

## REGULATING FOR FINANCIAL SYSTEM DEVELOPMENT AND FINANCIAL INNOVATION

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**Abstract :** Financial innovation is inextricably tied to asymmetric information and therefore sets the stage for financial crises. Over history, every truly meaningful crisis has had elements of asymmetric information, particularly affecting innovative financial instruments that are primary market liabilities. But financial innovation, by definition, occurs outside the regulated financial sector. Indeed, that is often the point of financial innovation! Hence, limiting regulators' scope of supervision to one narrow legally-defined sector of institutions sets a natural stage for regulatory arbitrage and crises. In such a system, crisis will always "surprise" supervisors, for whom financial innovations outside their narrow legally-defined charge do not exist. Everything will look like systemic risk, merely because banks reside in a financial system! Today, off-balance sheet structured finance-based funding, the regulatory approval of banks' use of credit default swaps for hedging capital needs, and the preponderance of non-bank subsidiaries in bank holding companies after Gramm-Leach-Bliley led to multiple sources of unrecognized risks that took regulators by "surprise," not because they were unknown but because regulators refused to look outside their narrow charges to see the wider financial system. Similarly, however, any attempt to change regulations will inextricably affect other non- or differently-regulated institutions, thereby leading to "unintended" (not unavoidable) consequences.

**Keywords:** financial engineering, financial innovation, financial regulation, structured finance, securitization.

### INTRODUCTION

#### OBJECTIVES

The issues in today's crisis – and indeed most important crises, historically – can best be understood as a manifestation of asymmetric information in an environment of rapid financial innovation. The present paper reviews the asymmetric information and financial innovation frameworks and applies those to major twentieth century U.S. financial crises. The paper posits that financial innovations inexorably create conditions of asymmetric information that can lead to financial crises and panics. Those events are crucial to the development of plain vanilla financial instruments, providing incentive to forgo margins in favor of liquidity. Hence, regulatory attempts to stabilize markets by manipulating bank failures may ultimately result in substantial setbacks to market development.

#### I. Market Difficulties:

##### A. Asymmetric Information and Financial Stability

The asymmetric information framework was pioneered by the Nobel prize-winning work of George Akerlof (1970). The basis for this work is the belief that some market participants have information that others do not. While many financial researchers tend to eschew asymmetric information as a per se violation of market efficiency, it is important to remember that asymmetric information is compatible with market efficiency where asymmetric information is between the issuer and the investor rather than between

individual investors in the same market.

While we are all familiar with the transactional effects of asymmetric information – moral hazard and adverse selection premiums – relatively few are familiar with the theory of how asymmetric information contributes to financial crises. With asymmetric information, when there has been a shock to asset values and investors do not know the incidence of that shock, investors rationally respond by divesting across all markets. Investors do not reinvest until they receive credible information about the incidence that helps them pick winners and avoid losers.

The banking crises of the Great Depression are held as a primary example of asymmetric information-based events. In my work with Charles Calomiris (1997), we showed that the information shock that precipitated the Chicago bank panic of June 1932 was the announcement that Congress and the Federal Reserve had turned down city requests to accept city “tax anticipation warrants” (securitized tax revenue bonds issued by the City of Chicago) as eligible paper at the discount window. For nearly a year leading up to the crisis, Chicago city employees were paid almost exclusively in these warrants and passed them on to others in lieu of cash for local transactions. Bank depositors knew that city finances were weakening and that the warrants were illiquid outside the greater Chicago area but they did not know which banks held greater or lesser concentrations of the illiquid and questionably-valued warrants. Hence, depositors ran all the local banks until they received more information, which in this case came from bank call reports filed on June 30, 1932.

The same pattern played out on a much larger scale in the year prior to March 1933, when nearly all the banks in the U.S. were closed “on holiday” due to heavy depositor withdrawals. Upon President Roosevelt’s inauguration on March 3, it was announced that all the banks would be closed and only sound banks would be allowed to reopen, their soundness to be established by inspections carried out by bank examiners throughout the country. Again, depositors knew there had been a shock to asset values but could not distinguish the incidence of the shock and responded by divesting from the entire market. Once information was credibly restored, depositors reinvested their funds.

Finally, while it is generally acknowledged that asymmetric information financial crises will not cause a recession, they are thought to be powerful propagation mechanisms for other economic shocks. Hence, a recession that occurs in the presence of credit shocks can be reasonably expected to be much deeper, and last much longer, than otherwise. Papers like Kiyotaki and Moore (1995) offer theoretical approaches to the issue, while those like Calomiris and Mason (2003a and 2003b) offer empirical support.

## **B. Financial Development, Financial Innovation, and Asymmetric Information**

Understanding the cycle of financial innovation involves extending of the concept of asymmetric information to financial institutions. According to Merton (1995), different types of financial institutions intermediate various levels of asymmetric information. Commercial banks intermediate relatively high asymmetric information financial instruments. Markets intermediate relatively low asymmetric information financial instruments.

The classic distinctions between banks and markets lie in a number of key dimensions regarding the relationship between the investors and the firms in each of the intermediaries identified in Figure 1. The investors and firms know one another in markets, whereas with banks investors (depositors) rarely know in which firms their money is invested. Banks cater to relatively naive investors

who need the services of a delegated monitor, while markets cater to sophisticated investors who can monitor firm performance on their own by reading financial statements and performing research. To further that distinction, bank investors usually have some type of insurance backing their claims (deposit insurance) necessitating regulation to stem conditions of moral hazard, whereas market investors face harsh discipline of investment loss. Bank regulation therefore is typically functional in nature (telling the bank what it can and cannot do) rather than merely transparency-enhancing, as that used in financial markets.

**Figure 1: Continuum of Financial Markets and Institutions**

Transparent		Translucent			Opaque		
Govt Bond Market	Stock Market	Unit Trusts	Mutual Funds	Pension funds	Finance Companies	Insurance Companies	Commercial Banks
<b>Financial Markets</b>				<b>Financial Institutions</b>			
<ul style="list-style-type: none"> <li>•Asymmetric information between investors and firm low</li> <li>•Sophisticated investors don't need third party monitor</li> <li>•Monitoring information must be communicated to each investor: complex</li> <li>•Regulation to ensure transparency</li> <li>•Minimal regulation provides efficient, if harsh, incentives</li> <li>•*Seasoned Firms</li> </ul>				<ul style="list-style-type: none"> <li>•Asymmetric information between investors and firm high: Intermediary may have other sources of information, such as deposit or payment relationships</li> <li>•Acts as <b>delegated monitor</b> for unsophisticated investors</li> <li>•Monitoring information need only be communicated to institution: simple</li> <li>•Regulation to ensure <b>safety and soundness</b> and protect unsophisticated investor</li> <li>•Regulation such as deposit insurance may breed <b>moral hazard</b></li> <li>•*Unseasoned Firms</li> </ul>			

Banks are often viewed as “special,” in that they motivate small denomination idle savings into small denomination loans, providing a substantial boost to economic growth in a way that markets cannot. But it would be wrong to believe that a financial system can survive without banks or markets, or the myriad institutions that span the range in between. In fact, it is common to believe that the continuum between banks and markets forms the basis of a financial pecking order, where firms begin life funding themselves on the basis of bank loans and work their way up to market-based funding as they become more seasoned and reduce asymmetric information. Substantial gaps in the continuum of institutions in between make it difficult for firms to grow and credibly commit to reduced asymmetric information along the way. But banks are special in another way, too. Banks also create high asymmetric information financial instruments to meet specific customer needs. These instruments are sometimes called bespoke products, because they are created in a custom one-off manner for a specific transaction. Bespoke products can be very innovative, meeting market challenges of hedging or speculating on specific types of risks.

Of course, there is a tradeoff between financial instrument specificity (uniqueness) and liquidity. So if a particular bespoke financial instrument becomes popular, firms using that instrument run the risk of illiquidity should their financial situations and needs change. Hence, it makes sense that as bespoke financial instruments become popular, the terms of the instruments become standardized so that the instrument can trade more like a commodity and netted directly. As instruments are commoditized, they can be bought and sold more freely on markets, where brokers and dealers routinely add liquidity. As those instruments become even more popular they may trade on organized exchanges, reducing counterparty risk and adding further liquidity. In summary, as product specificity and asymmetric information declines, liquidity rises.

The overall problem of today’s markets is one of conflicting incentives: custom products yield fat margins for banks while presenting the capability for widespread systemic risk. Hence, if innovators get lazy they sow the seeds of their own demise. But regulators did not recognize the shortcomings. The Federal Reserve Bank of New York is proposing a clearinghouse for CDS, but clearinghouses for non-standardized contracts will not yield appreciable market liquidity and stability. Rather, it is the standardization, itself, that needs to be fostered. To the chagrin of Wall Street banks that means no more fat margins, but it does mean long-term stability and liquidity and therefore a steady stream of new applications for ABS, CDOs, and CDS and other innovative products.

Viewed through the lens of the model described above, therefore, markets for many financial products that have recently become commonplace were inadequately developed despite having grown to fund a large proportion of today’s financial marketplace. Mezzanine ABS and RMBS were used to create CDOs, whose credit quality was bolstered by CDS either sold by monoline insurers or bought by them to hedge wrap insurance contracts. Some \$9 trillion of securitizations were supported by roughly \$0.5 trillion of CDOs, backed by a \$50 trillion CDS market, none of which was written on the basis of standardized liquid contracts. SIVs and CPDOs leveraged the securitizations and CDS in various ways, vastly increasing the size of the relevant market and the concomitant risk.

The instability and illiquidity that has contributed to today's market deterioration is, therefore, nothing more than a manifestation of typical risks inherent in a less-developed market. We know, for instance, that CDS are routinely exposed to credit risk, counterparty risk, model risk, rating agency risk, settlement risk, and the interrelationships among those risks. But while no market fixes have been proposed for those shortcomings, the Street has continued to build CDS upon CDS to achieve a multiplicative effect of risk layering. So now, commercial banks are not only losing the credit hedges that lower their capital requirements, but CDOs will lose their credit hedges as well and are unable to re-intermediate mezzanine ABS and RMBS as a result, thereby shutting down securitization. Immature innovative financial products are, therefore, poor building blocks for other innovative developments.

## **II. Innovative Instruments are both Assets and Liabilities**

### **A. Assets**

The usual way of thinking about innovation is from the perspective of different types of financial assets that are created. Innovation is typically most effective if it can create securities accessible to a larger investor base. That means more granular instruments are generally favorable.

Historically important innovations have included 19th century BC evidence of contracts for grain delivery and instruments of war finance in the Song Dynasty. The Venetian Loan of 1172 represented one of the first important failures, wherein after funding a fleet during the Byzantine crisis, the government hypothecated revenues from the populace. When the battle went badly, the "loan" became permanent.

The period, however, created a benchmark for investors. From then, most European cities began to issue bonds, life-rentes and annuities to finance expenses. Loans and life annuities became personal means for people to plan their economic future, address risk and invest capital. By 1600, there was a broad investor class. The foundation for investment in corporations was in place.

The 17th and 18th Century Netherlands saw the inception of the modern corporation (VOC) that issued easily transferable shares. Corporate bonds became popular and financial derivatives (forwards and options) were introduced. The period also saw early development of securitization and stock substitution via collateralized bonds very much like today's mortgage-backed securities, mutual funds, and depository receipts. In the 18th Century structured finance" securitizations, wherein cash flows of illiquid claims become collateral for securities, came to be traded. Stock securities were repackaged individually or as part of a portfolio to enhance liquidity. Principals of diversification were well-known by 1776, as well as principal-agent problems.

Twentieth Century U.S. crises were focused on investments in retail stock and bond investments, as well as institutional experiments with long-term mortgage and consumer lending in the Great Depression, commercial real estate in the Thrift Crisis, and consumer mortgages and securitized claims on those investments today.

Despite a long history of investment, asset crises are usually relatively benign. Investors surely experience losses, but the systemic nature of the crisis and macroeconomic propagation effects are relatively contained. The reason is the asset crises typically occur in secondary markets where uncertainty about long-term claims to cash flows are particularly sensitive. So while investors get hurt, firms are often still able to fund themselves in short-term markets and stay liquid while they prove their long-term viability.

### **B. Liabilities**

Every financial asset, however, is also a financial liability. When primary issue liability markets are interrupted, crises can be much more severe. In other words, financial bubbles have taught us that while it is easy to fund short-term prospects with long-term debt, funding long-term prospects with short term debt can be particularly dodgy.

Hence, authorities tend to regulate institutions that organize their funding to leverage the yield curve in this way. Early U.S. banks that funded themselves via money issue were particularly sensitive to liquidity difficulties. When regulatory authorities moved to stabilize monetized funding via the National Banking System, taxing banks that did not want to participate, banks turned to deposit-based funding.

After repeated deposit runs, culminated in the bank runs of the Great Depression (when, as discussed below, authorities dismissed the classical resolution mechanism of payment suspension), U.S. authorities moved to stabilize liability side via Federal deposit insurance. By the 1980s, banks again leveraged cheap short-term funding via the development of brokered deposit markets, leading authorities to stabilize those markets with blanket deposit insurance coverage. Recently, banks moved to fund themselves via pseudo-hypothecated (securitized) and term-structured (SIV) arrangements, resulting in

classic liability runs.

Unlike asset crises, however, liability crises tend to naturally be systemic. A much more intense propagation mechanism arises when even sound firms cannot obtain funding in primary markets. Furthermore, the underlying asymmetric information is particularly problematic when banks, themselves, cannot discern borrower viability and properly intermediate funds to value producing firms in a manner that produces economic growth.

### **III. Problem is not Managing Innovation, it is that Innovation is not Managed**

Too often, however, both asset and liability innovation occurs in a regulatory vacuum. Regulators seem to remain unaware of innovation occurring within the institutions under their charge, judging balance sheet exposure too small to be of interest without adequate understanding of risks posed to the institutions of interest and viewing innovations as lying outside their narrow legally-defined regulatory scope.

#### **A. Not Every Crisis need be Systemic**

In the Great Depression, mortgages were viewed similarly. The duration risk of maturity mismatches between deposits and long-term loans was not widely recognized as important until the mathematics of Macaulay duration were published in 1938. Still, however, in a heavily regulated financial system with usury rates on the lending side and interest caps on the deposit side, there was little room for Macaulay duration to matter. Indeed, it was not until freely floating currencies after Bretton-Woods in 1973 and interest rate deregulation in the 1980s that banks began to pay attention to duration gaps and manage interest rate risk, as well as develop interest rate derivative products.

Furthermore, bank runs before the Great Depression had been relatively contained. Suspension of payments addressed local crises, in a manner dating from the early days of Scottish free banking. Over the progression of the Great Depression, U.S. regulators and courts gradually rejected individual bank, local, then state, suspensions as crises mounted. By 1933, left only with nationwide bank holiday as a policy tool, National bank regulators and policymakers developed the present-day paradigm of Federal Deposit Insurance coverage.

Similarly, before the Thrift Crisis commercial mortgages were nothing special. In fact, commercial mortgage powers were granted to Thrifts as a means of augmenting earnings to Thrifts that faced margin pressures after interest rates paid on deposit accounts were deregulated under the Depository Institutions Deregulation and Monetary Control Act, which itself was a response to worldwide competition from Eurodollar accounts in the U.S.

Brokered deposits had never been much of a concern, either. To insolvent banks and thrifts, brokered deposits allowed quick leverage that could assist their bids for resurrection. U.S. regulators failed to take notice of such unbridled leverage even as the U.S. Bureau of Indian Affairs was arbitraging deposit insurance pass-through protection to maximize earnings from failing banks and thrifts. In total, use of brokered deposit leverage during periods of regulatory forbearance led to a roughly tenfold increase in losses to the deposit insurance system. Only recently (first quarter 2009) have regulators gotten around to proposing even the most rudimentary half-hearted regulations to address the use of brokered deposits to leverage returns in weak banks.

Today, too, mortgages were nothing special. There was no recognition of special risks in subprime mortgages, with even Vickie Tilman, CEO of Standard and Poor's, claiming in Congressional Testimony that her firm had thirty years' experience with mortgages – even though subprime mortgages had been in existence for only roughly three years at the time. Structured finance is still “off-balance sheet,” and therefore of no concern to regulators, even as regulators consciously memorialized the refusal to impose differences in risk treatment of mezzanine and AAA-rated residential mortgage-backed securities held on bank balance sheets in the early 2000s, despite protests by industry participants, themselves. .

In short, proper reflection on risk and appropriate regulatory classification of new financial instruments can avoid systemic crises. Such policy, however, will require regulators to look outside their immediate charges. Such a policy, while short of “systemic risk regulation,” can help regulators – even if they cannot avoid the bubble – know where important exposures lie so they can clean up the system quickly and effectively after a crash.

#### **B. Too Often, However, the Sole Means of Addressing Crisis is Retroactive Forbearance**

Forbearance, however, is all too often the sole means of addressing crises after the fact. Since at least the days of the Great Depression, when the Federal Reserve and Reconstruction Finance Corporation

sought to value bank assets on an “intrinsic” basis rather than a market basis, bank regulatory agencies have sought to buy time after the fact rather than recognize risk (even if only unofficially) a priori.

The situation in the Great Depression led to a realignment of accounting standards under the 1938 Uniform Agreement on Bank Supervisory Procedures. In 1991-2, similar negotiations led to lenience toward financial institutions after the Thrift Crisis to offset the ongoing credit crunch. Today, authorities are pursuing similar strategies by relaxing mark-to-market accounting standards.

But even before forbearance with respect to external standards, regulators provide forbearance with respect to their own internal standards. During the Thrift Crisis, U.S. regulators ignored their own internally -generated CAMEL ratings, willingly allowing banks known to breach their own regulatory standards to continue operating without restriction. Today, the policy continues and has been recently reported by the Treasury Office of Inspector General in their Material Loss Reviews of IndyMac and ANB. According to the OIG, “OCC did not issue a formal enforcement action in a timely manner, and was not aggressive enough in the supervision of ANB when problems first arose.” (Office of Inspector General 2008, p. 13) Well before failure, Indy Mac showed signs of risky business strategy that could have justified regulatory action:

- Goodwill assets were nearly two-and-a-half times the industry average;
- Other borrowed funds were over four-and-a-half times the industry average;
- Volatile liabilities was almost double the industry average;
- Tier One capital was below the industry average and Tier Two capital was only about one-seventh the industry average.
- Interest expense was roughly twice the industry average;
- Trading gains (losses) were seventy-five times the industry average. Hence, even in the most recent bank failures, ample evidence of increasing risk was not used to trigger existing Prompt Corrective Action provisions that could have reduce the costs of the failure.

#### **IV. Sources of Asymmetric Information Today**

In an asymmetric information financial crisis, investors – knowing there has been a shock to asset values but not knowing the distribution of that shock among investments – rationally pull back from the market as a whole to decrease their probable exposure. A recent example of such behavior was manifested in the Florida state money market fund offered to local municipalities. That fund experienced withdrawals amounting to approximately 30% of the original \$28 billion in the first two weeks after it was revealed that the fund held substantial exposures to defaulted SIVs and watch listed RMBS.

Sources of information that can be used to resolve asymmetric information in today’s markets are sparse. The meaning of bond ratings has been arbitrated to a two-step process, where investors have to know the investment sector before interpreting ratings (and thoroughly discount ratings on structured finance). Furthermore, structured products are overly complex, in that risk has been sliced and diced too finely to be supported by the statistical estimations of underlying collateral risk: the financial engineers got too tricky with the innovative new collateral.

Another element of information difficulties that investors are just beginning to learn about is the nature of “true sale.” True sale lies at the heart of securitization, as that is the reason that securitizations can be considered “off-balance sheet.” The concept of true sale is easy to demonstrate. Suppose I sell you my car. It breaks down as you drive away. Too bad. That is a true sale. Now suppose I offer you a money-back guarantee for two weeks. I should probably not spend the money I receive from the “sale” until the two week period expires. Until that, it is not a true sale.

When Citi Group and HSBC issued their SIVs in a form that contained triggers and other elements that allowed the financial instruments at the heart of the SIV to be sold back to the banks if certain events occur, they violated the economic definition (if not the accounting definition) of true sale, even if the banks had the capacity to absorb the losses.

Such terms, however, are not new in structured finance. Even common RMBS allow the loans to be returned to the issuer in the event of loan fraud, which led the industry to insist at the beginning of the crisis that mortgage difficulties were due merely to widespread fraud. Similar terms apply to other ABS. In the credit card sector, in particular, credit card issuers that securitize a lot tend to report more fraud than others. (See Vermilyea, et. al 2008) But even where those terms do not apply, securitized pools have been repaired by issuing banks without consequence – an action termed “explicit recourse” – even though such actions clearly violated FASB 140 and explicit regulatory rules at the time. In some cases, regulators formally excused the recourse by reasoning that if recourse was not allowed the bank at issue would be rendered critically undercapitalized, providing the foundations of today’s too-big-to-fail problem. Hence,

bank regulators have repeatedly used recourse as a form of explicit forbearance, similar to the way bank regulators allowed insolvent banks to continue operating in the Thrift Crisis in the 1980s and the way Countrywide was supported by Federal Home Loan Bank advances. (See Mason and Higgins 2004)

In short, while loan proceeds were sold to investors the risk of the loans never left the originating institution (the sponsor), typically a commercial bank. Think of the problem this way. If a bank sells a pool of loans with an expected loss rate of two percent, they can't really sell the last two percent. They could discount the price, but that is just taking the two percent loss now rather than later. But if losses turn out to be less than two percent the bank made a bad deal. So the bank usually prefers to keep the first loss piece – called the residual. Hence, the expected loss is retained.

Moreover, regulators knew about the problems with risk transfer and consciously and willfully looked the other way, memorializing such practices in regulatory rules and finally moving explicitly away from requiring a transfer of a “majority” of risk to merely requiring a structured finance arrangement to transfer “some” of the risk in 2004.

In fact, regulators did so despite warnings by none other than Fannie Mae and Freddie Mac that such relaxed standards would indeed result in a shell game, where partial or nonexistent risk transfer would cause a financial crisis. In the words of Freddie Mac in response to notice of proposed rulemaking in 2001, such practices would encourage banks “...to structure securitizations that reduce their capital requirements to a fraction of what they would otherwise be required to hold, even though the risk exposure remains the same. The results could be a net reduction in the amount of capital in the banking system to protect against credit risk.” Fannie Mae said even more clearly back then, “There should be equal capital for equal credit risk, regardless of the form in which the risk is held.”

Realizing the shortcomings of true sale, however, is still just an introduction to the information asymmetries facing today's markets. The next step lies in better understanding the terms and triggers of securitizations to recognize perverse incentives apparent in selling the AAA securities but keeping the risk, while also servicing the loans. My recent paper, “Subprime Servicer Reporting Can Do More for Modification than Government Subsidies” shows that while securitization deal terms that require servicers to hold residual stakes can properly align incentives in steady state market environments, they can create perverse incentives when markets are in free-fall. Right now, therefore, a preponderance of servicers are using any means necessary – including modifying loans whether borrowers can pay or not – to keep securitizations in which they hold residual and junior bond stakes away from triggers that can move their own investment stakes from first in line to last in line.

In spite of realizing the structures and shortcomings above, bank regulators and FASB remain reluctant to see a “third way” of approaching true sale. In particular, regulatory capital and the contingent liability do not have to be absolute. My research with Charles Calomiris (2004a) goes so far as to suggest that well-functioning banks routinely hold additional capital against their securitizations, despite lacking regulatory requirements to do so.

The point is that if investors believe that issuers will support securitizations as has happened in the past, they will discount current performance – that is, inflate value from fundamentals – except in cases where the firm is not expected to be a going concern. If, instead, securitizations are treated as true sales that cannot be bailed out, they will be priced strictly according to fundamentals. Not knowing which value to use is confusing. Hence, regulators have a lot of work to do to redefine true sale and removing a great many points of confusion from markets and financial statements.

In conclusion, I would be remiss to leave the reader with an impression that the risks discussed above were unknowable. For years before the crisis, Wall Street joked about the regulatory approach, the saying on the Street being “The only securitization without recourse is your last.” Indeed, without true sale even ratings agencies knew the structure of a securitization did not matter. Hence, the remark by S&P analysts that “even a cow could structure it and we'd rate it.” Willful ignorance is not systemic risk, and perpetuating willful ignorance guarantees repeat crises.

## **V. Resolving A symmetric Information Financial Crises involves more than Bagehot's Rule**

While the Federal Reserve is warning of capital deficiencies in the banking sector, those cannot be fixed with loans. (Indeed, loans to capital deficient intuitions violate the Federal Reserve's own Regulation A.) While bailouts are sometimes necessary, best practices identifying successful and unsuccessful bailouts are well-known through history. Perversely, however, the bailouts being applied today merely deny the capital crisis and perpetuate the asymmetric information. Instead, there needs to be a move to restore transparency to the financial system in a manner that will attract sufficient private capital to restore market and economic growth.

### **A. Promises and Pitfalls of Bailouts**

It is not always clear why bailouts are necessary. With banks, the issue is (relatively) simple. Banks are thought to intermediate high-asymmetric information assets – particularly small business loans – that are thought to be a source of significant economic growth.

That, in itself, however is not generally sufficient to justify such radical support by the government. Banks also aggregate small short-term deposits and lend them in the form of larger longer-term loans. Hence, bank intermediation of information, as well as denomination and maturity make them socially and economically “special” and, perhaps, worthy of occasional government support.

But there are problems with bailouts. Banks that need bailouts often increased their risk by responding to skewed incentives in an incomplete regulatory framework a priori. Skewing incentives further with bailouts therefore worsens the problem.

Also, as the bank robber Willie Sutton famously said, banks are “where the money is.” Politicians, therefore, tend to favor bailouts when they can control how the proceeds are distributed. Economists call this the “dark side” of bank bailouts.

Banks are repositories of economic and political power – a source not only of funds but also of substantial discretionary power over the economy. For example, Krueger and Yoo (2002) show that in Korea resources allocated to bail out banks were channeled in large part to value-destroying large firms. Thus, bank bailouts must be combined with effective reforms of lending practices. Arguments in favor of assisting banks therefore rely on attendant reforms in bank lending practices that will ensure that bank credit is channeled to firms on the basis of the merit of their investments. Too often such reforms are lacking.

As a result of those very real costs and benefits, it is important to think hard about WHY bailouts may be necessary in any particular instance. “The central goal of bank bailout policy is to design bank assistance to meet the legitimate goals of mitigating credit supply contraction for value-creating bank-dependent borrowers, while minimizing the potential abuse of assistance.” (Calomiris and Mason 2004b) It is important, therefore, to think hard about the total package of bailout measures that mitigate credit supply effects while making sure appropriate business reforms are carried out. It is rare, however, that both those conditions are satisfied.

### **B. Costs of Bailouts**

Banking history, both recent and past, provides ample lessons about the pros and cons of bank bailouts. Lesson one is that bank bailouts are very costly. Figure one illustrates that point. In cases like China in the 1990s, the costs reached toward 50% of GDP, and even 55% of GDP in Argentina in the early 1990s. Typically the costs aggregate to only around 20% of GDP. We can be tempted to suppose that developed countries are immune from such costs. Not so. Japan’s costs of the “lost decade” have so far exceeded 12% of GDP, Finland’s costs of 1991-1994 came in at about 11%, Norway 1987–1993 about 8%, Spain 1977-1985 about 17%, and Sweden of 1991 about 4%.

The financial crisis severely impacted the asset and profitability growth of the global banking sector, which started to recover during 2009 and 2010. The growth rate of assets for the Top 1000 banks grew by 5.9% during 2009–11, reaching well above the pre-crisis level. However, during 2011–12 the growth moderated to 4.9% due to the ongoing Eurozone crisis, which was to some degree compensated by the growth of assets in the Asia-Pacific and Latin American regions.

Profits-before-tax (PBT) of the banking sector also witnessed strong growth during 2009 and 2010. The PBT of the Top 1000 banks increased by \$553 billion between 2008 and 2011, and further increased by 4.6% in 2012, primarily due to the efforts taken by the banks to reign in their costs and disposition of non-core assets and unprofitable assets. However, due to the effects of the Eurozone crisis, European banks faced significant pressure regarding profitability.

### **C. Characteristics of Model Bailouts**

Policymakers face two main policy choices for bailouts: loans and recapitalizations. (In Europe they call recapitalizations “nationalizations,” but we don’t like that term in the U.S.) No matter what you call them, however, the choice comes down to the type of crisis that afflicts that economy. For quick liquidity crisis, loans are sufficient. Deeper problems, i.e., more than a week or so, are typically credit solvency problems, necessitating capital injections. Let’s look at the properties of each, in turn.



### Lending in Liquidity Crises

Loan-based assistance is based on Bagehot's rule. (Note, however, that what we call Bagehot's Rule is actually a bit bastardized, as it is unclear that Bagehot envisioned a central bank undertaking these functions, but I digress.)

There are two main problems with Bagehot's rule. First, it is difficult, if not impossible, to distinguish illiquid from insolvent banks in a crisis. Second, banks don't like a true penalty rate, claiming it is too expensive. The point is, however, that if the bank was solvent, it would be able to pay! But an even more important point is that Bagehot's rule has never really been followed. Almost from the Fed's inception, they have flaunted Bagehot's rule at the discount window. The Fed did this by lending to noticeably insolvent institutions as if they were illiquid.

As mentioned previously, one good measure of liquidity is whether the institution needs help for an extended period of time. Is one week enough? One month? Six months? One year? Liquidity crises are quick because they are typified by a situation where prices are known but money is lacking to buy the assets. (Regulatory forbearance keeps firms from supplying those assets to buyers, which confuses the issue in most crises.) Since such situations cannot last very long before money becomes available, liquidity crises are, by definition, short-lived.

According to Anna Schwartz (1992), Discount Window lending problems were evident well before the Great Depression. In the 1920s, the Federal Reserve was already propping up banks that were at risk of insolvency. An early investigation of Federal Reserve lending to weak banks showed that of 457 banks that borrowed continuous borrowers in 1926, 41 banks suspended operations in 1927, while 24 liquidated voluntarily or merged.

When the Fed was reaching its Discount Window lending capacity in the early 1930s the Reconstruction Finance Corporation (RFC) entered the picture, lending to banks, railroads, and other firms explicitly to provide capital. The RFC made short maturity (six -month) loans at high rates (6%) collateralized by banks' best quality, most liquid assets. Loans were typically rolled over at the end of the six months' time, facilitating a supply of long-term credit to weak banks.

Statistical studies of the program's success concluded, "The RFC's practice of subordinating depositors' and investors' interests through senior claims on banks' best assets may have caused banks to fail." (Mason 2001) The idea is simple: you can't fix a solvency problem with more leverage.

A similar program was implemented during the Thrift Crisis of the 1980s. After the Thrift Crisis, the House Banking Committee ordered an investigation of Federal Reserve Discount Window lending. While during earlier crises one could plausibly argue that it is difficult to discern between illiquid and insolvent institutions, by the 1980s regulators had the benefit of ongoing surveillance and regularly updated CAMELs ratios that gave quick insight into bank conditions. (If a bank is rated CAMEL 4 it is in dire difficulty; 5, it is on the brink of failure.)

The results of the House Banking Committee investigation of lending to insolvent institutions during the Thrift Crisis are therefore stunning: "Of 530 borrowers from 1985 on that failed within three years of the onset of their borrowings, 437 were classified as most problem-ridden with a CAMEL rating of 5, the poorest rating; 51 borrowers had the next lowest rating, CAMEL 4." (cited in Schwartz 1992)

The losses were also astonishing: Discount Window loans outstanding to banks at the time of failure amounted to almost \$10 billion. At the time of failure, 60 percent of the borrowers had outstanding discount window loans. These loans were granted almost daily to institutions with a high probability of insolvency in the near term, new borrowings rolling over balances due. In aggregate, the loans of this group at the time of failure amounted to \$8.3 billion, of which \$7.9 billion was extended when the institutions were operating with a CAMEL 5 rating.

Japanese authorities followed the same strategy in the 1990s, based in part upon the perceived success of the U.S. RFC. The program extended ¥1,726b of bonds in 1998, with little economic effect.

The interesting part of the story is that the Fed knew all along that the Discount Window lending was problematic. In 1932, the Fed admonished: "Central banks must not in any way supply capital on a permanent basis either to member banks or to the public, which may lack it for the conduct of their business." (cited in Schwartz 1992)

In 1954, the Fed pronounced the problem eradicated, and promoted, "an established tradition against member bank reliance on the discount facility as a supplement to its resources." The Fed reiterated its position in 1973 in the text of Regulation A, and again in the text of Regulation A in 1980 and 1990, while at the same time extending loans to weak banks liberally through the Discount Window, attaining a maximum exposure of about \$18b within three months of bank failures during the height of the Thrift Crisis.

Hence there is a clear pattern in the 20th century U.S.: each time, loan programs and forbearance

are promoted on the basis of their historical effectiveness, despite empirical statistical evidence to the contrary.

### **Recapitalization Programs for Solvency Crises**

As Mason (2001) noted a three-part strategy of triage to clarify asymmetric information, closing value-destroying insolvent firms, and recapitalizing remaining banks by assuming substantial default risk can effectively resolve insolvency crises. Nonetheless, authorities typically lend to insolvent banks until crises rise to such unmanageable proportions that the tough three-part strategy is obviously necessary, which is the only point at which the costs of such an action can be fully justified. Furthermore, each time, as well, policymakers are reluctant to re-learn the lessons used by private capital firms: keep control of the firm and the proceeds advanced.

The U.S. Reconstruction Finance Corporation advanced sums of money to recapitalize banks that were reopened after supervisors established their solvency or near-solvency through bank examinations carried out during the Bank Holiday and afterward with voting preferred stock shares. Note, however, that those investments carried strict conditions, much like those that private equity firms today impose on their own investments. Full voting rights, board seats, and dividend restrictions. Before the Depression was through, the government owned stock in nearly every institution in the U.S., and often had effective control by way of owning the largest voting block of shares. The RFC used that power to fire CEOs and install its own managers to nurse the institutions back to health. As private equity investors know today, however, do otherwise would be a waste of money.

The results were dramatic. Dividends were restricted, but bank capital and bank loans increased. While the program could not immediately halt the decline in the capital/asset ratio or the loan/asset ratio (because assets still needed to be written down to reflect true credit quality), loans became available to creditworthy borrowers and banking sector stability was restored.

Now look at what happened in Japan. Massive capital infusions in 1998 and 1999, totaling some ¥7,500b were undertaken between 1998 and 1999 to little economic effect. The reason is simple: the Japanese authorities did not restrict dividends or otherwise undertake regulatory reforms that strengthened the banking system. As a result, dividend payments were increased after 1999, as proceeds were tunneled to keiritsu stockholders. Since the capital did not encourage loan supply growth, roughly ¥7,500b (roughly \$ 75 billion) were wasted. The government undertook another, larger, round of recapitalizations with appropriate reform measures the following year achieved financial sectors stability. (Calomiris and Mason 2004b)

### **D. The Situation Today**

By ignoring the asymmetric information roots of today's crisis and remaining reluctant to close insolvent value-destroying institutions, U.S. bailout programs are merely wasting money and prolonging the downturn. At the time of writing, there remains no intention of publishing the full results of the Treasury's "Capital Allocation" program (colloquially referred to as the stress tests) or extending those tests to include regional banks.

Moreover, Treasury has vowed that none of the nineteen largest institutions will fail, regardless of their condition. Value-destroying firms can and often should fail through the process of reforming financial market transparency and liquidity. (Mason 2009) Tragically, no authority is proposing regulatory reform that can provide clarity to resolve the asymmetric information. Hence, the crisis continues.

### **SUMMARY AND CONCLUSIONS**

In summary, financial innovation is inextricably tied to asymmetric information and therefore sets the stage for financial crises. Over history, every truly meaningful crisis has had elements of asymmetric information, particularly affecting innovative financial instruments that are primary market liabilities.

But financial innovation, by definition, occurs outside the regulated financial sector. Indeed, that is often the point of financial innovation! Hence, limiting regulators' scope of supervision to one narrow legally-defined sector of institutions sets a natural stage for regulatory arbitrage and crises.

In such a system, crisis will always "surprise" supervisors, for whom financial innovations outside their narrow legally- defined charge do not exist. Everything will look like systemic risk, merely because banks reside in a financial system! Today, off-balance sheet structured finance-based funding, the regulatory approval of banks' use of credit default swaps for hedging capital needs, and the preponderance of non- bank subsidiaries in bank holding companies after Gramm-Leach-Bliley led to multiple sources of

unrecognized risks that took regulators by “surprise,” not because they were unknown but because regulators refused to look outside their narrow charges to see the wider financial system. Similarly, however, any attempt to change regulations will inextricably affect other non- or differently-regulated institutions, thereby leading to “unintended” (not unavoidable) consequences. In short, it is time for bank regulators to wake up and realize they live in a far larger financial system. Once they acknowledge their environment, they can properly see regulatory arbitrage for what it is, and properly defend the boundaries of regulated financial institutions.

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