's insurance policy by taking greater risks. This phenomenon is known as moral hazard.

Moral hazard is a feature of *all* insurance markets. There are established techniques for managing it—measures to align incentives and pre-specify risk parameters to be adhered to during the term of the insurance contract. Specifically, in addition to charging premiums that are tailored to the degree of risk underwritten, insurance firms almost always impose (i) covenants and monitoring rights to constrain risky behavior, and (ii) deductibles to align incentives and absorb "first loss." It is notable that the modern deposit insurance regime incorporates *precisely* these features. It supplements risk-based insurance premiums with (i) activity restrictions and supervision to constrain risky behavior (analogous to restrictive covenants and monitoring),

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expansion earlier . . . . But unless the Fed was prepared to discount the private securities that made up the bulk of bank balance sheets, the banks would have failed anyway.").

[95] *See* Banking Act of 1933, Pub. L. No. 73-66, 48 Stat. 162 (establishing the FDIC as a temporary agency); Banking Act of 1935, Pub. L. No. 74-305, 49 Stat. 684 (establishing the FDIC as a permanent agency).

[96] Gorton, *supra* note 24, at 2.

and (ii) capital requirements to align incentives and absorb first loss (analogous to insurance deductibles). That is to say, the deposit insurance regime embodies the standard private-sector techniques for counteracting the effects of moral hazard.

Importantly, then, the emergence of deposit insurance did not make regulatory risk constraints obsolete. On the contrary, it made risk constraints (and the first law of banking) even more important. But the basic economic purpose of these risk constraints changed. They were no longer primarily a tool of panic-prevention; that objective was largely accomplished by deposit insurance itself. Rather, risk constraints now were needed to address the adverse incentives that were an inescapable consequence of public support. Thus, risk constraints became the underlying terms and conditions of an insurance policy.

The model of modern bank regulation that emerged was, in effect, a public-private partnership. The government recognized the money supply (insofar as it consisted of insured deposits) as a public good: within the insured depository system, money was established as a sovereign obligation, not a private one. But the government outsourced to private firms—firms with investment expertise and detailed knowledge of specific markets—the *investment* of otherwise idle transaction reserves in the capital markets.[97] Naturally, this outsourcing contract came with a set of standard terms, consisting of the risk constraints of traditional bank regulation. (It also came with fees; the government now occupied the senior-most position in the financing structure of insured depositories, entitling it to direct compensation.) Here we see the government seeking to achieve three goals simultaneously: first, realize the enormous economic surplus that arises from letting private specialists invest the economy's pooled transaction reserves; second, stabilize financial conditions and limit consequential monetary losses by assuming public responsibility for the money supply (or the largest component of it anyway); and third, manage the unavoidable incentives for resource misallocation that arise from pursuing the first two goals.

Of course, deposit insurance did not apply to *all* money-claims—just deposits. This limitation meant that the effectiveness of deposit insurance in stemming panics depended critically on the fact that insured deposits constituted a large majority of all money-claims in the U.S. financial system. This

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[97] Bagehot stressed the importance of this decentralization:

> [A] central bank, which is governed in the capital and descends on a country district, has much fewer modes of lending money safely than a bank of which the partners belong to that district, and know the men and things in it . . . . A banker who lives in the district, who has always lived there, whose whole mind is a history of the district and its changes, is easily able to lend money safely there. But a manager deputed by a single central establishment does so with difficulty. The worst people will come to him and ask him for loans. His ignorance is a mark for all the shrewd and crafty people thereabouts.

BAGEHOT, *supra* note 25, at 89.

was indeed the case for many decades. However, as we have seen, by the time of the recent crisis, *private* money-claims had come to exceed government-insured bank deposits by a substantial margin. That is, by 2007 the public-private partnership approach to money creation had eroded through regulatory arbitrage—through the emergence and growth of shadow banking. Coincident with this erosion, unstable conditions resurfaced.

To be sure, the moral-hazard costs associated with the public-private partnership approach are serious. The government is unlikely to succeed in pricing and administering the regime perfectly, and resource misallocation is therefore inevitable. (The savings and loan debacle of the 1980s and early 1990s is a case in point.) Yet government intervention is never perfect. If perfection is the standard, then government solutions cannot be brought to bear on any social problems—from environmental protection to antitrust enforcement to national defense. Intervention in all of these areas entails government appraisals of value, and any deficiencies in its appraisals must result in resource misallocation and social costs. But when markets fail we are already in a world of "second best." The question in every case is whether the benefits of any given policy intervention outweigh the costs. As in other areas of government activity, the social cost of publicly underwriting the money supply through a public-private partnership system might depend critically on questions of institutional design. It is obvious, for example, that an unconditional government commitment to honor privately issued money-claims without any accompanying terms and conditions would result in catastrophic resource misallocation. (Actually, the years leading up to the recent crisis might profitably be understood through this prism.) But this presents a false choice. The government has never offered deposit insurance willy-nilly to all comers.

The point here is simply to elucidate the available alternatives. There are costs and benefits associated with *any* approach to the regulation of money-creation—and with a laissez-faire system. Risk constraints are costly too—and, as a historical matter, risk constraints alone proved insufficient to prevent banking panics. The historical progression of depository regulation has been one of increasingly *affirmative* measures to prevent money-claim defaults via public support facilities, coupled with an array of risk constraints and other regulatory obligations to address the incentive problems that arise from any commitment of public resources. As we have seen, this historical evolution culminated in a public-private partnership approach—the establishment of which inaugurated an unprecedented period of stable, panic-free financial and monetary conditions.

Against this backdrop, we can now examine the Dodd-Frank Act's approach to regulating money creation. The new law represents a clear departure from the historical trajectory described above, in which money creation was increasingly recognized as a public good. The new law's architects had something very different in mind.

III. What the Dodd-Frank Act Means for the Money Market

A. The Mechanics of "Orderly" Liquidation

The Dodd-Frank Act is an extensive piece of legislation, with far-reaching implications for almost every major area of the financial markets. The present Article will not attempt to trace all the likely effects of the new law on the market for money-claims. We can confine ourselves to the core issue. The discussion above highlighted a potential problem associated with money-claim *defaults*. Necessarily, then, we are talking about the failures of firms that issue these instruments. How will failures of big money-claim issuers (maturity-transformation firms) be handled after the Dodd-Frank Act?

One of the centerpieces of the new bill is the creation of a new Orderly Liquidation Authority (OLA) for certain financial firms. The goal of this new mechanism is ambitious: as set forth in the statute, it aims "to provide the necessary authority to liquidate failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard."[98] OLA found its origins in the government's apparent inability during the recent crisis to let major financial institutions fail without inflicting undue collateral damage. (We can set aside for the moment just what "failure" means in this context.) Big money-claim issuers—the AIGs and Lehmans of the world—would presumably be prominent candidates for the invocation of this new authority.

To understand how this goal is supposed to be accomplished requires a careful look at the design of the new regime. The statutory scheme of OLA is modeled directly on the existing FDIC receivership authority for depository institutions. This seems sensible; that regime appears to have provided a way to deal with depository insolvencies without imperiling the broader financial system. At first glance, then, this approach might seem to hold the promise of facilitating "orderly" failures of other types of maturity-transformation firm.

But this proposition needs to be examined more closely. Is it depository *receivership* that makes "orderly" bank failures possible? Or is it deposit *insurance*? For the two are logically distinct. A little history may shed some light here. Prior to the creation of the FDIC, bank failures were handled under insolvency regimes that treated depositors as ordinary creditors. As the FDIC's *Resolutions Handbook* recounts:

> In general practice, between 1865 and 1933, depositors of national and state banks were treated in the same way as other creditors—they received funds from the liquidation of the bank's assets after those assets were liquidated. On average, it took about six years at

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[98] Dodd-Frank Act § 204(a).

> the federal level to liquidate a failed bank's assets, to pay the depositors, and to close the bank's books—although in at least one instance this process took 21 years. Even when depositors did ultimately receive their funds, the amounts were significantly less than they had originally deposited into the banks.[99]

With the advent of deposit insurance, it became evident that bank failures could no longer be handled effectively under existing insolvency regimes. There were two reasons. First, a central objective of deposit insurance was to give insured depositors seamless access to their funds when banks failed—to maintain the "moneyness" of deposits. Making this happen required a substantial administrative apparatus: the government had to create an agency with the resources, the expertise, and the institutional mandate to achieve this objective. Plainly, the existing management teams of failed banks could not be relied upon to administer deposit insurance. In order to operationalize the deposit insurance system, the FDIC needed to control the operations of failed banks—it could not be on the outside looking in. Second, by virtue of deposit insurance, the FDIC's insurance fund bore most of the potential downside from bank failures. Accordingly, as the *Handbook* observes, Congress sought to "vest responsibility for liquidation in the *largest creditor*, whose interest was to obtain the *maximum possible recovery*."[100] No other party could be counted on to pursue a value-maximizing liquidation. (If equity investors and junior creditors thought they would probably be wiped out through insolvency proceedings no matter what, they would have little motivation to maximize recoveries.) So it was clear from the start that deposit insurance was incompatible with existing insolvency procedures. Actually, it was the establishment of deposit insurance that made a special receivership regime for banks essential.

These two distinct functions—deposit insurance and receivership authority—still go hand in hand. From the *Handbook*:

> In every failing institution transaction, the FDIC assumes two roles. First, the FDIC in its corporate capacity as insurer protects all of the failing institution's depositors . . . . Second, the FDIC acts as the receiver of the failed institution and administers the receivership estate for all creditors. The FDIC as receiver is functionally separate from the FDIC acting in its corporate role as deposit insurer, and the FDIC as receiver has separate rights, duties, and obligations from those of the FDIC as insurer. U.S. courts have long recognized these dual and separate capacities.[101]

Understanding the FDIC's dual roles is important—because the new OLA regime encompasses only one of these roles. OLA is a receivership regime,

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[99] FEDERAL DEPOSIT INSURANCE CORPORATION, RESOLUTIONS HANDBOOK 68 (2003).
[100] *Id.* at 84 (emphasis added).
[101] *Id.* at 6.

not an insurance program. And the function of FDIC-as-*receiver* is quite specific. "A receivership," says the *Handbook,* "is designed to market the institution's assets, liquidate them, and distribute the proceeds to the institution's creditors."[102] The objective of this liquidation process is "to maximize the return on the sale or disposition of the receivership estate's assets."[103] It should be evident that the function of depository receivership per se sounds rather similar to the function of the corporate bankruptcy regime. Indeed, the *Handbook* itself notes that "[i]n many ways the powers of the FDIC *as receiver* of a failed institution are similar to those of a bankruptcy trustee."[104] In short, the aim of FDIC-as-receiver is to preserve the value of the firm's assets or enterprise in order to maximize recoveries.

But here we run up against a basic question of objectives. Preserving enterprise value in order to maximize recoveries is no doubt a worthwhile policy goal; it is, after all, one of the basic goals of the corporate bankruptcy system. However, the analysis of Part II of this Article suggested that the distinctive problem associated with maturity-transformation firm failures arises not from enterprise value losses, but rather from the *consequential* losses to money-claimants that occur upon default, and the concomitant reduction in the money supply. These consequential losses, it was argued, are actually *distinct* from any losses arising from the impairment of the value of the firm's assets or enterprise. In fact, these consequential losses arise *irrespective* of how much ultimate recovery value is preserved.

Milton Friedman and Anna Schwartz emphasized this very point. In their *Monetary History,* they observed that the bank failures that ushered in the Great Depression "had two different aspects."[105] The first, they said, consisted of "losses to both [the failed banks'] owners and their depositors, just as the failure of any other group of business enterprises involved losses to their owners and creditors"[106]—in other words, losses of enterprise value. And the second aspect was their *monetary* impact. Friedman and Schwartz posed a basic question: "Which aspect was the more important for the course of business?"[107] Their conclusion was that "the second was vastly more important than the first."[108] To underscore this point, Friedman and Schwartz noted that the losses of bank enterprise value in the early 1930s were "minor" as a fraction of total wealth and "would deserve no more attention than losses of a comparable amount in, say, real estate."[109] In their

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[102] *Id.* at 85.
[103] *Id.* at 2.
[104] *Id.* at 67 (emphasis added).
[105] FRIEDMAN & SCHWARTZ, *supra* note 3, at 351.
[106] *Id.*
[107] *Id.*
[108] *Id.*
[109] *Id.*

view, "[t]he bank failures were important not primarily in their own right, but because of their indirect effect."[110] More pointedly:

> If [the bank failures] had occurred to precisely the same extent without producing a drastic decline in the stock of money, they would have been notable but not crucial. If they had not occurred, but a correspondingly sharp decline had been produced in the stock of money by some other means, the contraction would have been at least equally severe and probably even more so.[111]

If this monetary view has merit, then losses of enterprise value are at most a secondary issue when it comes to bank failures. And the discussion above made clear that the function of FDIC-as-*receiver*—on which OLA is modeled—is really about maximizing the enterprise value of failed banks. It is the FDIC-as-*insurer* that keeps the adverse monetary consequences from taking place.

But does the new OLA regime not give the FDIC access to resources that would enable it to deal with these *monetary* effects as well? For instance, could it not make funds available to honor the money-claims of failed issuers, thereby avoiding any adverse monetary repurcussions? The answer is: not necessarily. It is true that the FDIC *might* have substantial resources at its disposal under the OLA regime (more on this in a moment), and that these resources *might* be used under some circumstances to honor money-claims. Specifically, the OLA legislation gives the FDIC the power to make "additional payments" to third parties if certain conditions are met.[112] Presumably this power could be invoked to honor money-claims, at least some of the time. The FDIC has even hinted at this possibility. In its Interim Final Rule ("IFR") regarding OLA implementation, the FDIC made clear that *long-term* creditors (those with terms exceeding 360 days) will *never* receive such "additional payments."[113] By inference, this leaves open the possibility that money-claims might sometimes be honored in accordance with their contractual terms, thus neutralizing the monetary impact of failure.

Importantly, however, the FDIC can make additional payments to creditors only under specified circumstances. In particular, the statute requires the FDIC to conclude "that such action is necessary (I) to maximize the value of the assets of the [firm]; (II) to maximize the present value return from the sale or other disposition of the assets of the [firm]; or (III) to minimize the amount of any loss realized upon the sale or other disposition

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[110] *Id.*

[111] *Id.* at 352.

[112] *See* Dodd-Frank Act §§ 210(b)(4), 210(d)(4), 210(h)(5)(E).

[113] Federal Deposit Insurance Corporation, *Orderly Liquidation Authority Provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act*, Interim Final Rule, 76 Fed. Reg. 4211 (Jan. 25, 2011) [hereinafter FDIC IFR].

of the assets of the [firm]."[114] As a textual matter, these conditions have nothing to do with consequential losses to money-claimants. On the contrary: these are enterprise value considerations. Certainly these conditions would permit payments under contracts that are needed to keep the business running, such as contracts for ongoing services (paying utility bills, meeting payroll, and the like). But it is far from obvious that pure *funding* contracts—such as money-claims—could *ever* satisfy any of these criteria. It is worth asking what the status of, say, Lehman Brothers's commercial paper—the default on which ignited a run on the money market mutual fund industry—would have been under these standards. It comes down to the FDIC's interpretation.

There is no need to speculate about the FDIC's position. It goes out of its way in the IFR to note that, despite the fact that it reserves the *right* to make additional payments to short-term creditors, no one should count on it. Indeed, according to the IFR, additional payments will be granted with "exceeding rarity."[115] For the avoidance of doubt:

> While the Rule distinguishes between long-term unsecured senior debt and shorter term unsecured debt, this distinction does not mean that shorter term debt would be provided with additional payments under [the applicable statutory provisions] . . . .
>
> Short-term debt holders . . . are *highly unlikely* to meet the criteria set forth in the statute for permitting payment of additional amounts. In *virtually all cases*, creditors with shorter-term claims on the covered financial company will receive the same pro rata share of their claim that is being provided to the long-term debt holders. Accordingly, a potential credit provider to a company subject to the Dodd-Frank resolution process should have no expectation of treatment that differs depending upon whether it lends for a period of over 360 days or for a shorter term.[116]

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[114] Dodd-Frank Act § 210(h)(5)(E). To be precise, this is the standard for transferring claims to a so-called "bridge entity," where they are to be honored. Other avenues are available to make additional payments, *see supra* note 112, but they are subject to more or less the same standards. Incidentally, the FDIC has self-imposed an additional procedural condition: additional payments can be made to a creditor only upon an affirmative vote by the FDIC Board of Directors, which must make a specific determination that the relevant statutory requirements are met. FDIC IFR, *supra* note 113, at 4215.

[115] FDIC IFR, *supra* note 113, at 4212.

[116] *Id.* at 4211–12 (emphasis added). To drive home the point, in its request for comment on the IFR, the FDIC asks: "Are there additional ways to counteract any impression that shorter term debt is not at risk?" *Id.* at 4214. Furthermore, apart from an obscure reference to honoring "contract claims that are tied to performance bonds," *see id.* at 4212, the *only* example that the FDIC provides in its IFR of *financial* claimants that might receive additional payments is that of derivatives counterparties who would otherwise be entitled to terminate their contracts and might *seek to extract value from the estate* by entering mark-to-market claims calculated during a period of heightened market volatility, *see id.* at 4209. This is a real issue—as the IFR notes, it purportedly caused billions of dollars in losses to the Lehman

It is possible that this is all an elaborate head-fake. Maybe the FDIC fully intends, as a matter of policy, to promptly honor the money-claims of issuers that are put into receivership under OLA, and believes that it has the statutory authority to do so. (If so, its bluff is unlikely to work forever; you can't fool all of the people all of the time.) As a starting point, however, it seems more sensible to take the FDIC's policy statements at face value.

So what happens to unsecured money-claimants that do *not* receive additional payments—as will be the outcome "in virtually all cases"? The answer is that they will receive payments in accordance with their creditor priority based on the value realized, or expected to be realized, from the liquidation of the enterprise.[117] More specifically, as a technical matter, the "maximum liability" of the receivership to any claimant "shall equal the amount that such claimant *would have received* if" the failed firm "had been liquidated under chapter 7 of the Bankruptcy Code" or other applicable insolvency laws.[118] Indeed, the FDIC observes that "[p]arties who are familiar with the liquidation of insured depository institutions under the FDI Act or the liquidation of companies under the Bankruptcy Code will recognize many parallel provisions in [the OLA regime]."[119] In short, unsecured money-claimants should expect to see their claims impaired or extinguished—and they may not receive payouts, if any, for some time.[120]

For *secured* money-claims (that is, repo instruments) the treatment is somewhat different—but just as problematic from a monetary standpoint. The FDIC has until 5:00 pm on the business day following its appointment as receiver to decide whether the repo contract will be honored and, if so, to notify the repo creditor of its decision.[121] If the repo claim is not honored, the repo creditor may terminate the contract and take the collateral. From a *monetary* perspective, however, it should be clear that any failure to honor repo obligations turns money into non-money. Repo is a money-claim; the collateral underlying it typically is not. If the repo creditor had wanted an asset resembling the underlying collateral, presumably it would have bought that instead. (The fact that repo is collateralized does not imply that the repo creditor is indifferent as between owning the repo and owning the collateral!) Repo creditors do get their collateral quickly, but they must then monetize the collateral if they want to restore their money balances. This means persuading third parties to part with money. If the collateral is very liquid

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Brothers estate—but it is not usually viewed to be a central one from a financial stability perspective.

[117] Dodd-Frank Act § 210(b)(1).

[118] *Id.* § 210(d)(2) (emphasis added).

[119] FDIC IFR, *supra* note 113, at 4209.

[120] The FDIC "may, in its discretion and to the extent that funds are available, pay creditor claims" after it has determined that they are allowed. Dodd-Frank Act § 210(a)(7). There is no date certain.

[121] *See id.* § 210(c)(10)(A). Obligations on those contracts are suspended until that time, *see id.* § 210(c)(8)(F)(ii), and creditors' walkaway clauses are unenforceable, *see id.* § 210(c)(8)(F)(i). This discussion assumes that the repo instrument qualifies as a "qualified financial contract," as should practically always be the case.

and can easily be sold at little or no fire-sale discount (a big "if" during a panic), then the direct consequential harm to money-claimants under this scenario might be rather small. Nevertheless, the money supply has shrunk.[122] Just as importantly, as witnessed in the recent crisis, the moment at which repo creditors seize and liquidate collateral from failed money-claim issuers is likely to be precisely the moment at which normally liquid collateral becomes very hard to sell. (If the collateral were so liquid, why did the repo issuer not monetize it to prevent its own demise?) If the collateral cannot easily be monetized, then from a consequential loss perspective repo creditors might be little better off than unsecured money-claimants.

There is yet another problem. Even if the FDIC *wants* to make additional payments to money-claimants under OLA, it may do so only if the requisite resources are available. The funding provisions of OLA are therefore paramount. In implementing a receivership, the FDIC must borrow from the Treasury Department—and those borrowings are not unconditional. They are subject to "such terms and conditions as the [Treasury] Secretary may require."[123] That is to say, they are at the discretion of the then-presiding Administration—which might very well be sensitive to the political ramifications of authorizing the disbursement of potentially hundreds of billions of dollars in taxpayer funds to honor the money-claims of a failed financial firm.

Furthermore, there are explicit statutory limitations on the size and timing of those borrowings. For the first thirty days of any receivership, unless the FDIC has "calculated . . . the fair value of the total consolidated assets" of the failed firm, the FDIC is not permitted to borrow funds in an amount exceeding 10% of the firm's most recently reported "total consolidated assets."[124] Only after the thirtieth day (or sooner if the fair value calculation is completed) can the FDIC borrow more—but even then its borrowing capacity is limited to 90% of the "fair value of the total consolidated assets" of the firm "that are *available for repayment.*"[125] (Presumably this latter qualifier is intended to exclude from the calculation assets that are subject to a security interest; if so, then the amount of resources available to the FDIC in any liquidation is a *decreasing* function of the amount of repo issued by the firm.) Thus, even if the FDIC wanted to make quick payouts to money-claimants and were satisfied that it had the statutory authority to do so under

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[122] The FDIC has indicated that it will "exercise care" in valuing collateral and that it "will review [each secured] transaction to ensure it is not under-collateralized." FDIC IFR, *supra* note 113, at 4212. Any money-claim that *is* undercollateralized presumptively will not be honored: "[I]f the creditor is undersecured due to a drop in the value of such collateral, the unsecured portion of the claim will be paid as a general creditor claim." *Id.* Explicitly, the FDIC wants to discourage "overreliance" on "short-term, secured transactions in the repurchase market," which it views as "[a] major driver of the financial crisis and the panic experienced by the market in 2008." *Id.*

[123] Dodd-Frank Act § 210(n)(5).

[124] *Id.* § 210(n)(6).

[125] *Id.*

the additional payments provisions, it still would need the concurrence of the executive branch, and it might still run up against statutory borrowing capacity limits.

Finally, there is one other critical, if more subtle, potential impediment: Treasury's ability to provide the necessary resources is subject to its own funds availability. If the Treasury Department needs to issue Treasury securities in order to raise the proceeds for a big loan to the FDIC, and if those borrowings would cause the federal government to exceed the then-operative statutory public debt ceiling, then *congressional* approval would be needed.[126] As witnessed in the recent crisis, this risk is hardly trivial.[127]

To sum up, the position of money-claimants in a Dodd-Frank orderly liquidation is far from secure. Their statutory *entitlements* are generally similar to what they would be in bankruptcy: they have no legal basis to complain if they receive only the value they would have received in a bankruptcy liquidation, and they generally have no right to receive any payments at all until the conclusion of the receivership, which might be years away. (Contrast this with the position of insured depositors.) Although it will decline to do so "in virtually all cases," the FDIC might in its discretion authorize additional payments to money-claimants if it satisfies itself that such payments would maximize returns or minimize losses to the receivership. Even then, however, adequate funding must materialize—and it is not obvious that it will do so in a timely fashion or at all. The quantity of funds available for any liquidation is subject to strict numerical limitations, particularly in the first thirty days. The Administration needs to agree to supply the necessary funding. And there is a significant chance that the debt limit would need to be increased, requiring an act of Congress.

Needless to say, this approach is very different from the model that the FDIC uses for insured depositories—the one that arguably has prevented insured depositor panics for nearly eighty years. If the "orderliness" of depository failures arises from the fact that insured depositors' claims are seamlessly honored—if, as Friedman and Schwartz argued, the basic problem is essentially *monetary* in character—then OLA cannot be said to offer a reasonable prospect of "orderly liquidation."

B. The Government's Refashioned Emergency Powers

As a panic-fighting tool, then, OLA is at best unreliable. But are other tools not available? As detailed above, during the recent crisis the federal

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[126] *Id.* § 210(n)(5).

[127] The debt ceiling needed to be increased in *both* of the major pieces of crisis-response legislation that were enacted in late 2008. *See* Housing and Economic Recovery Act of 2008, Pub. L. No. 110-289, § 3083, 122 Stat. 2654; Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, § 122, 122 Stat. 3765. Former Treasury Secretary Henry Paulson has emphasized that the debt ceiling was a key issue in congressional negotiations during the crisis. *See* HENRY M. PAULSON, JR., ON THE BRINK 150, 154 (2009).

government provided support on a going-concern basis to nearly the *entire* maturity-transformation industry. The goal was to avoid defaults not just on deposits but on money-claims more generally—to stop a broad panic in the money market. Conceptually, these support programs amounted to an exercise of lender-of-last-resort authority, broadly construed. Could these same kinds of techniques be implemented once again in the event of a future money market panic?

Again, the answer here is: not necessarily. The Dodd-Frank Act has imposed significant new limitations on the key panic-fighting tools that were used by the government during the recent crisis. To see how, it is useful to look again at the major programs that were used to stabilize the financial system in 2008 and 2009. As we have seen, the most important of these consisted of (i) a series of liquidity facilities established by the Federal Reserve and (ii) massive guarantee programs that were rolled out by the FDIC and the Treasury Department. (Capital infusions were important too, but the focus for the moment will be on programs established pursuant to freestanding powers, i.e., programs that did not require mid-crisis congressional action.) These can be considered in turn.

Liquidity. Central bank lending has long been the standard first-response technique to quell financial panics. And the Federal Reserve lent liberally during the recent crisis, not just to regulated banks—the usual beneficiaries of so-called "discount window" access—but also to the unregulated shadow banking system. In fact, Federal Reserve lending programs were deployed to support every major area of the money market: the dealer repo market (via the PDCF program), the commercial paper market (via the CPFF program), the asset-backed commercial paper market (via the AMLF program), the money market mutual fund industry (via the MMIFF program), and the Eurodollar market (via currency swaps with foreign central banks). Critically, massive Federal Reserve loans were also supplied on a targeted basis to prevent defaults by individual money-claim issuers ($30 billion to Bear Stearns and $85 billion to AIG, plus an undrawn nonrecourse loan commitment of $260 billion to Citigroup). The combined scale of these measures was awesome. At the peak of its lending, the Federal Reserve extended over $1 trillion in loans to non-depositories. The legal authority for each of these facilities arose from the Federal Reserve's most potent weapon: Section 13(3) of the Federal Reserve Act,[128] which empowers the central bank to lend money to *any* firm—not just depositories—under "unusual and exigent" circumstances.

The Dodd-Frank Act has curtailed the Federal Reserve's 13(3) lending powers in two important ways. First, the Act imposes a new "broad-based eligibility" requirement on 13(3) lending.[129] Tailored loans to individual non-banks are no longer allowed; 13(3) loans can now be extended only

[128] 12 U.S.C. § 343 (2006) (prior to Dodd-Frank Act amendments).
[129] Dodd-Frank Act § 1101(a)(2).

through programs to which a broad range of institutions may apply for support. (Presumably the huge loan commitments to Bear Stearns, AIG, and Citigroup would have been off-limits; those controversial commitments were precisely the impetus behind this new limitation.) Second, the Dodd-Frank Act requires the Federal Reserve to obtain the prior approval of the Treasury Secretary before establishing any 13(3) lending program in the future.[130] This new condition represents a significant departure from prior practice. Before the Dodd-Frank Act, decisions to employ 13(3) lending powers were not subject to political constraints. Rather, they were left to the discretion of independent central banking authorities.

These two curtailments to the Federal Reserve's lending powers might in the end prove inconsequential. The Federal Reserve presumably could always decide to extend a loan to a particular, troubled institution under the guise of a "broad-based" program of general applicability. Likewise, the Treasury Secretary (at the behest of the President) might normally be expected to defer to, or even encourage, the establishment of lending facilities by the Federal Reserve in times of financial stress. If so, then these new limitations on the Federal Reserve's 13(3) lending powers are just formalities—they will not make a difference in practice.

But is the answer so obvious? One can just as easily imagine the Federal Reserve Board, under advice of counsel, being understandably disinclined to sidestep (thwart?) the express intention of Congress by establishing a purportedly "broad-based" lending program whose real purpose was to prevent or delay the default of a particular, troubled institution. Any such hesitation can only be reinforced by the Dodd-Frank Act's explicit requirement that the Federal Reserve establish by regulation "policies and procedures . . . designed to ensure that any emergency lending program or facility is for the purpose of providing liquidity to the financial system, and not to aid a failing financial company . . . ."[131] Likewise, can it really be taken for granted that Treasury approval will always materialize in a timely fashion, or at all? The public has shown little enthusiasm for supporting distressed financial firms. (Imagine the headlines: "Administration Approves Massive Government Loans to Wall Street.") Public opinion might oppose intervention; the President might have publicly opposed "bailouts" in the past; political paralysis could take over. We must admit the possibility that the insertion of overtly political considerations into the lender-of-last-resort function could have a meaningful impact. Even if the effect is just to delay action, the consequences could be meaningful; in a panic, every hour counts.

Guarantees. One of the basic (and unnerving) lessons of the recent crisis was that central bank lending was not enough. An equally critical component of the federal government's emergency response—and the largest as measured by total dollars committed—consisted of a set of guarantee pro-

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[130] Dodd-Frank Act § 1101(a)(6).

[131] *Id.*

grams established by the FDIC and the Treasury Department. The FDIC guaranteed nearly $350 billion of new debt issuance by depositories and, more importantly, their holding companies. (By far the biggest users of this program were diversified financial institutions experiencing liquidity strains in their *non*-depository operations that relied on short-term funding.) The FDIC also guaranteed another $830 billion of previously uninsured noninterest bearing transaction account liabilities. Finally, in the single largest dollar commitment of the crisis, the Treasury Department guaranteed over $3 trillion in money market mutual fund obligations—a dramatic and decisive measure that successfully stabilized the core of the shadow banking system.

Each of these guarantee programs was established solely on the basis of freestanding legal authorities, without the need for any new legislation. In the FDIC's case, the legal basis for its emergency guarantees arose from the so-called "systemic risk exception" to the normally applicable statutory limitations on the commitment of deposit insurance fund resources.[132] (Invoking that exception required the assent of two-thirds of the boards of both the FDIC and the Federal Reserve, as well as the Treasury Secretary in consultation with the President—but *not* congressional approval.) As for Treasury's money market fund guarantee, that program's statutory basis was a bit more imaginative. Treasury's guarantee facility made use of the Exchange Stabilization Fund, which was created in 1934 for the purpose of stabilizing the value of the U.S. dollar in foreign exchange markets.[133] As subsequently amended, the authorizing statute entitles the Treasury Secretary to use Exchange Stabilization Fund resources to "deal in gold, foreign exchange, and other instruments of credit and securities" in a manner "[c]onsistent with the obligations of the Government in the International Monetary Fund on orderly exchange arrangements and a stable system of exchange rates."[134] The pertinent IMF obligations, in turn, include an undertaking by members to "seek to *promote stability* by fostering orderly underlying economic and financial conditions and a monetary system that does not tend to produce erratic disruptions."[135] Reasonable people might disagree as to whether these provisions furnished a sound legal foundation for the money market fund guarantee program—but Treasury's reading does appear to be at least in the range of plausible legal interpretations.

At any rate, the freestanding legal authorities that were used to set up these guarantee programs no longer exist. To implement *any* of the guarantee programs deployed in the recent crisis would require an act of Congress. Specifically, under the Dodd-Frank Act, the FDIC's power to "create a widely available program to guarantee obligations of solvent [banks and bank holding companies] during times of severe economic distress" now

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[132] Federal Deposit Insurance Act § 13(c)(4)(G), 12 U.S.C. § 1823(c)(4)(G) (2006).

[133] *See* Gold Reserve Act of 1934, Pub.L. No. 73-87, 48 Stat. 337.

[134] 31 U.S.C. § 5302 (2006).

[135] Articles of Agreement of the International Monetary Fund, Article IV, Sec. 1, Dec. 27, 1945, 60 Stat. 1401, 2 U.N.T.S. 39 (emphasis added).

requires a congressional joint resolution of approval.[136] (For the avoidance of doubt: "Absent such approval, the [FDIC] shall issue no such guarantees."[137]) Finally, Treasury's authority to guarantee the money market mutual fund industry—arguably the key turning point in the crisis—is gone. Congress took that authority away prior to the Dodd-Frank Act, in the Emergency Economic Stabilization Act of 2008 (EESA).[138] But neither the Dodd-Frank Act itself nor any other post-EESA legislation has restored the capacity of *any* branch of government to mount a forceful response in the event of a run on this $3 trillion industry—the fulcrum of the shadow banking system.

"Shadow" Emergency Powers? Do these new restrictions on the government's freestanding emergency response powers really matter? It was seen above that Treasury's guarantee of the money market mutual fund industry in 2008 relied on what might be considered a rather expansive interpretation of its legal powers. Maybe Treasury officials, and their counterparts at the Federal Reserve and the FDIC, will always succeed in finding a colorable legal basis to stage an adequate and timely intervention in the event of a panic. Furthermore, Congress can always supply additional powers mid-crisis. That is what happened in 2008. One of the most visible aspects of the government's response to the recent crisis was the Treasury Department's infusion of equity capital—peaking at around $250 billion—into the largest U.S. financial institutions. (These infusions were sometimes advertised as a tool to induce lending, but their main purpose was to stabilize these institutions' short-term wholesale funding.) Treasury had no *freestanding* authority to inject capital. Rather, Congress granted Treasury that power at the height of the crisis, through the (initially unsuccessful) passage of EESA.[139]

So maybe the foregoing discussion of emergency powers is largely academic. Indeed, one does occasionally hear the argument that these kinds of legal formalities do not matter—that the government will inevitably do whatever is necessary to rescue the financial system in the event of a panic. A notable example of this line of thinking comes from economist Paul Krugman, who recently wrote (the italics are his own):

> [W]hen the next financial crisis arrives—well, it will play just like 2008. President Palin or whoever will find themselves staring into the abyss—and conclude that they have to bail out the financial sector anyway. In a crisis, *the financial system will be bailed out.* That's just a fact of life. So what we have to do is regulate the

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[136] Dodd-Frank Act § 1105(c)(1).

[137] *Id.*

[138] Emergency Economic Stabilization Act of 2008, Pub.L. No. 110-343, § 131(b), 122 Stat. 3765, 3797 (to be codified at 12 U.S.C. § 5236) ("The Secretary is prohibited from using the Exchange Stabilization Fund for the establishment of any future guaranty programs for the United States money market mutual fund industry.").

[139] *Id.* § 101, 122 Stat. 3767 (to be codified at 12 U.S.C. § 5211).

> system to reduce the chances of crisis and the taxpayer costs when the bailout occurs.[140]

If action by government officials or lawmakers is certain to materialize, then the suite of freestanding emergency powers is not particularly important. Forcible action will always be forthcoming at the critical moment.

But how much faith should we have in this conclusion? Those who are inclined to think that legal constraints do not matter might do well to reconsider the events of the recent crisis. One narrative account describes the moment when Chairman Bernanke informed Treasury Secretary Paulson that the Federal Reserve had reached its legal limit:

> "We cannot do this alone anymore," [Bernanke] said. "We have to go to Congress and get some authority." . . . Bernanke was growing agitated. "Hank! Listen to me," he interrupted. "We are done!" It was the first time Fed officials had heard him raise his voice. "The Fed is already doing all that it can with the powers we have," Bernanke continued. One participant recalled, "Ben gave an impassioned, linear, rigorous argument explaining the limits of our authority and the history of financial crises in the U.S. and abroad."[141]

Perhaps it did not really happen this way. Or perhaps the Chairman's "impassioned" argument was disingenuous—maybe he had a limitless supply of legal tricks up his sleeve. But we should at least consider the possibility that regulatory authorities will run up against hard legal constraints—and

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[140] Paul Krugman, *Hijacking Too Big to Fail*, THE CONSCIENCE OF A LIBERAL (blog) (Apr. 3, 2010, 12:11 PM) http://krugman.blogs.nytimes.com/2010/04/03/hijacking-too-big-to-fail.

[141] James B. Stewart, *Eight Days*, NEW YORKER, Sept. 21, 2009, at 59. Soon thereafter, Paulson agreed: "You and I should go see the President and then go to Congress tonight and ask for more authority." *Id.* The same message was delivered directly to the President:

> In the Roosevelt Room meeting, Paulson reminded Bush that the Treasury secretary's authority to spend or lend money that Congress hadn't appropriated was extremely limited . . . . At one point, according to participants, Paulson made an oblique reference to the possibility that the Fed could continue to finance the rescue of Wall Street if Congress balked. Someone—several participants recalled it was Bush, but others insisted it was Vice President Cheney or Chief of Staff Josh Bolton—pressed Bernanke. Could the Fed keep doing it if Congress was a problem? No, Bernanke said. He recited the limits of the Fed's legal authority even in "unusual and exigent circumstances."

WESSEL, *supra* note 81, at 202. Paulson tells a similar story:

> "We've got a real problem," I said to the president. "It may be the time's come for us to go to Congress and get additional authorities." "Don't you have enough with the Fed? You just bailed out AIG," he pointed out. "No sir, we may not." . . . [In a White House meeting the following day] Ben insisted that, legally, there was nothing more that the Fed could do. The central bank had already strained its resources and pushed the limits of its powers . . . . President Bush pushed him, but he held firm. "We are past the point of what the Fed and Treasury can do on their own," Ben said.

PAULSON, *supra* note 127, at 242, 257.

that they will abide by the law of the land. Every law student learns the shibboleth that law is inherently open-textured and flexible. But its flexibility is not infinite; there are limits to plausible interpretation. The burden of persuasion here would seem to rest with those who for some reason doubt that legal constraints are binding in this area.[142] Could any arm of government guarantee the money market mutual fund industry again if a panic erupted tomorrow? Cite a plausible legal authority. (The author is aware of none.) Could Treasury inject capital into the country's largest financial institutions again? In 2008 the Administration thought it needed an act of Congress to take this step. No one has seriously argued otherwise. The assertion that authorities will always "find a way" is not particularly reassuring. Apart from being superficial and essentially conclusory, this line of argument raises troubling questions about democratic accountability and the rule of law.

Will Congress necessarily act promptly, or at all, once a crisis erupts? The blithe assurance that it will—a fairly widespread (though far from universal) sentiment, based on the author's unscientific polling—is perplexing. Yes, they eventually acted during 2008. That is one data point. But it must be remembered that it is technically possible for the money market mutual fund industry and the broker-dealer industry, including broker-dealers housed within diversified bank holding companies, to exhaust their cash reserves and default within a day or two. Panics can erupt with blinding speed. Add to this the decidedly unpopular status of "bailouts" in our political discourse, and the forces aligned against swift and decisive government intervention appear rather formidable. Relying on a mid-crisis act of Congress to furnish whatever tools are needed to keep the system from collapsing would seem to be a strategy fraught with peril. It is far from obvious that Congress will muster the political will to act before much of the damage is already done. (In 2008, the Federal Reserve's massive loan to AIG and Treasury's money market fund guarantee appeared to play a critical role in holding the system together between the Lehman Brothers bankruptcy (on September

[142] The casual nature of legal argumentation in this area is sometimes surprising. Richard Posner, for example, has argued that the federal government's support for auto companies in December 2008 "undermined Bernanke's and Paulson's claim that they had lacked the legal authority to bail out Lehman. If they could lawfully bail out insolvent auto manufacturers, they could lawfully have bailed out an insolvent investment bank." POSNER *supra* note 57, at 277. There is a problem with this legal argument: the statutory authority that was relied upon for the auto rescue did not yet exist when Lehman went bankrupt. (EESA, which created the TARP program that financed the auto rescue, was enacted on October 3, 2008—eighteen days *after* the Lehman bankruptcy on September 15.) So Posner's legal argument fails on purely formal grounds. If Posner's point was that employing the Federal Reserve's 13(3) lending powers to rescue Lehman would have been no more of a legal "stretch" than employing Treasury's EESA powers to support the autos—that the government was inconsistently permissive in its legal interpretations—then that is an argument that might be made. But such an argument would require a careful examination of the relevant legal authorities; it cannot be made on the basis of logical implication alone.

15) and the eventual enactment of EESA (on October 3). As seen above, neither of these tools is available any longer.)

The banking system did in fact collapse during the early 1930s; the Great Depression did happen. Perhaps we have all learned our lesson—maybe that was a one-time mistake. On the other hand, it is not hard to find government officials, business leaders, and impeccably credentialed economists who stand in sincere and vocal opposition to intervention. For a policy question of this magnitude, we cannot responsibly ignore the potential impact of political and process constraints. No one would tolerate such a cavalier attitude in the context of, say, national security policy. It is not clear why we should be so sanguine in the context of financial stability policy.

The government's success in averting a systemic collapse in 2008–2009 does not constitute a logical proof that it could not have been otherwise. There is another, more realistic interpretation: that we narrowly averted an utter catastrophe by virtue of a particular constellation of personalities and legal authorities, coupled with a barely sufficient measure of political will. There is too much at stake to adopt a dismissive attitude toward supposed "formalities" of law, process, and institutional structure in this area. Law is formal by its very nature—and mere "formalities" are often outcome-determinative.

C. The Ghost of Crisis Yet to Come

We now have a basis to situate the Dodd-Frank Act's approach to regulating money creation within a broader historical context. Until fairly recently, money creation in the United States was dominated by the depository banking sector. And the three broad phases of U.S. bank regulation—first risk constraints, then lender of last resort, and finally deposit insurance—represented the gradual establishment of public responsibility for the bulk of the money supply. With the creation of deposit insurance, that public commitment became absolute and unconditional: modern depository regulation recognizes money-creation (in the form of insured deposits) as a public good. This is the model of a public-private partnership.

Whatever else it may do, the Dodd-Frank Act does not seek to adapt this approach to contemporary monetary conditions. It was not an objective of the Dodd-Frank Act to establish money creation as a public responsibility. The new law did not establish any criteria of eligibility for accessing money market financing. Nor did it seek to modernize the government's monetary support facilities. On the contrary, as we have seen, the government's support facilities are now subject to substantial contingencies that did not previously exist. And the new Orderly Liquidation Authority is modeled on the FDIC-as-*receiver*; it is designed to maximize enterprise value, not to address the problem of money-claim defaults. Viewed in historical perspective, the Dodd-Frank Act represents a departure from the established regulatory trajectory in this area.

In lieu of embracing direct public responsibility for monetary conditions, the Dodd-Frank Act seeks to preserve financial stability by other means. The bill is animated by a risk-constraint philosophy of financial regulation: it aims to bring about financial stability mainly by imposing stricter oversight (including "systemic" supervision), enhanced capital requirements, and new activity restrictions on many areas of the financial system. We have seen that this risk-constraint approach—the now-settled direction of U.S. policy for the foreseeable future—is associated with uncertain benefits in terms of preventing panics. And these risk constraints do come at a real social cost. They increase interest rates, impede credit formation, and reduce the rate of economic growth.[143]

Of course, government resource commitments, such as those entailed by the public-private partnership alternative, are costly too—particularly if they are poorly designed. Unless the government can price its commitment perfectly, resource misallocation will happen. There is every reason to think that a blanket public commitment to honor all privately issued money-claims unconditionally, outside the context of a coherent regime to address the associated incentive problems, would be ruinously costly. But this sets up a false choice. Traditional bank regulation has *never* been designed this way; support facilities have *always* been accompanied by licensing requirements, risk constraints, and supervision, with a corresponding *prohibition* on money-creation (in the form of deposits) by firms that decline to abide by these parameters. These techniques are not perfect, but no government intervention ever is.

At any rate, the Dodd-Frank Act institutionalizes risk and uncertainty for money-claimants. This was a deliberate policy decision, and it necessarily means that future money market panics are not out of the question. The collective action problem inherent in maturity transformation has not gone away. Money-claimants still have ample reason to withdraw funding at the first sign of stress—to get to the front of the line. There is no upside in default; economic agents can always park cash in short-term Treasury bills for a few months, until conditions stabilize. They might sacrifice a few basis points of investment yield by taking this conservative approach. But the decision whether to sacrifice a tiny bit of yield to play it safe with transaction reserves will not normally be a close question; the marginal risk/marginal reward calculation will point decidedly toward withdrawal. For a money-claimant, this is really the only prudent choice—unless the money-claimant is an insured depositor, in which case the money-claim represents a sovereign commitment, not a private one. In that area alone, the collective action problem has been solved.

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[143] If they do *not* have these adverse effects, it is only because the financial system has eluded these constraints through regulatory arbitrage—in which case they cannot be expected to do much good.

The widespread sense that OLA can succeed in impairing money-claims without imperiling financial stability does not withstand scrutiny. As shown above, OLA was not designed to deal with the monetary consequences of maturity-transformation firm failures. The additional payments provisions and funding limitations mean that money-claimants can never know where they stand, so their incentive to withdraw remains intact. Moreover, there are still other reasons to doubt that OLA will be effective in stopping panics. First, there is no assurance that any failed issuer will be subject to OLA in the first place. Activating OLA requires the approval of two-thirds of the boards of both the FDIC and the Federal Reserve, the Treasury Secretary, in consultation with the President, and, if the firm does not consent, a federal district court judge.[144] Bankruptcy is the default option, and bankruptcy means long delays and likely impairment of money-claims—it is a *source* of, not an answer for, consequential losses to money-claimants. Second, if the FDIC experiences a loss in the liquidation of a financial firm pursuant to OLA, it must *first* seek to recover that loss from the *recipients of additional payments.*[145] This means that *every* additional payment from OLA is accompanied by a contingent liability. Third, and finally, the Dodd-Frank Act requires the FDIC to disclose publicly the identities of additional payment recipients.[146] Money-claimants might understandably want to avoid this scrutiny. These provisions, in addition to the restrictive criteria for additional payments and the funding limitations discussed above, set the stage for money market creditors to run when conditions deteriorate. Why would they choose to endure these risks?

It might be argued that exposing money-claimants to these risks will actually be conducive to financial stability by promoting market discipline by money-claimants and encouraging issuers to rely on more stable funding structures. If that is the case, though, then why have a lender of last resort at all? It is worth remembering that the existence of maturity transformation, and of disastrous banking panics, long predates the existence of public support facilities. The Federal Reserve was created *precisely* because risk constraints alone appeared to be insufficient to bring about stable financial conditions. The FDIC, too, was created in direct response to the terrible consequences of financial collapse. Both economic theory and financial history suggest that maturity transformation is problematic under laissez-faire con-

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[144] *See* Dodd-Frank Act §§ 203(a)(1)(A), 203(b). If the firm or its largest U.S. subsidiary is a broker-dealer, then two-thirds of the Securities and Exchange Commission is substituted for the FDIC Board. *See id.* § 203(a)(1)(B). If the firm or its largest U.S. subsidiary is an insurance company, then the Director of the Federal Insurance Office is substituted for the FDIC Board. *See id.* § 203(a)(1)(C). The Treasury Secretary must make a series of specific findings in support of appointing a receiver. *See id.* § 203(b). Judicial review is under an "arbitrary and capricious" standard, and the appointment of the receiver takes effect by operation of law if the court fails to act within twenty-four hours of receiving the petition. *See id.* § 202(a).

[145] *See id.* § 210(o)(1)(D)(i).

[146] *See id.* § 203(c)(3)(A)(vi).

ditions—that it is associated with a market failure. Perhaps there is some optimal balance between public support and market discipline by money-claimants that would maximize overall economic well-being. But unless we have some way of finding that optimum, this debate is merely of academic and not of practical interest. What we do know is that market discipline by money-claimants is incompatible with financial stability: runs and panics are the very *manifestations* of market discipline by short-term creditors.

The *FDIC Handbook*, describing the position of depositors prior to the establishment of deposit insurance, offers this observation: "Given the long delays in receiving any money and the significant risk in getting their deposits back, it was understandable why anxious depositors withdrew their savings at any hint of problems."[147] Under the Dodd-Frank regime, money-claimants likewise face the prospect of "long delays" and "significant risk" in getting their money back if an issuer fails. It therefore should not be surprising if money-claimants again withdrew "at any hint of problems." This is a recipe for panic and financial contagion. Once a panic starts, unless going-concern support promptly emerges on a scale sufficient to calm the markets, the result will be serial failures of money-claim issuers—leading to either bankruptcy or the activation of OLA.[148] From the perspective of preserving enterprise value, OLA is probably superior to bankruptcy. But preserving enterprise value is only a secondary objective; as Friedman and Schwartz stressed, it is the *monetary* issues that are paramount.

Is the financial crisis behind us? At this writing, large U.S. money market funds, the core of the shadow banking system, have reached their maximum legal concentration limits in the largest U.S. financial firms. In pursuit of additional yield, these funds have substantially increased their exposure to the short-term credit instruments of the largest European banks. The European banking system has shown itself to be shaky. Another major tremor in Europe could easily lead to a "break the buck" scenario in one or more U.S. money market funds. If this happens, unless Congress is in the mood for a bailout, the government has no apparent policy tools that would be sufficient to forestall a run on the money market fund industry. We might speculate as to the ramifications of more bailouts for our fiscal situation and our political culture. But the alternative—a potential run on U.S. money market funds, a rush to liquidity by these funds to meet withdrawals by their clients, and a consequent refusal by these funds to roll funding for U.S. dealers and other money-claim issuers, whose only option for survival, absent prompt congressional action, will be Federal Reserve liquidity support (subject to new legal impediments), which, if not promptly forthcoming in adequate scale, will lead to cascading failures across the financial system and the possibility

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[147] FDIC RESOLUTIONS HANDBOOK, *supra* note 99, at 68.

[148] Others have reached similar conclusions on this score. *See, e.g.*, Jeffrey N. Gordon & Christopher Muller, *Confronting Financial Crisis: Dodd-Frank's Dangers and the Case for a Systemic Emergency Insurance Fund*, 28 YALE J. REG. 151 (Winter 2011).

of a true economic disaster—is not appealing either. There should be no illusions that the recent reform legislation has cured these ills.

Paul Krugman, cited above for the proposition that the financial system "*will be bailed out,*" appears to have reconsidered his views on this topic. He recently said:

> Something I've been thinking about: . . . [M]y working assumption has been that . . . everybody now knows that the financial system is backstopped by the government and the institutions will not be allowed to fail. But how sure are we of that if this happens, say, next year? . . . [W]e're almost certainly heading for political paralysis. . . . In that kind of environment, it's kind of hard to see a TARP II. It's really hard to imagine that in fact we will have the political consensus to do this. So . . . there are two main [economic] scenarios [for the near term], one of which is pretty bad and one of which is very bad. But there's a third one, which is absolutely catastrophic, I think. And that's not negligible now.[149]

It is hard to disagree. And Krugman's analysis raises a deeper question: is this really the kind of issue on which we should need to reach a "political consensus" at the critical moment? Our administrative and, indeed, our constitutional system is premised on the idea that some kinds of policy questions should be insulated from volatile political dynamics. Traditionally, monetary policy—which, broadly construed, is the topic at issue here—has been viewed as one of these areas.

IV. Conclusion

It would be fair to say that this Article has been more critical than constructive. But the objective has been to try to elucidate one view of the problem and to attempt to trace some of the implications of the policy choices we have made. A more constructive program for reform will be offered in a subsequent piece.

It might be said that the problems addressed in this Article are second-order concerns. Just because the emergency policy response to the recent crisis was aimed at preventing money-claim defaults, it might be argued, does not mean that money-claim issuance (or, equivalently, maturity transformation) is our central policy problem. There is a temptation to look deeper, beneath the panic in the money market, toward some "underlying" cause or causes of the crisis.

The lens of "causation" can be a misleading guide to policy. All social events have many causes, but some aspects of the world are more readily susceptible to policy intervention than others. It is trivially true that, if the

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[149] Paul Krugman, Remarks at Economic Policy Institute conference: America's Fiscal Choices: Strengthening the Economy and Building for the Future (Oct. 5, 2010).

government could legislate an end to bad investments, financial stability would be virtually assured. But no one would suggest that financial policy should be directed toward this objective, any more than national disaster policy should be directed toward stopping hurricanes and earthquakes from happening. A justifiable standard for overturning market outcomes must come down to a judgment that the benefits of the chosen intervention are likely to exceed the costs.

Much of recent policy has been explicitly justified on grounds of reducing "systemic risk." But that nebulous concept has yet to be defined in terms adequate to serve as a basis for any kind of sensible cost-benefit analysis. Without a means to conduct—or even a coherent framework for conducting—an analysis of costs and benefits, we are left with policy based on superficial intuitions, impressionistic judgments, and casual speculation.[150] If these types of considerations are used as a basis for interfering with market allocations of resources, there is a very real danger of doing more harm than good.

This intuition-based approach gives rise to two seemingly contradictory impulses. The first is the tendency to define the basic problem in highly simplistic, metaphorical terms—like the need to "restore the balance" between regulators and financial markets. These kinds of metaphors appeal to a technocratic instinct: we need more troops, smarter troops, better-resourced troops, to keep the financial system from getting out of whack in this way or that! (Never mind what "out of whack" means; many people think they are savvy enough to see the problem coming next time around; hindsight bias in this area is a persistent problem; the costs of the inevitable false positives are seldom mentioned.) And the second impulse is almost the opposite. It is the invocation of the supposed inevitability of financial crises, the defeatist notion that we are dealing with problems of human nature (or even—in the case of "animal spirits"—*inhuman* nature!) that we cannot hope to really fix, only to resist through whatever inadequate means are available. We are dealing, supposedly, with an inevitability of capitalism. These kinds of impulses provide a measure of consolation, but they do not offer a clear path forward. In the meantime the need to "take action" takes on a life of its own. The hope is always that the action taken will at least do no harm—that the costs of the chosen intervention will not be so great. This usually amounts to wishful thinking, sometimes cloaked in seemingly sophisticated analysis whose underlying assumptions are remote from reality.

Another, more disciplined approach to policy development is available. It starts by trying to build a theory—a model that captures essential features of reality. From the vantage point of that theory, it seeks to explain, *specifically,* how government intervention might be expected to improve upon lais-

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[150] Milton Friedman called it "theory by aphorism." Milton Friedman, *The Role of Monetary Policy*, 58 AM. ECON. REV. 1, 1 (1968).

sez-faire outcomes. Implicitly, this approach recognizes that not all social problems have policy solutions. Coase, again, said it aptly:

> Actually very little analysis is required to show that an ideal world is better than a state of laissez faire, unless the definitions of a state of laissez faire and an ideal world happen to be the same. But the whole discussion is largely irrelevant for questions of economic policy since whatever we may have in mind as our ideal world, it is clear that we have not yet discovered how to get to it from where we are. A better approach would seem to be to start our analysis with a situation approximating that which actually exists, to examine the effects of a proposed policy change, and to attempt to decide whether the new situation would be, in total, better or worse than the original one. In this way, conclusions for policy would have some relevance to the actual situation.[151]

This is an approach to policy that eschews empty metaphors. It also declines to indulge in a defeatist mentality masquerading as wise humanism or as hard-headed realism. It is a commitment to a methodology—not to any predetermined outcome. Coase's intellectual agenda was quite different from that of, say, Keynes. But their frames of mind were not so far apart. Keynes's analytical orientation was recently described by a modern admirer in the following terms: "Keynes's genius—a very English one—was to insist we should approach an economic system not as a morality play but as a technical challenge."[152] This means doing the hard work of theory-building—to try to say something both general and nontrivial. As Keynes inimitably put it:

> If the basic system of thought on which the orthodox school relies is in its essentials unassailable, then there is no escape from their broad conclusions, namely, that, while there are increasingly perplexing problems and plenty of opportunities to make disastrous mistakes, yet nevertheless we must keep our heads and depend on the ultimate soundness of the traditional teaching . . . . We are, in my very confident belief—a belief, I fear, shared by few, either on the right or on the left—at one of those uncommon junctures of human affairs where we can be saved by the solution of an intellectual problem, and in no other way.[153]

This theory-building approach actually sets a far higher bar for intervention than the intuition-based approach. And it favors targeted, surgical solutions, allowing markets to allocate resources with as little government interference as possible. It resists the scattershot approach of intuition-based policy,

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[151] Coase, *supra* note 70, at 43.

[152] Martin Wolf, *Keynes Offers Us the Best Way to Think About the Financial Crisis*, FIN. TIMES, Dec. 24, 2008, at 7.

[153] John M. Keynes, *Is the Economic System Self-Adjusting?*, BBC Radio Address (1934), *transcribed in* KEYNES ON THE WIRELESS 131, 140–41 (Donald Moggridge ed., 2010).

which runs the risk of being both costly and ineffectual. Instead, it uses intuition as a *starting point* for theory-building.

The analysis of this Article has suggested that there may be a specific and identifiable market failure that is endemic to maturity transformation. At the same time, it acknowledges that the welfare gains generated by this activity—that is, by funneling trillions of dollars in transaction reserves into the capital markets—are probably immense. It offers a prima facie case that the tools of modern bank regulation might profitably be extended to the broader money market. (As noted above, this proposition will be explored in more detail in a separate piece.) Implementing this public-private partnership approach would mean, at the very least, establishing the "first law of banking" along functional lines. That is to say, it would mean establishing criteria of admission to the money market and *disallowing* access to money-claim funding by firms whose business models do not meet those criteria—just as we prohibit non-banks from issuing deposit liabilities. Among other things, this would probably mean that both the modern broker-dealer business model and the money market mutual fund industry would have to change in fundamental ways. Given that these two species of financial institution were at the epicenter of the recent financial crisis, perhaps this should not be very troubling.