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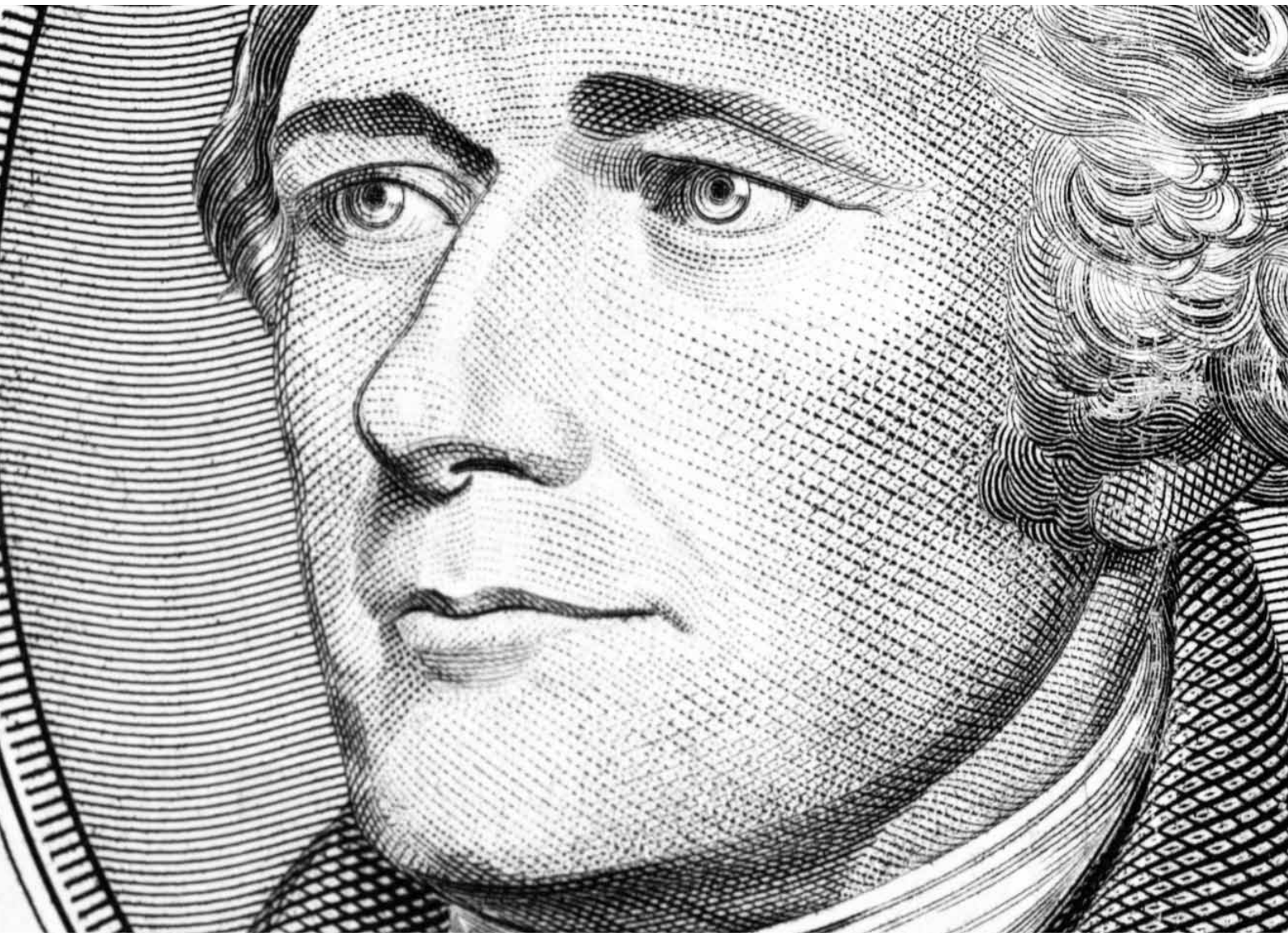
Not What They Had in Mind

A History of Policies that Produced the Financial Crisis of 2008

Arnold Kling



September 2009

The Legatum Institute is pleased to publish this timely study, *Not What They Had in Mind: A History of Policies that Produced the Financial Crisis of 2008*, by Dr. Arnold Kling[1]. The study was produced as part of ongoing research by the Financial Markets Working Group of the Mercatus Center, George Mason University, USA.

Unlike other studies of the global financial crisis, which are more limited in scope, this important study provides a comprehensive historical account of how policy choices made over decades in the United States created conditions ripe for a global crisis. It counters flawed conventional notions about the sources of the crisis and is indispensable reading for anyone who seeks the truth about what happened to cause the crisis – and why.

The Legatum Institute has been a supportive partner of the Mercatus Center's work to provide an evidence-based account of the economic crisis of 2008 and is gratefully reprinting this report with permission from the Mercatus Center. The Legatum Institute is a global policy, research, and advisory organization based in London, United Kingdom. The Institute supports original research in political economy, global development, and democratic governance with an eye toward promoting human dignity, economic progress, and political liberty.

Consistent with its worldwide mission, the Institute seeks to bring to an international audience an understanding how policy choices in the world's largest single economy, the United States, led to a crisis that has affected the global economy. It is our hope that the lessons contained in this historical account will equip policymakers, business leaders, investors, the media, and everyday citizens with the knowledge necessary to avoid similar pitfalls in the future, and to foster healthier, stronger, and more sustainable prosperity over the long term.

1 Authors note: I would like to thank Ben Klustsey for research assitance. I would also like to thank Lawrence J. White, Tyler Cowen, Russ Roberts, Brian Hooks, and Rob Raffety for helpful comments. Errors that remain are my own.

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Cover image: Alexander Hamilton, first US Treasury Secretary and founder of the First National Bank.

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CONTENTS

CHAPTER ONE

INTRODUCTION

"Those who cannot remember the past are condemned to repeat it."

GEORGE SANTAYANA

Many Americans who lived through the financial crisis of 2008 will remember the stunning events that took place: large, famous financial institutions suddenly unable to survive as independent entities; policy makers scrambling to prevent what they saw as a potential catastrophe; massive taxpayer-funded bailouts; plummeting stock prices; "toxic assets" with exotic initials like CDO and CDS. Representatives of credit rating agencies excoriated by Congressional committees. Executives at firms like AIG Insurance and Merrill Lynch accused of excessive short-term greed and risk-taking.

But those who only remember the headlines of 2008 will fail to heed Santayana's warning. For the roots of the crisis go back many decades, and if we are to avoid repetition we have to fully understand the context in which decisions were made in the years leading up to the crisis.

As this paper will illustrate, the seeds for much of the current crisis were sown in the policy "solutions" to previous financial and economic crises. Any attempt to dissect and understand the current crisis that does not account for the complex history, evolution, and integrated nature of financial regulations will not yield meaningful lessons for today's policy makers.[2]

What made the crisis possible were the illusions that key participants held during the years that preceded the meltdown. Financial executives had excessive confidence in mathematical models of risk, in financial engineering, and in the "AAA" designation of credit rating agencies. However, it is misleading to simply write, in the words of one prominent white paper, that "Market discipline broke down as investors relied excessively on credit rating agencies."[3] What this formulation overlooks is the fact that regulators themselves encouraged the reliance on agency ratings, particularly for compliance with bank capital requirements. In fact, we will see that the regulatory impetus to use agency ratings dates back to the 1930s, was reinforced in the 1970s, and was significantly enhanced as recently

2 To find poor historical analysis, one need only examine Department of the Treasury, *Financial Regulatory Reform—A New Foundation: Rebuilding Financial Supervision and Regulation* (Washington, DC: GPO, 2009), http://financialstability.gov/docs/regs/FinalReport_web.pdf/. This 89-page "white paper" overlooks many key historical factors.

3 U.S. Department of the Treasury, *Financial Regulatory Reform: A New Foundation Rebuilding Financial Supervision and Regulation*, 2009 p. 3.

as January 1, 2002. To ignore these regulatory policies and instead assert that agency ratings were relied on because "market discipline broke down" is to present a distorted view of history.[4]

The fact is that the regulatory community shared in the illusions of key market participants. Regulators, too, placed too much confidence in financial engineering. Regulators, too, thought that the dispersal of risk into the "shadow banking system" helped make the core financial system safer. Regulators, too, thought that securitization was a superior form of mortgage finance.

This paper examines the history of the evolution of financial markets and financial regulation as it pertains to the financial crisis. While it considers alternative points of view concerning the causes of the crisis, it takes a particular position, based on my experience in looking at competition in the market for mortgage credit risk. Specifically, it emphasizes the role played by bank capital regulations in promoting the practices that produced an unstable financial system.

The next section presents a framework for looking at the crisis as a combination of four elements: bad bets, excessive leverage, domino effects, and 21st-century bank runs. This in turn allows one to assess the relative importance of five broad policy areas:

- Housing policy
- Capital regulation for banks
- Industry structure and competition
- Autonomous financial innovation (not driven by capital regulation)
- Monetary policy

To understand how policies in these areas might have contributed to the crisis, we need to have a framework that describes the crisis. Once we know how the crisis came about, we can start to allocate responsibility to various policy areas.

4 Ibid.

CHAPTER TWO

A FRAMEWORK FOR UNDERSTANDING THE FINANCIAL CRISIS

The financial crisis can be thought of as consisting of four components:

1. Bad bets
2. Excessive leverage
3. Domino effects
4. 21st-century bank runs

1. Bad Bets

Bad bets were the investment decisions that individuals and firms made that they later came to regret. They were the speculative investments that drove the housing bubble. When consumers in 2005 through 2007 purchased houses primarily on the expectation that prices would rise, those investments turned out to be bad bets. When lenders held securities backed by mortgage loans made to borrowers who lacked the equity or the income to keep their payments current during a downturn, those were bad bets. When AIG insurance sold credit default swaps (CDS) on mortgage securities, giving AIG the obligation to pay insurance claims to security investors in the event of widespread mortgage defaults, those were bad bets.

One way to estimate the significance of bad bets is to estimate the loss in the value of owner-occupied housing. The peak value was roughly $22 trillion, and if house prices declined by 25 percent, this is roughly a $5 trillion loss. This is a reasonable estimate of the order of magnitude of the losses from bad bets.

2. Excessive leverage

Banks and other financial institutions took on significant risks without commensurate capital reserves. As a result, declines in asset values forced these institutions either to sell hard-to-value assets or face bankruptcy. Commercial banks had insufficient capital to cover losses in their mortgage security portfolios. Freddie Mac and Fannie Mae had insufficient capital to cover the guarantees that they had issued on mortgage securities. Investment banks, such as Merrill Lynch, had insufficient capital to cover losses on mortgage securities and derivatives. AIG insurance had insufficient capital to cover the decline in value of its CDS portfolio.

In hindsight, large financial institutions were far too fragile. They were unable to withstand the drop in value of mortgage-backed securities that in turn stemmed from falling house prices.

3. Domino effects

Domino effects are the connections in the financial system that made it difficult to confine the crisis to only those firms that had made bad bets. Healthy institutions could be brought down by the actions of unhealthy institutions. For example, when Lehman Brothers declared bankruptcy, a money market fund known as Reserve Prime, which held a lot of Lehman debt, indicated that it would have to mark the value of its money market fund shares to less than $1 each ("breaking the buck" in financial parlance).

Of course, one could argue that Reserve Prime was not so much the victim of a domino effect as it was a bad bettor. Financial professionals had been aware for months that Lehman was in difficulty, and keeping a large position in Lehman debt can be viewed as making a bet that the government would treat Lehman as "too big to fail."

Another domino effect potentially comes from sales of hard-to-value assets. Suppose that Bank B holds rarely traded securities and that the most recent market prices indicate a value of $X for those securities. However, Bank A is in distress and so must sell similar assets at a low price. This causes Bank B to mark its assets down below $X. As a result, Bank B falls below regulatory capital requirements and must sell some of these assets. This depresses their price further, causing Bank C to mark down its assets and fall below its minimum capital requirements, and so on.

We may never know how serious domino effects might have been in the financial crisis because the federal government took such strong steps to prop up institutions. For example, we do not know what would have happened if the government had allowed Freddie Mac and Fannie Mae to go into bankruptcy. Presumably, institutions with large holdings of GSE securities would have suffered major losses.

4. 21st-century bank runs

In a traditional bank run, depositors who wait to withdraw their money from an uninsured bank might find that the bank is out of funds by the time they reach the teller. That creates

an incentive for a depositor to run to the bank so as to be the first in line—hence a bank run. By 21st-century bank runs, I mean the financial stress created by situations in which the first creditor that attempts to liquidate its claim has an advantage over creditors that wait.

The incentives for bank runs come from a structure of financial claims that leads individual agents to form mutually incompatible contingency plans. In the case of an uninsured bank, each depositor's contingency plan may be to withdraw funds at the first sign of trouble. Such plans are incompatible because if too many depositors attempt to execute their plans at once, they cannot all succeed. Instead the bank will fail.

For AIG Insurance, credit default swaps resulted in a 21st-century bank run carried out by counterparties. Banks that had purchased protection on mortgage securities from AIG were not sure that AIG had the resources to make good on its swap contracts. These counterparties exercised clauses in their contracts that allowed them to demand good-faith collateral from AIG in the form of low-risk securities, even for credit default swaps on securities that had not yet defaulted. The demands for collateral soon exceeded the available liquid assets at AIG, which might have forced AIG either to liquidate valuable assets hurriedly or to declare bankruptcy. It was at that point, in late September of 2008, that the government stepped in to provide the low-risk assets that enabled AIG to meet its collateral obligations in exchange for the government taking over most of the equity value of AIG.

These 21st-century bank runs caused the failures of the large investment banks. They held portfolios of illiquid securities, including tranches of mortgage-backed securities, that they financed in the "repo" market, meaning that they borrowed funds and used the illiquid securities as collateral.[5] When investors developed concerns about the value of mortgage securities, they greatly reduced their willingness to make "repo" loans to institutions offering those illiquid securities as collateral. For investment banks with large inventories of securities to finance, this created a shortage of liquidity. For such institutions, the situation felt like a bank run.

Similarly, the structured investment vehicles (SIVs), created by commercial banks, were attempting to carry long-term mortgage-backed securities financed with short-term commercial paper. When investors became concerned about the value of the mortgage securities, the commercial paper market dried up. This created conditions among the SIVs that were similar to a bank run.

The 21st-century bank runs suggest multiple equilibria. An institution in the good equilibrium can hold onto its long-term positions by rolling over short-term funding at low interest rates: the institution proves solvent. In the bad equilibrium, the institution's creditors panic; it cannot roll over its short-term funding except at very high interest rates; and the institution collapses. With domino effects, the bad equilibrium spreads from one firm to another.

Domino effects and 21st-century bank runs exposed a weakness in the ability of regulators and courts to handle failures of large institutions. If bankruptcy or some other form of resolution could take place quickly with clear rules for determining the priorities of various creditors, then there would be less incentive for creditors to rush to exercise

5 Suppose that institution A holds a mortgage-backed security, which it wants to carry using short-term financing. Institution A sells the security to institution B, but institution A commits to repurchase the security in one week at a slightly higher price that reflects the short-term interest rate. Institution B is said to make a "repo" loan to institution A with the security as collateral. If institution A were to default on the loan, institution B would retain possession of the security.

claims on troubled institutions. In addition, this practice would limit the domino effects, because creditors could obtain quickly whatever assets to which they were entitled, rather than face months of legal uncertainty. Finally, with an effective resolution authority in place, government officials would not feel so compelled to bail out troubled institutions.

The Four Elements Together

It is important to keep in mind that the financial crisis required all four elements. Without the bad bets, financial institutions would not have come under stress. Without the excess leverage, the bad bets would not have caused a financial crisis.[6] Without the potential domino effects and the 21st-century bank runs, policy makers in 2008 would have been less frustrated and frightened, and they would have been hard pressed to justify the emergency financial measures, including unprecedented financial bailouts, if the crisis had been limited just to bad bets and excessive leverage.

The government presumably designed the emergency response to forestall domino effects and bank runs. However, in the process of propping up troubled institutions, policy makers also put themselves in the position of insulating key firms from some of their losses on bad bets. The ideal objective might be to prevent domino effects and bank runs without forcing taxpayers to absorb losses from bad bets. However, that is a difficult needle to thread.

Because policy makers took such extensive measures, it is difficult to gauge the significance of domino effects and bank runs. As a result of the bailouts and other policies, we presumably did not observe the worst of what might have happened had the domino effects and bank runs been allowed to play out. It is impossible to know exactly how serious the consequences would have been had those phenomena proceeded unchecked.

> As far as the oil wildcatter is concerned, he was just about to strike oil when his financing gave out. One has to be somewhat skeptical of the claims that the financial crisis was primarily due to an unwarranted loss of confidence.

To the extent that a financial institution was the victim of bad bets and excessive leverage, one is tempted to argue that those were its own choices and its managers and shareholders should suffer the consequences. These are losses due to bad decisions. On the other hand, to the extent that an institution was squeezed mostly by domino effects and bank runs, one is tempted to argue that government action might correct this bad equilibrium, as these are problems of loss of confidence.

The regulatory response was focused on loss of confidence. The Federal Reserve and the Treasury placed more importance on loss of confidence than on bad decisions. Both their actions during the crisis and the reform proposals that they floated in 2009 were focused mostly on issues related to domino effects and bank runs.

In this respect, the financial regulators probably reflected the views of the financial institutions. The institutions saw themselves as victims of a loss of confidence. In that regard, they reacted like executives of other businesses under adversity. In general, if you ask the CEO of a failed business what caused the failure, the CEO will cite loss of confidence rather

6 The collapse of stock prices in 2000 at the end of the Dotcom bubble illustrates how bad bets alone need not have catastrophic consequences for the financial system or for the economy. Because the bad bets took place in the equity market, the stock market crash was fairly self-contained, and the resulting recession was mild.

than bad decisions. As far as the oil wildcatter is concerned, he was just about to strike oil when his financing gave out. The founder of a startup that burned through all of its cash will argue that he was making great progress until his investors lost their nerve. The retailer or real estate developer that goes bankrupt will blame the banks for their unwillingness to stretch out loans. Similarly, executives at Citigroup or AIG will claim that the problem is not the severity of their losses but the loss of confidence on the part of their creditors and counterparties. Accordingly, one has to be somewhat skeptical of the claims that the financial crisis was primarily due to an unwarranted loss of confidence.

The evidence for bad decisions includes the large number of mortgage defaults and the large number of downgrades of mortgage securities. It also includes the fact that private hedge funds did not see much opportunity in picking up distressed assets. If loss of confidence were important, then on a temporary basis assets would have been driven far below fundamental values, and other firms would have found it profitable to buy illiquid assets or to take over troubled banks. As it turned out, only the government was willing to try to take advantage of this profit opportunity. If loss of confidence was the primary problem, then the government's investments in banks ought to earn profits for the taxpayers. Even the AIG bailout should ultimately provide taxpayers with a windfall return. It is too early to say, but my guess is that this will not prove to be the case.

CHAPTER THREE

THE MATRIX OF CAUSAL FACTORS

The next step in understanding the historical evolution of the financial crisis is to map policy areas to the four elements of the crisis in terms of causal relationships. As stated earlier, the five policy areas are housing policy, capital regulation for banks, competitive boundaries in financial intermediation, response to financial innovation, and monetary policy. Below is a matrix that includes my weights on the importance of each of these factors relative to the column heading. For example, I assign housing policy a high weight in leading to bad bets and no weight in creating bank runs. The remainder of this section will present my rationale for these weights.

Policy Area	Bad Bets	Leverage	Domino Effects	Runs
Housing Policy	High weight	No weight	No weight	No weight
Capital Regulation	Very high weight	Very high weight	Very high weight	Very high weight
Industry Structure	No weight	Very low weight	Low weight	Low weight
Innovation	Low weight	Low weight	Low weight	Low weight
Monetary Policy	Low weight	Low weight	No weight	No weight

As this matrix conveys, capital regulations were the most important causal factor in the crisis. Capital regulations encouraged banks and other financial institutions to make bad bets, to finance those bets with excessive leverage, and to set up financial structures that were subject to domino effects and to 21st-century runs.

Bad bets were caused primarily by capital regulations and by housing policy. As will be explained below, capital regulations distorted mortgage finance away from traditional lending and toward securitization. Capital regulations specifically referenced credit rating agency grades of securities, and these grades proved faulty. Thus, banks were steered toward making bad bets.

Another contributor to bad bets was *housing policy*. Housing policy consistently encouraged more home ownership and subsidized mortgage indebtedness. This policy contributed to an unsustainable speculative surge in home purchases.

It is worth noting that property bubbles took place at around the same time in many other countries, including the United Kingdom and Spain. These property bubbles cannot be blamed on U.S. housing policy. Thus, policy alone is not entirely responsible for the bad bets. Clearly, there were other factors, such as the apparent flow of savings from China or other rapidly-growing countries into Western property markets.

Excess leverage should be blamed largely on the perverse nature of capital regulations. These regulations, which were supposed to constrain leverage, instead were implemented in ways that encouraged risk-taking. For commercial banks, regulators sanctioned banks' use of securitization, credit default swaps, and off-balance sheet entities to hold large amounts of mortgage risk with little capital. For investment banks, the SEC voted in 2004 to ease capital requirements. For Freddie Mac and Fannie Mae, the low capital ratios that had historically been applied to investments in low-risk mortgages came to be applied to the firms' forays into subprime mortgage securities. AIG Insurance, as a major seller of credit default swaps, was effectively writing insurance without being required to set aside either loss reserves or capital. Thus, every major financial institution was given the green light to pile on mortgage credit risk with very little capital.

Regulators understood most of the reasons for the increase in leverage, but they did fail to appreciate some *innovations*. For example, it is unlikely that the Office of Thrift Supervision, which had nominal oversight of the AIG Insurance unit that sold credit default swaps, understood the nature of the leverage in AIG's positions. Thus, I give a low but non-zero weight to autonomous innovation in creating excess leverage.

Financial engineers created collateralized debt obligations (CDOs), credit default swaps (CDSs), and other esoteric products largely to exploit opportunities for regulatory capital arbitrage. Compared with traditional mortgage lending financed by deposits, these financial instruments increased the financial interdependence and vulnerability to runs of the financial system.

In explaining bad bets and excessive leverage, there are those who place a higher weight than I do on the *monetary policy* of the Federal Reserve. The argument is that the Fed kept short-term interest rates too low for too long, and this encouraged institutions to fund risky mortgage-securities with short-term debt.[7] As I will explain below, I believe that monetary policy was not such a large culprit in creating the housing bubble and the expansion in leverage.

I also believe that *capital regulations* set the stage for domino effects and bank runs, because the regulations skewed incentives away from traditional mortgage lending and toward securitization and risky financial structures that incorporated mortgage securities. Financial engineers created collateralized debt obligations (CDOs), credit default swaps (CDSs), and other esoteric products largely to exploit opportunities for regulatory capital arbitrage. Compared with traditional mortgage lending financed

7 See, for example, John Taylor, *Getting off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis* (Stanford, CA: Hoover Institution Press, 2009).

by deposits, these financial instruments increased the financial interdependence and vulnerability to runs of the financial system.

For *domino effects* and *bank runs*, intuition may suggest that a large role was played by changes to *industry structure* due to mergers, acquisitions, and the erosion of boundaries between investment banking and commercial banking. The Obama Administration white paper[8] is among many analyses that stress the significance of the growth of the "shadow banking system." This shadow banking system refers to off-balance sheet entities (such as SIVs) and portfolios of investment banks and other non-bank institutions, which together amounted to trillions of dollars.

If we could conduct an alternative history with capital regulations that did not favour securitization and off-balance-sheet entitites, then the shadow banking system would not have been an issue, and no crisis would have occurred.

However, much of what is now called "shadow banking" emerged in response to capital regulations. The consequent fragility of the financial system reflected above all the risk allocation created by the structured transactions and the leverage at individual institutions, rather than new relationships between institutions of different types. If we could conduct an alternate history with capital regulations that did not favor securitization and off-balance-sheet entities, then the shadow banking system would not have been an issue, and no crisis would have occurred. Conversely, consider an alternate history where institutions had to maintain a strict, Glass-Steagall separation of commercial from investment banking yet continued to operate under capital regulations that blessed securitization, off-balance sheet financing, and other complex transactions. In that case, I believe that the crisis would have unfolded pretty much as it did.

Apart from practices that were developed for the purpose of regulatory capital arbitrage, financial innovation played a small role in the crisis. CDO's, CDS's on mortgage securities, and SIVs are examples of innovations that took advantage of regulatory capital arbitrage. On the other hand, mortgage credit scoring is an example of what I call an autonomous innovation, meaning an innovation that was created for reasons other than regulatory capital arbitrage. It seems that overconfidence in credit scoring helped fuel the bad bets in mortgage lending. However, on the whole, most of the dangerous innovation seems to have been driven by regulatory capital arbitrage.

8 *A New Foundation: Rebuilding Financial Supervision and Regulation*, 2009.

CHAPTER FOUR

PAST CRISES MAKE BAD POLICY: HOUSING POLICY AND CAPITAL REGULATION

Before proceeding to a more detailed look at the evolution of policy in the five areas, it is worth pointing out that housing policy and bank regulatory policy evolved out of previous crises. The lesson is that financial regulation is not like a math problem, where once you solve it the problem stays solved. Instead, a regulatory regime elicits responses from firms in the private sector. As financial institutions adapt to regulations, they seek to maximize returns within the regulatory constraints. This takes the institutions in the direction of constantly seeking to reduce the regulatory "tax" by pushing to amend rules and by coming up with practices that are within the letter of the rules but contrary to their spirit. This natural process of seeking to maximize profits places any regulatory regime under continual assault, so that over time the regime's ability to prevent crises degrades.

The U.S. government made its first attempt to reshape the mortgage market in the 1930's. When the Great Depression hit, the typical mortgage loan was a five-year balloon: the borrower paid interest only for five years, at which point the entire mortgage came due. The borrower either had to obtain a new loan or pay off the existing loan. Under the Depression's circumstances of declining prices and incomes and closing banks, many homes went into foreclosure. In the absence of reliable deposit insurance, banks were subject to runs, and thousands of banks closed.

In response to these problems, policy makers pressed for two major reforms. One was the advent of the thirty-year fixed-rate mortgage, promoted by new agencies, including the Federal Housing Administration (FHA) and the Federal National Mortgage Association (FNMA), which was created in 1938. Another was the creation of Federal deposit insurance.

Fast forward forty years. From the late 1970s through the late 1980's, the savings and loan industry in the United States collapsed, with many institutions becoming insolvent. Because the savings and loans associations (S&Ls) were holding thirty-year fixed-rate mortgages, their assets plummeted in value with rising inflation and interest rates. Largely

funded with insured deposits, they had little incentive to avoid taking risks, and indeed with deregulation they made bad bets in a number of areas, including junk bonds and commercial real estate, in a desperate attempt to restore profitability. Thus, the combination of thirty-year fixed-rate mortgages and insured deposits, which were the solutions to the 1930's mortgage crisis, ended up producing the 1970's crisis.

Through the 1970s, banks and S&Ls were subject to regulation Q, which placed ceilings on the interest that these institutions could pay on various forms of deposits. As a result of regulation Q, when inflation and interest rates increased in the 1970's, the interest rates on deposits were artificially low, causing savers to seek higher returns elsewhere. The result was disintermediation, in which depositors bypassed banks and S&Ls for money market funds.

Disintermediation posed a dilemma for depository institutions and their regulators. If regulators did not lift the regulation Q ceilings, then the volume of deposits would shrink. However, lifting the ceilings would raise the cost of funds for banks and S&Ls. Because their assets were long-term, fixed-rate mortgages, the S&Ls were in trouble with or without regulation Q. With regulation Q, they lost funds. Without regulation Q, they suffered a negative spread between the earnings on their assets and the cost of their liabilities.

Thus, the regulators responded to the S&L crisis by promoting securitization, market-value accounting, and risk-based capital, all of which contributed to or exacerbated the most recent crisis. Mortgage securities became the "toxic assets" at the core of the crisis. Risk-based capital regulations promoted the use and abuse of these instruments. The combination of risk-based capital and market-value accounting served to exacerbate both the boom and the bust.

Regulation Q ceilings were phased out in the early 1980s. At the same time, interest rates were at record levels, as the Fed attempted to bring down inflation. Holding thirty-year fixed-rate mortgages funded by short-term deposits, the S&Ls were being squeezed to death. Ultimately, many of the institutions were closed, and taxpayers took losses of over $100 billion in order to cover deposit insurance.

In the aftermath of the S&L crisis, policy makers drew three conclusions. One was that securitization of mortgages was better than traditional mortgage lending. The thinking was that pension funds, insurance companies, and other institutions with long-term liabilities were better positioned to bear the interest-rate risk associated with thirty-year fixed-rate mortgages than were banks and S&Ls that relied on short-term deposits.

Another lesson of the S&L crisis was that regulators should not rely on book value accounting. By not marking to market their economically depreciated mortgage assets, S&Ls were able to stay in business even though they were insolvent, taking on more risk and adding to the ultimate cost of the taxpayer bailout.

A final lesson of the S&L crisis was that capital requirements needed to be formal and based on risk. Policy makers wanted private investors, not taxpayers, to be the primary suppliers of risk capital to banks. The concept of risk-based capital was embedded in the Basel Accords in 1989, an international set of standards adapted and implemented by bank regulators in countries across the world, including the United States.

Thus, the regulators responded to the S&L crisis by promoting securitization, market-value accounting, and risk-based capital, all of which contributed to or exacerbated the

most recent crisis. Mortgage securities became the "toxic assets" at the core of the crisis. Risk-based capital regulations promoted the use and abuse of these instruments. The combination of risk-based capital and market-value accounting served to exacerbate both the boom and the bust.

During the crisis, risk-based capital and market-value accounting contributed to domino effects. When a bank was forced to sell mortgage-backed securities, this lowered the market value of these securities, triggering write-downs at other banks under market-value accounting. This put other banks below the regulatory minimum for capital.

This history suggests that as policy makers respond to one crisis, their solutions can set the stage for the next crisis. There is a significant difference between hindsight and foresight, a fact that I wish to emphasize when looking at the evolution of policy in the five main areas: housing policy, capital requirements, industry structure and competition, innovation, and monetary policy.

In discussing each of these five policy areas, my goal is to provide a historical narrative that explains how the issues appeared to policy makers. What factors made their decisions seem reasonable at the time? What factors were overlooked? What lessons might we learn?

CHAPTER FIVE

HOUSING POLICY

Housing policy was close to the center of the financial crisis. The United States government's policy has been to encourage as many people as possible to purchase homes. The use of mortgage credit has been particularly subsidized. The culmination of this policy was a wild spiral of increasing home purchases, higher home prices, and increased housing debt-to-equity ratios, until these trends reached their limit and the process went into reverse.

From 2000 to 2005, the total value of residential real estate in the United States rose by 81 percent.[9]

The total value of household mortgage debt rose even faster.[10] Over that same period, the GDP price index for residential construction increased 29 percent.[11] Thus, even after adjustment for changes in the cost of construction, real estate values and mortgage indebtedness increased by more than 50 percent in just five years. The home ownership rate, a politically salient figure, reached 69 percent, up 5 percentage points from a decade earlier.[12]

Between 2005 and 2008, household mortgage debt continued to rise, by a total of 18 percent. However, the value of residential real estate declined by 14 percent. As a result, over these three years the average ratio of home equity to real estate value plunged from 58 percent to 43 percent.[13]

Policies that encouraged home ownership in the past decade include: the mortgage interest deduction; the capital gains tax exclusion; Federal programs that guarantee mortgage loans (such as the Federal Housing Authority (FHA) and Veterans Administration (VA)) and Federal programs that guarantee some liabilities of some mortgage lenders (deposits of savings loans, debt and securities of Freddie Mac and Fannie Mae); the Community Reinvestment Act; and "affordable housing goals" for Freddie Mac and Fannie Mae.

9 Federal Reserve Board Flow of Funds Accounts, table B100, line 4.

10 Ibid., line 33.

11 Bureau of Economic Analysis, *National Income and Product Accounts Table: Table 1.1.4 Price Indexes for Gross Domestic Product,* July 31, 2009 http://www.bea.gov/national/nipaweb/TablePrint.asp?FirstYear=2000&LastYear=2005&Freq=Qtr&SelectedTable=4&ViewSeries=NO&Java=no&MaxValue=112.283&MaxChars=7&Request3Place=N&3Place=N&FromView=YES&Legal=&Land=.

12 U.S. Census Bureau, *Housing Vacancies and Homeownership Table 15: Homeownership Rates of the United States, by Age of Householder and by Family Status,* 2005 http://www.census.gov/hhes/www/housing/hvs/annual05/ann05t15.html.

13 Board of Governors of the Federal Reserve System, *Flow of Funds Accounts of the United States: Flows and Outstandings First Quarter 2005*, 2005 and Board of Governors of the Federal Reserve System, *Flow of Funds Accounts of the United States: Flows and Outstandings Fourth Quarter 2008*, 2008.

The mortgage interest deduction has been in place since the income tax was first enacted in the United States. It probably had its greatest impact in the 1970s, when marginal tax brackets and nominal interest rates were higher than they are today. At the margin, the mortgage interest deduction probably played little role in encouraging the recent surge in home ownership. Many of the marginal home buyers had low income tax rates. For home buyers in higher tax brackets, the effect of the mortgage interest deduction may have been to increase the demand for larger and higher quality homes.

What the mortgage interest deduction may have affected in recent years was the amount of debt consumers were willing to have on their homes. The tax deduction reduced the incentive of owners to pay off or pay down their mortgages. By the same token, it gave homeowners a reason to believe that home equity loans were the cheapest form of credit available, particularly after the deductibility of other forms of consumer interest was ended in 1997.

Congress chartered Freddie Mac to do what it had forbidden the S&Ls to do: raise funds in one part of the country to finance mortgage lending elsewhere. Freddie Mac created a secondary market in mortgages, in which mortgages could be pooled together and sold as securities. In fact, the mortgage securities market was initially a government-created phenomenon.

The capital gains tax exclusion was changed in 1997. Prior to that, homeowners over age 55 could exclude up to $125,000 in capital gains on the sale of their primary residences. Before age 55, a homeowner could avoid capital gains tax by "rolling over" into a more expensive home.

In 1997, this was changed to a straight exclusion of $500,000 for married couples ($250,000 for single individuals), regardless of age. Under some conditions, second homes also could be eligible for this capital gains tax exclusion. The more liberal capital gains tax exclusion rewarded housing speculators and thus may have contributed to the housing bubble.

From the 1930s onward, mortgage lending was undertaken by institutions whose liabilities were guaranteed by the Federal government. In addition to Fannie Mae, which was chartered in 1938, there were the savings and loans, which had Federal deposit insurance.

By the late 1960s, restrictions on interstate banking and Regulation Q (which set regulatory ceilings on the interest rates that thrifts could pay depositors) created a shortage of mortgage funds in fast-growing regions, particularly in California. Rather than fix this problem by addressing the regulatory causes, Congress chartered Freddie Mac to do what it had forbidden the S&Ls to do: raise funds in one part of the country to finance mortgage lending elsewhere. Freddie Mac created a secondary market in mortgages, in which mortgages could be pooled together and sold as securities.

In fact, the mortgage securities market was initially a government-created phenomenon. In 1968, Congress created the Government National Mortgage Association (GNMA) to sell securities backed by mortgages guaranteed through government programs of the Federal Housing Administration (FHA) and the Veterans Administration (VA). One purpose was to get these mortgages off the books of the Federal government so that the Administration would not have to keep coming back to Congress to request increases in the debt ceiling, for these requests created opportunities for Congress to express frustration with the Vietnam War. As part of this process of trying to trim the government's balance sheet, Fannie Mae was sold to private investors.

By the early 1980s, S&Ls needed a new source of funds. They could not sell their mortgages without incurring losses that would have exposed their insolvency. Instead, with the approval of regulators, investment bankers concocted a scheme under which a savings and loan would pool mortgages into securities which would be guaranteed by Freddie Mac. The S&L would retain the security and use it as collateral to borrow in the capital market. However, unlike an outright sale of the mortgages, the securitized mortgage transaction would not trigger a write-down of the mortgage assets to market values. The accounting treatment of mortgage securities, in which they were maintained at fictional book-market values, enabled the S&Ls to keep a pretense of viability as they borrowed against their mortgage assets. Fannie Mae soon joined Freddie Mac in undertaking these transactions.

Thus, from the 1960s through the early 1980s, mortgage securitization was driven largely by anomalies in accounting treatment and regulation. GNMA was developed in order to move mortgages off the government's books, even though government was still providing guarantees against default. Congress created Freddie Mac to work around the problems caused by regulation Q and interstate banking restrictions. And the growth in securitization by Freddie Mac and Fannie Mae was fueled by the desire of regulators to allow S&Ls to raise funds using their mortgage assets without having to recognize the loss in market value on those assets. Mortgage securitization did not emerge organically from the market. Instead, it was used by policy makers to solve various short term problems.

Mortgage securitization did not emerge organically from the market. Instead, it was used by policy makers to solve various short term problems.

Securitization failed to prop up the S&L industry. When that industry collapsed, Freddie Mac and Fannie Mae were poised to dominate the housing finance market. They did so from the late 1980's until the late stages of the homeownership boom. By 2003, Freddie and Fannie together held half of all mortgage debt outstanding. However, from 2003 through 2005, many buyers could not qualify for the "investment quality" mortgages that Freddie and Fannie were focused on purchasing. Consequently, the market share of these Government Sponsored Enterprises (GSEs) actually declined over this period. The GSEs became much more active in the sub-prime market in 2006 and 2007, in part to try to recover market share.

CRA and the Under-served Housing Market

In 1995, Congress revised the Community Reinvestment Act (CRA), first enacted in 1977, to give banks a stronger impetus to raise the portion of consumer loans (including mortgages) going to low-income borrowers. Both the Clinton Administration and the Bush Administration also gave Freddie Mac and Fannie Mae quotas for supporting low-income housing. In order to meet these quotas and to try to stop the erosion in market share, the GSEs set aside some of their "investment quality" requirements and found ways to participate in the sub-prime mortgage market.

Many mortgage loans that met the standards for CRA were of much higher quality than the worst of the mortgage loans that were made from 2004-2007. Thus, one must be

careful about assigning too much blame to CRA for the decline in underwriting standards. It is possible that, even in the absence of CRA, many lenders would have pursued the market for low-quality mortgages simply in pursuit of profits. Careful research would be needed in order to determine the marginal impact of CRA.

In the mortgage market as a whole, the quality of loans deteriorated along many dimensions:

- The share of loans for non-owner-occupants (speculators) rose from 5 percent in the early 1990s to 15 percent in 2005 and 2006. Moreover, official data may understate the growth in housing speculation since a buyer of an investment property may claim an intent to occupy the home when she applies for a loan.
- The loan products became riskier. More loans were adjustable-rate loans with low initial "teaser" rates. A number of loan products incorporated features that reduced or eliminated the automatic amortization of principal.
- Down payment requirements were loosened. Loans with down payments of 3 percent, 2 percent, or even zero became common. Borrowers were allowed to take out "refinance" loans for 100 percent of the appraised value of their homes (and sometimes even more).
- Lenders waived requirements that borrowers document their incomes, assets, and employment information on their mortgage applications.

In traditional mortgage lending, borrowers were asked to provide proof of income, employment, and assets. The lender might call the company where the borrower worked to verify employment. The borrower might be asked to supply pay stubs to verify income. And the borrower might be asked to supply bank statements to verify assets.

Most of the time, this documentation was redundant. Mortgage originators, trying to compete for business by offering greater convenience, would try to make exceptions to the documentation requirements. They then would negotiate with Freddie Mac and Fannie Mae to allow these exceptions.

For the vast majority of mortgage loans, reduced documentation saved on costs without any adverse effect on loan quality. However, a program of reduced documentation becomes a magnet for fraud. Under such programs, swindlers operating as mortgage originators can concoct remarkable schemes to sell mortgage loans and abscond with millions of dollars. The GSEs experienced this sort of fraud in the late 1980s, and that is why in 1990, when a trend toward reduced documentation of mortgage loans was building, Freddie Mac and Fannie Mae issued a joint policy against purchasing "low-doc" loans. For a time, this put a halt to the trend.

However, fifteen years later, another move toward "low-doc" lending emerged. The newer "NINJA" loans ("no income, no job, no assets") were motivated less by a desire to provide convenience to ordinary borrowers and more by a desire to reach out to new borrowers by focusing on housing appreciation and credit scores as the primary tools for controlling credit risk. This time, the GSEs were not able to take a stand against

the dangerous trends in mortgage origination. Their market shares had been eroded by private-label mortgage securitization. They were under pressure from their regulators to increase their support of low-income borrowers. Finally, they had been stained by accounting scandals in which they had allegedly manipulated earnings, so that they had little political capital to throw into a fight to maintain underwriting standards.

The weakening of mortgage credit standards was destabilizing for the housing market. This was particularly the case with the trend toward lower down payments and innovative mortgage designs that required less repayment of principal. As a result, many homeowners relied on house price appreciation for the equity in their homes. As long as prices were rising, home purchases could be sustained at high levels, including speculative purchases and homes that were too expensive for the borrowers to afford. Once prices stopped rising, however, there was no equity cushion to prevent defaults and foreclosures, so that a rapid and severe downward spiral took place.

At the time that mortgage credit quality was deteriorating, the main regulatory concern was with consumer protection. Those who had this concern, such as Edward Gramlich of the Federal Reserve Board, thought that lenders were exploiting consumers by providing loans that were dangerous, costly, and poorly understood by borrowers.

The danger to financial firms of poor mortgage credit quality went largely unnoticed. However, the issue was raised in an article written by FDIC economist Cynthia Angell in 2004. She concluded:

> In summary, because home prices have appreciated briskly over the past several years and outpaced income growth, concerns have been voiced about the possibility of a nationwide home price bubble. However, it is unlikely that home prices are poised to plunge nationwide, even when mortgage rates rise. Housing markets by nature are local, and significant price declines historically have been observed only in markets experiencing serious economic distress. Furthermore, housing markets have characteristics not inherent in other assets that temper speculative tendencies and generally mitigate against price collapse. Because most of the factors affecting home prices are local in nature, it is highly unlikely that home prices would decline simultaneously and uniformly in different cities as a result of some shift such as a rise in interest rates.
>
> The greater risk to insured institutions is the potential for increased credit delinquencies and losses among highly leveraged, subprime, and ARM borrowers. These high-risk segments of mortgage lending may drive overall mortgage loss rates higher if home prices decline or interest rates rise. Credit losses may, in turn, spill over to nonmortgage consumer credit products if households prioritize debt repayment to give preference to mortgage payment. Residential construction lending in markets where there is significant speculative building, as well as an abundance of thinly capitalized builders, also may be of concern, especially when the current housing boom inevitably cools.[14]

After this was published, home prices continued climbing for nearly three years. Mortgage credit quality deteriorated further. However, regulators did not focus on the potential impact

14 Cynthia Angell, "Housing Bubble Concerns and the Outlook for Mortgage Credit Quality," FDIC Outlook, February 2004, http://www.fdic.gov/bank/analytical/regional/ro20041q/na/infocus.html/.

for the financial system. The common assumption was that profit-driven financial institutions knew what they were doing. As noted above, regulatory concern with mortgage origination practices was largely limited to worries about individual borrowers not understanding the risks they were assuming. In any case, regulators did little or nothing about even these latter worries.

With homeownership rising, household wealth increasing, and financial sector profits robust, policy makers were much more inclined to view mortgage trends as benign rather than as a threat. The overall policy of encouraging home purchases with mortgage debt seemed to be working, and it had powerful support from the various interest groups that benefited from the boom.

In hindsight, the government had a definite opportunity to avert the crisis by changing housing policy in 2003 or 2004. They could have forced Fannie Mae, Freddie Mac, and banks to hold more capital to back their expansion into sub-prime mortgage loans. Better yet, regulators could have recognized the risks of trying to expand home ownership to weaker and weaker borrowers in an environment of high house prices. Instead of encouraging the GSEs and the banks to make more loans to low-income borrowers, the regulators could have leaned on those firms to maintain prudent lending standards, particularly for down payments.

Regulators, like their private sector counterparts, failed to imagine the potential financial cataclysm that was developing in the mortgage market. Even if they could have envisioned the scenario of a bursting of the housing bubble and anticipated the consequences for institutions involved in the mortgage financing system, regulators would have had to convince politicians of the validity of their concerns.

To the extent that there was a trade-off between expanding the availability of mortgage credit and maintaining safety and soundness, the political pressure appeared to be toward expanding credit availability as opposed to worrying about safety and soundness. This can be seen in the way that Congress rejected efforts by both the Clinton and Bush Administrations to restrain the growth of Fannie Mae and Freddie Mac.

Former Federal Reserve Board Chairman William McChesney Martin once described the Fed's job as "taking away the punchbowl just when the party is getting good." From a political perspective, a regulatory crackdown on loose mortgage underwriting standards in 2004 would have meant taking away a punchbowl filled with more home ownership — particularly among minorities — as well as expansion and profits in the businesses of home building, real estate brokerage, mortgage origination, and Wall Street financial engineering. Whether the political process would have accepted taking away that punchbowl is questionable.

To the extent that there was a trade-off between expanding the availability of mortgage credit and maintaining safety and soundness, the political pressure appeared to be toward expanding credit availability as opposed to worrying about safety and soundness. This can be seen in the way that Congress rejected efforts by both the Clinton and Bush Administrations to restrain the growth of Fannie Mae and Freddie Mac. Various economists, including a group calling itself the Shadow Regulatory Committee, were worried by the rapid growth of the GSEs, but, for the most part, these economists expressed fears that the GSEs would take on too much interest-rate risk. Credit risk, which proved to be their downfall, was not the focus of much concern.[15]

15 The GSEs take credit risk when they guarantee mortgage securities against any defaults on the underlying mortgages. They take interest-rate risk when they themselves hold mortgage securities in portfolio. It was curbs on the size of the GSEs' security portfolios that economists both inside and outside the Clinton and Bush Administrations sought.

The housing lobby has been one of the most powerful coalitions in Washington. It includes real estate agents, community action groups that advocate for expanded home ownership, home builders, mortgage originators, mortgage financing firms, and securities trading firms—all interest groups that benefit from expanding the demand for housing and for mortgage loans. When it came to mortgage lending, the political pressure on policy makers all went in one direction—for more subsidies and fewer restrictions. Thus while in theory, the most logical and straightforward way to avert the financial crisis would have been to adjust housing policy, in practice, the political landscape made such an approach very unlikely to be attempted.

Housing Policy Timeline	
Date	Regulation
1934	National Housing Act
1948	Federal National Mortgage Association established by statute
1954	Federal National Mortgage Association Charter Act (part of the Housing Act of 1954)
1964	Housing Act of 1964
1968	Housing and Urban Development Act of 1968, Title VIII
1970	Emergency Home Finance Act of 1970
1971	Ginnie Mae authorized to purchase mortgages
1972	Low-income housing program authorized
1973	Office of Emergency Preparedness abolished
1973	President proposes legislation to increase homeownership
1974	President announces mortgage assistance plan
1974	Housing and Community Development Act of 1974
1974	Emergency Home Purchase Act of 1974
1975	Emergency Housing Act of 1975

1977	Community Reinvestment Act
1977	Housing and Community Development Act of 1977
1979	Minimum requirement of loans to low-income residents set
1979	Freddie Mac's obligations granted same standing as government securities
1980	Housing and Community Development Act of 1980
1983	Housing and Urban-Rural Recovery Act of 1983
1984	Secondary Mortgage Market Enhancement Act of 1984
1986	Tax Reform Act of 1986
1987	Emergency Low Income Housing Preservation Act of 1987
1989	Financial Institutions Reform, Recovery, and Enforcement Act of 1989
1990	Cranston-Gonzalez National Affordable Housing Act
1992	Multifamily Housing Finance Improvement Act (part of the Housing and Community Development Act of 1992)
1992	Federal Housing Enterprises Financial Safety and Soundness Act of 1992 (part of the Housing and Community Development Act of 1992)
1993	Housing Intermin Goals set for 1993–1994
1995	Housing Intermin Goals set for 1996–2000
2000	Housing Interim Goals set for 2001–2004
2004	Housing Interim Goals set for 2005–2008
1994	Riegle Community Development and Regulatory Improvement Act of 1994
1997	Taxpayer Relief Act
1997	Departments of Veterans Affairs and Housing and Urban Development and Independent Agencies Appropriations Act, 1997
2003	American Dream Downpayment Act

CHAPTER SIX

BANK CAPITAL REGULATIONS

The most important regulatory failure contributing to the financial crisis was in the arena of safety and soundness. Bank capital regulations were the primary culprit. In addition, regulators permitted Fannie Mae, Freddie Mac, AIG, and many investment banks to take too much risk with too little capital.

In fact, it will be seen below that the risk-based bank capital regulations had perverse effects. The regulations created an incentive for banks to take highly levered positions in securities backed by risky mortgage loans.

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The financial tactics that ultimately were at the heart of the financial crisis emerged in order to achieve regulatory capital arbitrage—gaming the system in order to minimize capital while retaining risk. These tactics included securitization, off-balance-sheet financing, the use of credit derivatives such as credit default swaps, and the reliance on ratings of credit agencies.[16]

The capital requirements were part of a regime known as the Basel Accords. The problems with the Basel regulations, and especially with the use of credit rating agencies, were anticipated by many economists. In particular, the Shadow Regulatory Committee, a group of economists offering independent opinion on bank regulation, issued timely and accurate criticisms of the approach that regulators were taking toward capital regulation.

16 The regulatory use of credit rating agencies dates back to the 1930's. Flandreau, *et al*, pointed out that:

> "In the midst of a wave of defaults and plummeting bond prices in 1931, the OCC instituted formulae based on credit ratings to book the value of US national banks' bond portfolios. The role of rating agencies was extended in 1936 when the OCC restricted the purchase by banks of securities with lower credit ratings."
>
> "[In September of 1931], time bond prices were plummeting in the wake of the German financial crisis and a run on Sterling. The OCC ruling was reported to state that all Federal, State, and Municipal US securities, as well as other domestic and foreign securities belonging to any of the top four categories of ratings could be booked by banks at face value (Harold 1938), while other securities and defaulted bonds should continue to be marked to market."
>
> Marc Flandreau, Norbert Gaillard, and Frank Packer, "Ratings Performance, Regulation and the Great Depression: Lessons from foreign Government Securities," CEPR Discussion Paper 7328, 2009 (http://www.graduateinstitute.ch/webdav/site/iheid/shared/publicationsNEW/publications_GCI/working_paper_ratings_gci.pdf)

By incorporating Nationally Recognized Statistical Rating Organization (NRSRO) ratings into formal capital requirements, bank regulators effectively outsourced critical oversight functions to the credit rating agencies.[17] However, as it turned out, the credit rating agencies did not serve well the regulators' purpose. Instead, they rated mortgage-backed securities too generously, under assumptions about house prices that were too optimistic. This problem was foreseen by critics at Fannie Mae and in the Shadow Regulatory Committee, who pointed out that when securities were being rated for regulatory purposes rather than for trading purposes, the rating agencies would face less market incentive to rate conservatively.

The Basel Accords were created in stages. The first stage was the initial agreement, which was issued in 1988. The latest stage, known as Basel II, was scheduled to be implemented in the United States in 2008. In between, there were a number of modifications to Basel I. Some of the modifications had a significant impact on the treatment of mortgages and mortgage securities. The initial Basel agreement called for banks to hold 8 percent capital against risk-weighed assets. At least half of this capital had to consist of equity or published reserves. The rest could be in undisclosed reserves, preferred stock, subordinated debt, and other categories.

The risk weights of assets were as follows:

- Claims on OECD governments and central banks had zero risk weight. At the margin, these assets required no capital.
- Claims on other OECD public-sector entities (such as U.S. state governments or Fannie Mae and Freddie Mac) and short-term claims on banks had a 20 percent risk weight. At the margin, these assets required (.08)(.20) = 1.6 percent capital.
- All home mortgages, regardless of risk characteristics, carried a 50 percent risk weight. At the margin, mortgages required 4 percent capital.
- All other assets, including ordinary commercial loans, had a 100 percent risk weight. At the margin, these assets required 8 percent capital.

Among other effects, these risk weights created an advantage for mortgage securitization, because the bank capital standards for low-risk mortgage loans were overly onerous while Freddie Mac and Fannie Mae faced lower capital standards.[18] Recall that the Basel agreement created an effective 4 percent capital requirement (2 percent tier one or equity capital) for all mortgages, regardless of risk. However, for mortgage securities guaranteed by Freddie Mac or

17 In 1975, the Securities and Exchange Commission designated a small, select subset of these credit rating agencies as Nationally Recognized Statistical Rating Organizations (NRSRO's). In recent years, the only NRSRO's were Moody's, Fitch, and Standard and Poors

18 Economists Paul Calem and Michael Lacour-Little calculated capital requirements for banks to have a BBB solvency standard. Using this approach, they pointed out,

> newly originated loans with 80 percent loan-to-value ratios and a prime borrower credit score of 700 require very little capital to cover credit risk: no more than 0.51 percent in a well-diversified portfolio and 0.90 percent in a regionally concentrated portfolio, assuming a BBB solvency standard and an eight year horizon.
>
> ...current rules may encourage regulatory capital arbitrage, including increased rates of securitization of mortgage assets.
>
> Paul S. Calem and Michael Lacour-Little, "Risk-Based Capital Requirements for Mortgage Loans," (FEDS Working Paper no. 2001-60, November 2001), 3 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=295633/.

Fannie Mae, the capital requirement would have been 1.6 percent (0.8 percent tier one). Thus, it was capital-efficient to securitize mortgage loans with Freddie Mac or Fannie Mae.

The late 1990s saw the emergence of collateralized debt obligations (CDOs). These enabled mortgage securities to be deemed low risk for capital purposes, even though they were not guaranteed by Freddie Mac or Fannie Mae. These so-called "private label" securities now became eligible for regulatory capital arbitrage. The financial engineers carved CDOs into tranches, with junior tranches bearing the risk of the first loans to default, insulating senior tranches from all but the most unlikely default scenarios. Once regulators endorsed the use of credit rating agency evaluations, CDO tranches could earn high ratings, which meant low capital requirements. At that point, private-label securitization really took off.

The Basel agreement created an effective 4 percent capital requirement (2 percent tier one or equity capital) for all mortgages, regardless of risk. However, for mortgage securities guaranteed by Freddie Mac or Fannie Mae, the capital requirement would have been 1.6 percent (0.8 percent tier one). Thus, it was capital-efficient to securitize mortgage loans with Freddie Mac or Fannie Mae.

Capital requirements could be reduced further by moving CDOs off a bank's balance sheet into a Structured Investment Vehicle (SIV). As long as the bank only offered a short-term line of credit (less than one year) to the SIV, the assets of the SIV did not have to be included in the calculation of capital requirements.

The phenomenon of regulatory capital arbitrage was well understood by the Federal Reserve Board. Although papers in academic journals written by Federal Reserve Board employees routinely carry a disclaimer that they do not represent the opinions of the Board or its staff, a paper published in 2000 by Fed researcher David Jones provides clear evidence that the Fed knew that regulatory arbitrage relative to capital requirements was taking place. Moreover, the tone of the paper was generally sympathetic to the phenomenon.

> In recent years, securitization and other financial innovations have provided unprecedented opportunities for banks to reduce substantially their regulatory measures of risk, with little or no corresponding reduction in the overall economic risks—a process termed "regulatory capital arbitrage" (RCA).
>
> ...Ultimately, RCA is driven by large divergences that frequently arise between underlying economic risks and the notions and measures of risk embodied in regulatory capital ratios. As discussed below, such divergences create opportunities to unbundle and repackage a portfolio's risks in ways that can reduce dramatically the effective capital requirement per dollar of economic risk retained by a bank. Efforts to stem RCA without narrowing or eliminating these divergences—for example, by limiting banks' use of securitization and other risk unbundling technologies—would be counterproductive and perhaps untenable. In some circumstances, RCA is an important "safety-valve" that permits banks to compete effectively (with nonbanks) in low-risk businesses they would otherwise be forced to exit owing to unreasonably high regulatory capital requirements. Moreover, as evidenced through their widespread use by nonbanks, securitization and other risk unbundling technologies appear to provide genuine economic benefits to banks, quite apart from their role in RCA. Lastly, the

> same shortcomings giving rise to RCA under the Accord also distort bank behavior in other ways, such as discouraging the true hedging of economic risks.
>
> ...when capital standards are not based on any consistent economic soundness standard (e.g., probability of insolvency), through securitization and other techniques it is often possible to restructure portfolios to have basically similar risks, but much lower regulatory capital requirements.
>
> ...Federal Reserve staff have estimated the outstanding (non-mortgage related) ABSs [asset-backed securities] and ABCP [asset-backed commercial paper] issued through programs sponsored by the 10 largest US bank holding companies. Even excluding mortgage securitizations, these estimates reveal that the securitization activities of these companies loom large in relation to their on-balance sheet exposures. As of March 1998, outstanding non-mortgage ABSs and ABCP issuance through securitization programs sponsored by these institutions exceeded US$200 billion, or more than 25% of the institutions' total risk-weighted loans.
>
> ...Since the underlying securitized assets tend to be of relatively high quality, a strong case can be made that the low capital requirements against these retained risks actually may be appropriate.
>
> ...Unless these economic and regulatory measures of risk are brought into closer alignment, the underlying factors driving RCA are likely to remain unabated. Without addressing these underlying factors, supervisors may have little practical scope for limiting RCA other than by, in effect, imposing more or less arbitrary restrictions on banks' use of risk unbundling and repackaging technologies, including securitization and credit derivatives.
>
> Such an approach, however, would be counterproductive (and politically unacceptable).
>
> ...By reducing banks' effective capital requirements against such activities to levels more consistent with the underlying economic risks, RCA may permit banks to compete efficiently in relatively safe businesses they would otherwise be forced to abandon.[19]

In essence the author argued:

- The Basel risk buckets were arbitrary.
- The risk classifications may have been overly conservative for certain types of loans.
- Regulatory Capital Arbitrage (RCA) enabled banks to reduce the capital requirements for these loans.
- RCA was difficult to stop politically.
- RCA did not necessarily harm safety and soundness if it kept banks competitive in markets to make low-risk loans.

What is striking about the paper is the degree to which the regulator shows understanding and support for the banks' use of securitization and off-balance sheet entities to reduce capital requirements. Because we know what happened subsequently (the paper

19 David Jones, "Emerging problems with the Basel Capital Accord: Regulatory capital arbitrage and related issues," *Journal of Banking and Finance*, 2000, 35–58.

was published in 2000), reading the Jones paper is like watching a movie in which we see how a jailer becomes sympathetic to the plight of a prisoner, while we know that eventually the prisoner is going to escape and go on a vicious crime spree.

A key modification of the Basel regulations was developed from 1997-2001 and put into place by U.S. banking regulators with an effective date of January 1, 2002. This new rule broadened the definition of low-risk securities to include securities rated double-A or higher by NRSROs.[20] This meant that they had a risk weight of 20 percent, which put them on par with securities issued by Freddie Mac or Fannie Mae. This in turn drew the attention of the GSEs, which recognized that their competitive role could be undermined by the more lenient bank capital requirements.

In a comment on the proposed rules, Freddie Mac showed what would happen to the capital requirement on a representative structured financing of a $100 million pool of mortgages owned by the bank. Recall that under the original Basel agreement, the capital requirement would be $4 million ($100 million times a 50 percent risk weight times the 8 percent capital requirement).

Mortgage tranche rating and support level	Capital requirements
AAA $94 million	$1.504 million (1.6%)
AA $ 2 million	$.032 million (1.6%)
A $ 2 million	$0.080 million (4 %)
BBB $ 1 million	$0.080 million (8%)
BB $ 0.5 million	$0.080 million (16%)
Unrated $0.5 million	$0.5 million (gross-up)
TOTAL $100 million	$2.276 million (vs. $4 million unsecuritized)

Thus, the new rule dramatically lowered the capital banks needed in order to hold mortgage assets. For mortgages, the rule had the exact same effect as lowering the generic capital requirement from 8 percent to something closer to 4.5 percent.[21]

Fannie Mae offered similar examples. In addition, it pointed out that the new rules would create incentives to undermine the integrity of NRSRO ratings. Banks would shop for ratings. Moreover, if the securities were not traded, and instead were only rated for regulatory purposes, then the NRSROs would have little incentive to worry about the reputations if their ratings.

The criticisms made by the GSEs might have been dismissed as self-serving. Protecting their own advantages in terms of low capital requirements was critical to maintaining the franchise value of Freddie Mac and Fannie Mae. However, the Shadow Regulatory Committee—a group of market friendly economists offering independent opinion on bank regulation and no friend of the GSEs, which the committee thought were far too large

20 See Michael J. Zamorski, "Final Rule to Amend the Regulatory Capital Treatment of Recourse Arrangements, Direct Credit Substitutes, Residual Interests in Asset Securitizations, and Asset-Backed and Mortgage-Backed Securities," November 29, 2001, http://www.fdic.gov/news/news/financial/2001/fil0199.html/.

21 Memorandum from Freddie Mac to the bank regulatory agencies, June 7, 2000. Reproduced in Corine Hegland, "Why the System Collapsed," *National Journal*, April 11, 2009, http://www.nationaljournal.com/njmagazine/cs_20090411_7855.php/.

and excessively exposed to risk —weighed in with similar concerns. Referring to a Basel Committee proposal along the lines of the U.S. regulators' proposal, the Shadow Regulatory Committee's statement number 160, written in March of 2000, said in part,

> the use of private credit ratings to measure loan risk may adversely affect the quality of ratings. If regulators shift the burden of assessing the quality of bank loans to ratings agencies, those regulators risk undermining the quality of credit ratings to investors. Ratings agencies would have incentives to engage in the financial equivalent of "grade inflation" by supplying favorable ratings to banks seeking to lower their capital requirements. If the ratings agencies debase the level of ratings, while maintaining ordinal rankings of issuers' risks, the agencies may be able to avoid a loss in revenue because investors still find their ratings useful...In short, if the primary constituency for new ratings is banks for regulatory purposes rather than investors, standards are likely to deteriorate.[22]

In this instance, events proved the Shadow Regulatory Committee correct. The rating agencies, undisciplined by investors and seeking only to meet the demands of banks, who in turn were motivated solely by the desire to reduce regulatory capital, were generous with their AAA and AA ratings. The optimism in the ratings emerged as a central scandal of the financial crisis.

The 2002 rule thus had several deleterious effects. First, it created opportunities for banks to lower their ratio of capital to assets through structured financing. Second, it created the incentive for rating agencies to provide overly optimistic assessment of the risk in mortgage pools. Finally, the change in the competitive environment adversely affected Freddie Mac and Fannie Mae, which saw their market shares plummet in 2004 and 2005. The GSEs responded by lowering their own credit standards in order to maintain a presence in the market and to meet their affordable housing goals. Thus, the 2002 rule unleashed the final stages of the mortgage boom: the expansion in private-label securities and sub-prime lending.

The drive to hold mortgage assets backed by as little capital as possible proceeded well beyond the initial structured finance mechanisms sketched in the table above. Other tactics for minimizing regulatory capital included:

- Bundling and re-bundling mortgage-backed securities (Wall Street terminology included "CDO" for "collateralized debt obligation" and "CDO-squared" for a CDO collateralized by CDOs).
- "Renting" AIG's triple-A rating by obtaining credit default swaps from that insurance company.
- Putting mortgage-backed securities into off-balance-sheet entities called special-purpose vehicles (SPVs) and structured-investment vehicles (SIVs).

Supposedly, the off-balance sheet entities were self-contained, primarily relying on commercial paper for funding. However, once investors lost confidence in the soundness

22 Shadow Financial Regulatory Committee, "Reforming Bank Capital Regulation," statement number 160, March 2, 2000, http://www.aei.org/docLib/20051114_ShadowStatement166.pdf/. statement number 160, http://www.aei.org/article/16542/.

of the underlying assets, they were no longer willing to invest in the commercial paper. The banks were obligated (or at least felt obligated) to put the assets in these entities back onto their books. This damaged the banks in terms of liquidity, because short-term funding for mortgage-backed securities was no longer available. It also damaged them in terms of capital adequacy, because the assets now counted against their capital requirements. After the crisis, the Financial Accounting Standards Board (FASB) took steps to change the treatment of special-purpose vehicles.[23]

In hindsight, one wonders how the banks were able to obtain regulatory permission to move mortgage securities off their balance sheets, effectively evading capital requirements altogether. In view of the fact that banks later took possession of these assets, it is clear in retrospect that the banks had not off-loaded the risk of those mortgage securities.

Step by step, innovation by innovation, the process of regulatory arbitrage became more efficient. Financial engineers squeezed more and more assets into banks with less and less required regulatory capital. What emerged was a highly-leveraged financial structure that was vulnerable to an adverse shift in the housing market.

Regulators were thinking that the original Basel rules were keeping banks from expanding their holdings of mortgage assets, which regulators viewed as relatively safe. The regulators were concerned with the rigidity of the Basel rules and the slow pace at which these could be changed. As a result, regulators had to choose between giving the SPVs and SIVs on-balance-sheet treatment, under which the risk-bucket approach would have demanded too much capital (or so it was thought at the time) or giving them off-balance-sheet treatment, which demanded no capital.

Step by step, innovation by innovation, the process of regulatory arbitrage became more efficient. Financial engineers squeezed more and more assets into banks with less and less required regulatory capital. Investors who purchased the securities issued by banks, Fannie Mae, Freddie Mac, and other companies saw attractive returns on liquid assets that apparently carried no risk. However, behind these securities were risky, long-term mortgages without a sufficient capital cushion.

What emerged was a highly-leveraged financial structure that was vulnerable to an adverse shift in the housing market. When some mortgage securities firms ran into trouble in 2007 due to excessive loan defaults, investors took steps to assess and then limit their exposure to mortgage assets. The commercial paper market for the banks' off-balance sheet entities collapsed. The holders of credit default swaps from AIG demanded collateral in the form of short-term, risk-free assets.

In fact, the whole dynamic of the financial sector went into reverse. Financial institutions had been loading up on long-term, risky assets, while issuing short-term liabilities and minimizing on capital. Now, every institution needed to boost its liquidity and its capital position, and few firms were interested in buying mortgage securities.

In hindsight, many observers have faulted the rise of the "shadow banking system," meaning the various investment banks and off-balanced-sheet entities that became involved in mortgage finance. However, at the time, most regulators were pleased with the way that

23 See Binyamin Appelbaum, "Board to Ban Accounting Practice That Helped Lending Proliferate," *The Washington Post*, May 18, 2009, http://www.washingtonpost.com/wp-dyn/content/article/2009/05/17/AR2009051701779.html/.

mortgage credit risk was allocated by these transactions. For example, the annual report of the International Monetary Fund in 2006 stated that financial innovation "has helped to make the banking and overall financial system more resilient."[24] At the time, in the view of many regulators, securitization and credit derivatives helped to disperse risk in ways that made the financial market safer.[25]

Another key policy maker, Federal Reserve Chairman Ben Bernanke, said in June of 2006,

> The evolution of risk management as a discipline has thus been driven by market forces on the one hand and developments in banking supervision on the other, each side operating with the other in complementary and mutually reinforcing ways. Banks and other market participants have made many of the key innovations in risk measurement and risk management, but supervisors have often helped to adapt and disseminate best practices to a broader array of financial institutions.
>
> ...The interaction between the private and public sectors in the development of risk-management techniques has been particularly extensive in the field of bank capital regulation, especially for the banking organizations that are the largest, most complex, and most internationally active. Moreover, the development of new technologies for buying and selling risks has allowed many banks to move away from the traditional book-and-hold lending practice in favor of a more active strategy that seeks the best mix of assets in light of the prevailing credit environment, market conditions, and business opportunities. Much more so than in the past, banks today are able to manage and control obligor and portfolio concentrations, maturities, and loan sizes, and to address and even eliminate problem assets before they create losses. Many banks also stress-test their portfolios on a business-line basis to help inform their overall risk management.
>
> To an important degree, banks can be more active in their management of credit risks and other portfolio risks because of the increased availability of financial instruments and activities such as loan syndications, loan trading, credit derivatives, and securitization. For example, trading in credit derivatives has grown rapidly over the last decade, reaching $18 trillion (in notional terms) in 2005. The notional value of trading in credit default swaps on many well-known corporate names now exceeds the value of trading in the primary debt securities of the same obligors.[26]

Thus, regulators were well aware of the innovations in credit risk management. However, they viewed these developments with sympathy and approval.

In retrospect, given the failure of the Basel regime, what might have worked better? The Shadow Regulatory Committee warned of flaws in the approach to safety and soundness embodied in the Basel capital standards even before the first version of those standards

24 International Monetary Fund, Annual Report of the Executive Board for the Financial Year Ended April 30, 2006, August 3, 2006, 11.

25 See Gillian Tett, Fool's Gold: How the Bold Dream of a Small Tribe at J.P. Morgan Was Corrupted by Wall Street Greed and Unleashed a Catastrophe (New York: Free Press, 2009).

26 Bernanke, Ben, 2006. "Modern Risk Management and Bank Supervision," speech at the Stonier Graduate School of Banking, June 12. http://www.federalreserve.gov/newsevents/speech/Bernanke20060612a.htm

became official in 1989.[27] In a number of statements that the Shadow Regulatory Committee issued in the early 1990s, it recommended the use of subordinated debt as an alternative to the Basel approach of trying to manage safety and soundness by classifying assets according to regulators' determination of risk.[28] The idea behind requiring banks to issue subordinated debt is that creditors would require interest rates based on their perception of the risk of the bank. The size of this risk premium would in turn provide a market signal to regulators of where to look for problems. Moreover, the subordinated debt would provide an additional layer of protection for taxpayers. Many economists continue to believe that subordinated debt would be useful. For example, economists Susan Woodward and Robert Hall expressed support for a proposal made by a team of banking experts called the Squam Lake Working Group for subordinated debt that could convert automatically to equity in a systemic crisis for banks that fell below their capital requirements.[29]

Regulators were well aware of the innovations in credit risk management. However, they viewed these developments with sympathy and approval.

Both the Squam Lake Working Group and the Shadow Regulatory Committee recognize that much of the challenge in bank regulation involves what economists call "the time inconsistency problem." That is, prior to a crisis, regulators wish to convey to unsecured bank creditors that they will not be bailed out, so that market discipline will be exercised. However, at the time of a crisis, regulators will face political pressure to bail out unsecured creditors. Knowing this, creditors may assume that their unsecured claims really have a high probability of being protected by regulators, and this assumption could undermine market discipline.

For example, Freddie Mac and Fannie Mae each were limited to a $2.25 billion line of credit from the Treasury prior to the crisis. However, in September of 2008, the GSE's were placed under government "conservatorship," under which all of their debt was effectively covered by the taxpayers. This demonstrated the time inconsistency problem.

The problem of time inconsistency illustrates that it is difficult to establish and to maintain a clear boundary between the responsibilities of the private sector and the responsibilities of government authorities for preventing and resolving financial crises. If government tries to let private creditors suffer the consequences of the risks that they take, the political fallout can be severe. On the other hand, if government bails out private creditors, this creates moral hazard, leading private creditors to take excess risks.

Another major challenge with financial regulation is that the natural evolution of banks as they seek to maximize return on equity tends to undermine any regulatory regime. As we saw earlier, the solutions to any given crisis have an eerie tendency to come back as the causes of the next crisis. It would be relatively easy to devise rules that would prevent an

27 In May 1987, in statement number 18, the economists warned that fixed risk weights for assets would distort credit allocation while failing to protect deposit insurance funds. Shadow Financial Regulatory Committee, "Regulatory Proposals for Risk-Related Capital Standards," No. 18, May 1987, http://fic.wharton.upenn.edu/fic/Policy%20page/20051230_18%5B1%5D.pdf.

28 See for example, Shadow Financial Regulatory Committee, "Mergers and Acquisitions in the Banking Industry," statement no. 147, May 4, 1998, http://www.aei.org/docLib/20051114_ShadowStatement147.pdf/.

29 Susan Woodward and Robert Hall, "Financial Policy: Looking Forward," Financial Crisis and Recession, May 11, 2009, http://woodwardhall.wordpress.com/2009/05/11/financial-policy-looking-forward/ writing in support of Squam Lake Working Group on Financial Regulation, "An Expedited Resolution Mechanism for Distressed Financial Firms: Regulatory Hybrid Securities," (Squam Lake Working Group Paper, Council on Foreign Relations, April 2009), http://www.cfr.org/publication/19002/expedited_resolution_mechanism_for_distressed_financial_firms.html.

exact repetition of what occurred in 2008. However, in view of history one has to wonder whether new regulations will fail to prevent—or perhaps help to cause—some future crisis.

Changes to Capital Rules	
Date	Regulation
1931	Ratings assessments used in bank portfolios
1936	Bank purchases restricted based on ratings
1975	Rating agencies judgments' used in regulatory decisions
1979	The consolidated supervision of banks' international activities
1986	Guidelines on managing banks' off-balance sheet exposures
1988 (Basel I)	International convergence of capital measurement and capital standards
1994	Treatment of credit risk associated with certain off-balance sheet items
1994	Banking standards converged
1994	Banking standards converged
1995	Changes made to capital standards of Special Purpose Vehicles
1996	Banking standards converged
1996	Supervisory guidance for credit derivatives
2001	Ratings-based approach applied to asset- and mortgage-backed securities.
2001	U.S. moved further to adopt Basel standards
2004 (Basel II)	International convergence of capital measurement and capital standards: a revised framework
2004	Some broker dealers permitted alternative means to compute capital
2006	Credit Rating Agency Reform Act of 2006
2007	U.S. regulators attempt to further incorporate Basel standards
2008	BCBS consultative document on computing capital
2008	U.S. regulators attempt to further incorporate Basel standards
2008	U.S. regulators attempt to further incorporate Basel standards
2009	Revisions to Basel II market risk framework

CHAPTER SEVEN

EROSION OF COMPETITIVE BOUNDARIES

Much of the regulatory change that took place over the past forty years consisted of the informal erosion and formal elimination of barriers to entry in financial services. The prohibition against interstate banking was relaxed and finally ended. The separation between commercial and investment banking, established by the Glass-Steagall Act of 1933, was breached by a number of financial innovations (such as money market funds) and by regulatory rulings. The final elimination of Glass-Steagall functional boundaries through the Gramm-Leach-Bliley Act of 1999 served more to ratify ongoing trends than to create a dramatic shift in the competitive environment.

The original restrictions on interstate banking and on the functional boundaries of banks were enacted under the theory that banks would be too powerful if they operated nationwide or engaged in a full range of financial services. By the 1980s though, many economists viewed the policies to restrict bank operations as anachronistic. Instead, they thought that consumers would benefit from more vigorous competition in financial services and that restrictions only protected inefficient suppliers of those services. There were three factors that worked to change the competitive environment in financial services: financial innovation; regulatory rulings; and legislation. The latter was probably the least important, in part because of the long lags involved in enacting banking laws.[30]

One way to summarize the legislative history of the Gramm-Leach-Bliley Act, which formally ended the restrictions on commercial banks engaging in investment banking and vice-versa, is that it was the culmination of a long process. For over thirty years, the competitive structure contemplated in the Glass-Steagall Act and the Bank Holding Company Act had been eroded by innovation and regulatory rulings. The legislative effort to remove barriers to entry was stalled for many years, because of "turf wars" involving various interest groups within the financial services industry and their regulators. What

30 In reconstructing the history of the competitive environment in financial services, I have found it highly instructive to review the statements issued over two decades by the Shadow Financial Regulatory Committee. Some relevant quotes from the committee's statements are included in the appendix. The full statements are on the Web site of the American Enterprise Institute at http://www.aei.org/research/shadow/publications/pageID.888,projectID.15/default.asp.

is important to recognize is that safety and soundness were not primary concerns in the debate over the competitive boundaries within financial services. The chief legislative challenge was addressing the concerns of the various interest groups, with each sector trying to gain entry into other niches while restricting entry to its native niche. When the legislation finally passed, it appeared that the banks and their regulators had won: banks entered other markets while suffering relatively little new entry into banking.[31]

The erosion of competitive boundaries did have consequences for the structure of the banking system. Banks became larger and more complex. Non-bank financial firms became critical to the functioning of the financial system and closely intertwined with banks. In retrospect, the complexity and inter-connectedness of the system seemed to play a role in making the financial system vulnerable to domino effects and runs. However, given the environment created by new financial instruments and technologies, retaining Glass-Steagall and/or the restrictions on interstate banking would have done little or nothing to preserve simplicity in financial services. If anything, retaining the antiquated legislative framework in the context of ongoing financial innovation might have resulted in ever more opacity in the financial system, as institutions continued their relentless searches for ways to fit the square pegs of new technology into the round holes of antiquated statutory language.

It helps to distinguish two issues: barriers to entry and safety and soundness. Glass-Steagall and restrictions on interstate banking were regulatory barriers to entry. They were attempts to restrict the ways in which banks could compete with one another and to restrict entry by certain types of financial institutions into the markets of other financial institutions. Economists are predisposed to dislike barriers to entry. Moreover, innovation and technological change were constantly undermining the barriers to entry. Other things being equal, the case for removing barriers to entry is a sound one.

The erosion of competitive boundaries did have consequences for the structure of the banking system. Banks became larger and more complex. Non-bank financial firms became critical to the functioning of the financial system and closely intertwined with banks. In retrospect, the complexity and inter-connectedness of the system seemed to play a role in making the financial system vulnerable to domino effects and runs.

The safety and soundness issue concerns the fact that the stability of certain financial institutions has become a matter of public policy, particularly with the use of deposit insurance. It is taken as given that policymakers ought to try to forestall domino effects and bank runs. To the extent that removing barriers to entry allows financial institutions to expand their scope in ways that make them more difficult to regulate or to stabilize, one can argue that barriers to entry represent a component of safety and soundness. When banks are prohibited from undertaking profitable activities, this does not necessarily preclude those activities from taking place: non-bank financial firms can expand into those areas. At this point, regulators face a dilemma. If they allow regulated banks to expand into previously forbidden activities, supervisors and examiners may lack the expertise to assess risk accurately, particularly as balance sheets become more complex and opaque. On the other hand, if banks are restricted in their activities, a "shadow banking system" can grow

31 However, this may reflect the fact that Wall Street had already succeeded, with money market funds and mortgage securitization, in penetrating the most profitable segments within banking services.

in these restricted areas, and that, too, may pose problems for the safety of the financial system. In retrospect, it appears that regulators faced both problems—banks with complex and opaque structures as well as a large "shadow banking system."

Over most of the last four decades, the Shadow Regulatory Committee and many regulatory agency staff came to view barriers to entry as providing little or no benefit for promoting safety and soundness. Today, we can observe that these barriers were eroded and that safety and soundness was not maintained. However, it is not necessarily the case that the barriers could have been retained in the face of technological change.

If barriers to entry had been retained, this might have indirectly enhanced safety and soundness by strengthening the franchise value of financial institutions. Effective barriers to entry create excess profits (economists call these "rents"). When a firm earns rents, it has an incentive to protect those rents by avoiding risks. In a paper written after the financial crisis, Gary Gorton makes the point that prior to the erosion of barriers to entry,

> bank charters were valuable because of subsidies, in the form of limited entry into banking, local deposit monopolies, interest-rate ceilings, and underpriced deposit insurance. In other words, bank regulation not only involved the "stick" of restrictions (reserve requirements, capital requirements, limitations on activities), but also the "carrot," that is, the subsidies.[32]

Any regulation that creates excess profits for financial firms therefore has the indirect effect of enhancing safety and soundness. In general, economists have not advocated using regulations to create excess profits for this purpose, because barriers to entry create inefficiency. However, as Gorton suggests, the inefficiency might be a price worth paying if there were no better way to enhance safety and soundness. Gorton suggests that this might be worth considering.

Competitive Boundaries Timeline

Date	Regulation
1967	Limits imposed on nonbanking activities of S&L companies
1970	Bank Holding Company Act restrictions expanded to one-bank holding companies
1978	Federal mutual charters granted to state-chartered savings banks
1980	National Bank Act extended to state banks and savings associations
1980	Depository Institutions Deregulation and Monetary Control Act (DIDMCA)
1980	OCC changed national bank charter standards
1982	Garn-St. Germain Depository Institutions Act
1984	Subsidiary involvements in securities

32 Gary Gorton, "Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007" (NBER working paper, May 9, 2009), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1401882/.

1985	OCC changed national bank charter standards
1986	OCC changed national bank charter standards
1986	Commercial bank involvement in securities
1987	Commercial bank involvement in underwriting
1987	Investment revenue limits raised
1987	The Competitive Equality Banking Act (CEBA)
1989	Financial Institutions Reform Recovery and Enforcement Act (FIRREA)
1991	Federal Deposit Insurance Corporation Improvement Act (FDICIA)
1996	Commercial bank involvement in investment services
1997	Reverse tying practices repealed
1999	Gramm-Leach-Bliley Act

CHAPTER EIGHT

FINANCIAL INNOVATION

> *"As to new financial instruments, experience establishes a firm rule . . . that financial operations do not lend themselves to innovation. What is recurrently so described and celebrated is, without exception, a small variation on an established design, one that owes its distinctive character to the aforementioned brevity of the financial memory. The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version. All financial innovation involves, in one form or another, the creation of debt secured in greater or lesser adequacy by real assets. . . . All crises have involved debt that, in one fashion or another, has become dangerously out of scale in relation to the underlying means of payment."*
>
> —John Kenneth Galbraith, *A Short History of Financial Euphoria*

Notwithstanding Galbraith's curmudgeonly observations, there is much to be said for financial innovation over the past forty years. There is little reason to be nostalgic for the financial services industry of 1960. We would not like to do without automated teller machines. Not many of us would like to see minorities shut out of mortgage markets, as they were to a large extent until recent decades. Few of us would like to see mainstream financial services kept out of reach of people with low incomes, forcing them to rely on pawn shops and the like. There seems to be little to be said for returning to the high brokerage commissions on stock trades that prevailed forty years ago. Prior to the advent of money market funds and mortgage securitization, consumers earned less on their deposits and paid more for their mortgages. Without the growth of financial derivatives, it would not have been possible for institutions to issue fixed-rate mortgages without taking on substantial interest-rate risk, the perils of which were demonstrated by the savings and loan industry in the 1970s. Of all of the financial innovations that emerged in the past forty years, the overwhelming majority were not implicated in the crisis. However, a few innovations clearly were at the center of the turmoil.

Mortgage credit scoring largely replaced human underwriting in the 1990s. This automated part of the mortgage application processing routine, perhaps saving consumers one or two hundred dollars in fees. More importantly, mortgage credit scoring changed

the approach to credit risk in the market. The rules of thumb in human underwriting served to segment the market into essentially three categories: investment quality (meeting the strict credit standards of Freddie Mac and Fannie Mae), below investment quality, and unqualified. Credit scoring allowed for finer gradation of risk, with many risk buckets. Lenders priced for risk by charging different interest rates for loans in the various risk buckets. Many formerly non-investment-quality borrowers could be charged interest rates closer to that on an investment-quality loan. Furthermore, many formerly unqualified borrowers could be accommodated at an appropriate interest rate (or so it was thought). Credit scoring also facilitated securitization of mortgages, giving purchasers of mortgage pools objective data with which to measure the credit risk of the underlying mortgages.

Credit scoring was adopted at a time when there were no major imbalances in housing markets. In the 1980s there were regional housing slumps in Texas, New England, and California. However, from the mid-1990s through 2005, house prices rose everywhere. This probably caused many investors to take an overly optimistic view of the effectiveness of credit scoring. Some of the apparent success of credit scoring reflected the favorable trends in house prices, rather than the reliability of the scoring methodology.

Another important innovation in this period was private-label mortgage securities. These were securities not guaranteed by Freddie Mac or Fannie Mae. Instead, the credit risk was retained by private investors. Credit scoring helped to give investors guidance concerning the risk of the underlying mortgages.

Growth of private-label securities was propelled by another innovation, known as structured finance, in which the credit risk in a given mortgage pool was split unevenly among various tranches. The most junior tranche would take the first losses. The next losses would go to the next tranche. Other tranches, called senior tranches, were insulated from taking losses except under the most unlikely catastrophic scenarios. Senior tranches were able to obtain ratings of AA and AAA from the national credit rating agencies.

More importantly, mortgage credit scoring changed the approach to credit risk in the market. Many formerly unqualified borrowers could be accommodated at an appropriate interest rate (or so it was thought).

A further innovation that helped enlarge the mortgage securities market was the use of credit default swaps. A credit default swap can be thought of as a form of insurance against the default of a security. Default insurance has long been in use to broaden the market for municipal bonds, allowing cities and states with imperfect credit ratings to sell bonds to investors that are required to hold only low-risk securities. Similarly, with the protection of credit default swaps, mortgage securities could be sold to institutions that otherwise might be precluded from holding or reluctant to hold them.

The thinking behind credit default swaps is that they are comparable to other financial derivatives, such as options on foreign currencies or on Treasury securities. Derivatives create a liquid market for trading risk, and they can provide a public measure of the price of risk. Thus, many market participants view the changes in the prices of

credit default swaps as indicators of changes in the probability of default of the underlying instruments.

However, credit risk is unlike interest-rate risk or currency risk in that it is highly asymmetric. Currencies and interest rates move up or down with approximately equal probability. Taking a position on currencies or interest rates is a bit like betting on a coin flip. In contrast, mortgages and corporate bonds default with a very low probability, but the severity of loss is high. The seller of credit default swaps is positioned like a property insurance company with a lot of exposure along the Gulf Coast. Most of the time, the seller just collects premium income. However, if a severe hurricane strikes, the losses could be very large.

Credit default swaps played a major role in one of the main acts of the crisis: the downfall of AIG insurance. In the period 2003-2005, AIG was the insurance seller for billions of dollars of credit default swaps on what were presumed to be safe securities. By 2008, when the outlook for the underlying securities was becoming much more treacherous, AIG's counterparties were demanding that AIG post collateral to ensure that it would not default on the credit default swaps. These collateral calls taxed AIG's ability to raise liquid funds, forcing the company to borrow heavily from the Federal Reserve and from the U.S. Treasury.

Credit default swaps also helped produce the inter-institutional entanglement that made government officials fear domino effects. Because credit default swaps were traded over-the-counter, rather than in an organized exchange, there was a prospect that if a major seller of credit default swaps went bankrupt, its counterparties could be in legal limbo until the bankruptcy was resolved by the courts.

In the late 1990s, the head of the Commodities Futures Trading Commission, which oversees derivatives trading on organized futures markets, argued that the CFTC should have regulatory authority over credit default swaps. Today, many economists believe that credit default swaps would be safer if they were standardized and traded on an organized exchange, rather than traded over-the-counter.[33] Another point to note is that AIG's subsidiary that sold credit default swaps operated under the umbrella of a savings and loan, which was subject to the regulatory jurisdiction of the Office of Thrift Supervision (OTS). In hindsight, it does not appear that OTS exercised sufficient oversight over the risks that AIG accumulated by selling credit default swaps.

It is not clear what would have been the result had Congress chosen to encourage or to require that credit default swaps be traded on an organized exchange. The following issues arise:

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33 The Shadow Regulatory Committee did not support the earlier proposals to regulate credit default swaps. In September of 2000, these economists wrote:

> "The Committee also recommends that over-the-counter derivative transactions between sophisticated investors be exempt from CFTC and SEC regulation.
>
> –The dominant players in the OTC markets are banks, and federal banking regulators already exercise regulatory control over those institutions and their derivatives activities that renders unnecessary additional regulatory oversight of the OTC market. The Committee, therefore, recommends clarifying legislation to exempt OTC derivatives bought and sold by sophisticated investors from regulation by the SEC and CFTC. The Committee recognizes that the exemption of OTC derivatives from CFTC regulation raises some substantive competitive issues about the structure and regulation of derivatives products traded on exchanges. The Committee believes that serious thought should be given to reducing federal regulation on all derivative products that are bought or sold by sophisticated investors, whether traded over-the-counter or on an exchange." Shadow Financial Regulatory Committee, "The Regulation of Derivative Instruments," No. 163, May 2000, http://fic.wharton.upenn.edu/fic/Policy%20page/20051114_ShadowStatement163%5B1%5D.pdf

1. Standardized credit default swaps would not have served the mortgage securities market. Holders of mortgage securities are not looking to buy an insurance policy that pays off in the event that some generic mortgage bond defaults. They want to buy protection in case their specific bonds default. Because the demand for insurance is specific rather than generic, it is not clear how anything other than an over-the-counter market could have served the purpose.
2. AIG was an enormous player in the credit default swap market. It is not clear how an organized exchange could manage its exposure relative to a single, dominant participant.
3. Credit default swaps start out as deep, out-of-the money options. That is, when the underlying securities are first issued, the probability of default is very low. Generally speaking, options traded on organized exchanges are much closer to being at-the-money. At-the-money options behave much better than out-of-the-money options. The latter are worth zero under most scenarios, but under extreme conditions they can be worth a fortune. This highly nonlinear behavior makes it very difficult for an exchange to manage its counterparty risk to sellers of deep, out-of-the-money options. Hence, such organized exchanges do not offer such options ordinarily.

Structured finance and credit default swaps emerged in order to feed the appetite of institutions for AAA-rated assets. This appetite was stimulated by risk-based capital rules. In fact, the question of whether generic credit default swaps could substitute for over-the-counter credit default swaps depends in part on capital regulations. If a bank could get the same reduction in risk-based capital required for holding a mortgage security protected by a generic credit default swap as it could for holding that security protected by an over-the-counter credit default swap, then that would improve the viability of trading CDS on an organized exchange. However, such a policy would greatly complicate the administration of risk-based capital regulations.

The demand for credit default swaps on mortgage-backed securities was closely related to risk-based capital regulations at banks. Thus, the growth of credit default swaps, particularly in AIG's portfolio, was not autonomous. It was part of the process of regulatory capital arbitrage. Rather than blame financial innovation per se, it may be more appropriate to fault the regulatory framework that created incentives for these particular innovations to take off and to be abused.

As we have seen, risk-based capital regulations, particularly beginning in January of 2002, put a premium on AAA-rated assets: banks could hold such assets with very little capital. Obtaining protection from AIG insurance, with its AAA rating, enabled banks to expand their holdings of mortgage securities. Risk was transferred from the banks to AIG. As a result, capital left the banks, but it did not go to AIG. AIG used its AAA rating, not actual capital, to back its positions. Or, to put this another way, the Office of Thrift Supervision, which regulated the unit at AIG that traded CDS, did not require AIG to add capital in proportion to the amount of capital that AIG's counterparties were able to subtract. The result was a net increase in the ratio of risk to capital in mortgage finance.

The rigidity of the risk buckets in the Basel Accords may have played a role in stimulating the growth of credit default swaps. The risk buckets measure the risk of each asset individually, rather than treating assets as a portfolio. Suppose that a diversified portfolio of B-rated bonds will be as safe as a single bond that is rated AA. With rigid capital requirements, a bank would have to hold more capital to hold the B-rated bonds. However, by buying credit default swaps from a highly-rated insurance company, the bank could hold the B-rated bonds without having to hold additional capital.

Of course, if the diversified bond portfolio really is low risk, then the bank should be allowed to reduce its capital without having to purchase a credit default swap. On the other hand, if the diversified bond portfolio is not really low risk, then when the insurance company sells the credit default swap, its regulator should require higher capital. The credit default swap does not change the underlying risk of the bond portfolio. Allowing capital to leave the financial system because of the credit default swap reflects a flaw in the design of capital regulations. One can blame this on innovation, but it goes back to the design and implementation of capital requirements.

Structured finance and credit default swaps emerged in order to feed the appetite of institutions for AAA-rated assets. The growth of credit default swaps, particularly in AIG's portfolio, was not autonomous. It was part of the process of regulatory capital arbitrage. Rather than blame financial innovation per se, it may be more appropriate to fault the regulatory framework that created incentives for these particular innovations to take off and to be abused.

Credit default swaps on corporate bonds might be a source of 21st-century bank runs if the sellers of such swaps use what is known as dynamic hedging to protect their positions. The analogy would be with portfolio insurance, which was a phenomenon that emerged two decades ago. Portfolio insurance created synthetic put options on stock portfolios, just as credit default swaps create synthetic put options on interest-bearing securities.

On October 19, 1987, stock prices in the United States fell by more than 20 percent, the largest one-day percentage drop in history, without significant news. Many institutional investors had obtained "portfolio insurance," which guaranteed their stock portfolios against large losses. The sellers of portfolio insurance planned to execute stock sales in order to back their insurance promises. Selling stocks as prices fall in order to create a synthetic put option is known as dynamic hedging. It works in a liquid market when it is attempted in low volume. However, not everyone can execute dynamic hedging at the same time. Hence the contingency plans of the sellers of portfolio insurance were not mutually compatible.

In some instances, credit default swaps may have been sold under the same contingency plans as portfolio insurance. A credit default swap is like a put option or insurance. The buyer of a credit default swap is obtaining insurance against a default on the security. The seller is providing such insurance.

In theory, the sellers of credit default swaps on individual firms may have planned to implement dynamic hedging. If I have sold a credit default swap on debt from company A, my plan might be that if company A starts to get into trouble I will short the stock or other debts of company A in order to create a synthetic put option to offset my sale of the credit

default swap. However, if many other investors have the same plan, then we cannot all sell at once without driving down the prices of the bonds and shares of company A faster than dynamic hedging can be executed.

In theory, credit default swaps create inherent instability by leading sellers of CDS to form contingency plans for aggressive short-selling that cannot all be executed when desired. However, I cannot provide evidence that this problem manifested itself in practice. Although there was widespread concern over short-selling in the latter half of 2008, we did not observe the sort of rapid, overwhelming selling that took place in the October 1987 stock market crash.

Like portfolio insurance, credit default swaps represent put options that start out deep out of the money. If you sell me a put option on a security with an exercise price of, say $80, then I have the option to sell you that security for $80. If the current price of that security is $100, then the option is deep out of the money, because the price would have to fall by at least $20 before I would want to exercise that option. Sellers of such options expect to earn small premiums in most scenarios, but they stand to lose substantial amounts in rare scenarios.

Allowing capital to leave the financial system because of the credit default swap reflects a flaw in the design of capital regulations. One can blame this on innovation, but it goes back to the design and implementation of capital requirements.

Regulating financial innovation is much easier after the fact than before. Many innovations, such as the growth of hedge funds and private equity firms, were feared to pose risks but were not implicated in the recent crisis. On the other hand, mortgage credit scoring seemed to be a relatively benign innovation—lowering the transaction costs in obtaining a mortgage and broadening the availability of mortgage credit—yet it helped to contribute to the excesses in sub-prime lending and securitization. It is difficult to have confidence that regulators will be able to distinguish ex ante the dangerous innovations from the benign ones.

CHAPTER NINE

MONETARY POLICY AND LOW INTEREST RATES

In retrospect it can be argued that expansionary monetary policy in 2001-2003 set the stage for the housing bubble. Low interest rates were an enabling factor in the increase in home purchases and the expansion of mortgage lending.[34] Moreover, the excesses of the bubble from 2004-2006 might have been curtailed by tightening monetary policy sooner and more aggressively than was done. Therefore, it is worth providing a brief outline of how the conventional wisdom on monetary policy evolved over the past forty years.

In the late 1960s, the conventional view of macroeconomic stabilization policy focused on fiscal policy. The standard view emphasized a trade-off between inflation and unemployment (the Phillips Curve), with an additional causal factor known as "cost-push" inflation, reflecting the conflict over income shares between labor and capital. The problem of cost-push inflation was thought to require "incomes policies," which were government efforts to limit wage and price increases.

In the 1970s, the Nixon Administration implemented wage and price controls in an effort to control inflation. Although these policies met with initial success, by the late 1970s inflation was approaching 10 percent per year, with high unemployment. The conventional wisdom began to shift in favor of the views of Milton Friedman, who argued that (a) there was no permanent trade-off between inflation and unemployment and (b) inflation is always a monetary phenomenon.

In 1979, President Carter appointed Paul Volcker to be chairman of the Federal Reserve Board, and Volcker was given a mandate by Carter, as well as by Carter's successor, President Reagan, to slow the rate of money growth in order to curb inflation. For the next twenty-five years, inflation declined while unemployment, after rising sharply during a recession in 1980-1982 caused by Volcker's contractionary monetary policy, dropped to low levels.

34 Another factor that held down interest rates was the large demand for U.S. securities. Federal Reserve officials referred to a "global savings glut" as a possible explanation for low rates. Ben Bernanke, "The Global Saving Glut and the U.S. Current Account Deficit" (speech, Virginia Association of Economics, Richmond, VA, March 10, 2005).

The period from 1983 through 2007, during which the U.S. economy experienced low unemployment, low inflation, and only shallow recessions, was often described as the Great Moderation. The conventional wisdom was that monetary policy played a big role in achieving these outcomes. This reinforced the view that monetary policy should be the dominant tool for macroeconomic stabilization. The focus was on maintaining a low rate of inflation, with the presumption that fluctuations in employment would be moderate.

During the Great Moderation, a number of financial crises took place—a stock market crash in August of 1987, a series of sovereign debt crises in the 1980s and 1990s, and the DotCom crash in 2000. However, in each case, any potential impact on economic growth and employment was apparently mitigated by monetary expansion. Thus, the conventional wisdom was that because monetary authorities could mitigate the effects of financial crashes, there was no need for monetary policy to focus on identifying or stopping financial bubbles in order to prevent such crashes.

This conventional wisdom would be less well accepted today. In contrast with previous financial crises, the current crisis led to a sharp recession that could not be mitigated with monetary expansion. Essentially, the old wisdom would say that expansionary monetary policy, as the Fed has been pursuing since the Fall of 2008, should be sufficient to prevent a recession. This is not the case, as shown by the fact that (a) we are also trying fiscal stimulus and (b) even so, we are having a severe recession. This suggests that in hindsight more should have been done to prevent the housing bubble from expanding as much as it did. This in turn suggests that the monetary easing that took place from 2001-2003 was excessive.

Essentially, the old wisdom would say that expansionary monetary policy, as the Fed has been pursuing since the Fall of 2008, should be sufficient to prevent a recession. This is not the case, as shown by the fact that (a) we are also trying fiscal stimulus and (b) even so, we are having a severe recession.

However, at the time, the sluggish growth in employment (the 2001-2003 period was commonly referred to as a "jobless recovery") was thought to justify the monetary expansion and low levels of interest rates. Indeed, in August of 2002, Paul Krugman wrote a column on the sluggishness of the economy, in which he passed along a joke that proved to be prophetic.

> To fight this recession the Fed needs more than a snapback; it needs soaring household spending to offset moribund business investment. And to do that, as Paul McCulley of Pimco put it, Alan Greenspan needs to create a housing bubble to replace the NASDAQ bubble.[35]

Krugman and others were frustrated that Greenspan's Fed was keeping short-term interest rates too high. However, at the same time, long-term interest rates had been falling. In fact, the differing behavior of long-term and short-term interest rates should raise questions of just how much control the Fed really has over the mortgage market.

35 Paul Krugman, "Dubya's Double Dip?" The Conscience of a Liberal *New York Times*, August 2, 2002, http://www.nytimes.com/2002/08/02/opinion/dubya-s-double-dip.htm

Before the recent crisis, the conventional wisdom was that monetary policy should focus on aggregate economic performance and that it was not wise to put the entire economy through a recession merely to stop a housing bubble. That view looks less compelling today. However, if there are other regulatory tools available for addressing financial safety and asset market bubbles, then it would still seem better to use those tools to stabilize financial markets while reserving monetary policy for stabilizing the growth rate in nominal gross domestic product (GDP).

CHAPTER TEN

DOMINO EFFECTS AND BANK RUNS—REVISITED

A number of economists, including Hyman Minsky and John Kenneth Galbraith, suggest that instability is a characteristic of financial markets. In this view, finance is naturally subject to waves of euphoria and pessimism. There may be an inherent tendency for financial institutions to become vulnerable to domino effects and runs. Fundamentally, the nonfinancial sector wants to hold short-term, riskless assets (think of demand deposits) and to issue long-term, risky liabilities (think of long-term debt to finance purchasing a home or planting fruit trees). The financial sector fills a need by having a balance sheet with the opposite characteristics: risky, long-term assets, financed by issuing short-term riskless liabilities.

Financial intermediation can work through three mechanisms: diversification; risk selection and monitoring; and signaling. The systematic instability tends to come from signaling.

Diversification can be on the asset side or on the liability side of the intermediary's balance sheet. On the asset side, investing in a great many fields of fruit trees or home mortgages reduces the risk that any one adverse event will bankrupt the intermediary. On the liability side, having many depositors reduces the risk that the demand for withdrawals at any one time will be more than the bank can handle. Risk selection and monitoring allows the bank to specialize in the collection of information about the risks. In our simple examples, a bank could study different fields to know where fruit trees are more likely to thrive. It could underwrite individual mortgage borrowers in order to select loans that are most likely to be repaid.

Finally, there is signaling, which is the most likely to contribute to systematic instability. Given that a financial intermediary knows more than others about the nature of the risks on its balance sheet, and given that its balance sheet consists of long-term risky assets and short-term, riskless liabilities, the intermediary depends on the trust of its creditors. This makes signaling very important. A bank needs to send signals to depositors that it is sound. Traditional signals included expensive lobbies and conservatively-dressed employees. Recognized brand names and long histories of profitability can also be signals that appeal to consumers.

No matter how many pleas are made for greater transparency, signaling will always be a part of financial intermediation. If an intermediary were perfectly transparent, then the investor would know exactly what risks it is taking. If the investor knew everything about the underlying risks, then the investor could select the risks for herself—she would not need the intermediary. Invariably, some of the diversification, risk selection, and risk monitoring is going to be opaque to the investor. Given that opacity, investors will rely on signals to decide where to entrust their funds.

Signals of government backing can be extremely valuable. Banks in the United States put the symbol of FDIC insurance on their front doors. Even after they were sold to private shareholders, Freddie Mac and Fannie Mae kept their original names (Federal Home Loan Mortgage Corporation and Federal National Mortgage Association) in order to signal their government backing.

No matter how many pleas are made for greater transparency, signaling will always be a part of financial intermediation. If a signal was trusted yesterday, it will be trusted slightly more today. And if it is still trusted today, it will be trusted slightly more tomorrow. On the other hand, signals can lose value suddenly. Highly-rated mortgage securities went from being trusted to "toxic" in very short order. Few investors seemed willing or able to sift through these securities to determine which ones might be less risky than others.

Until recently, the ratings issued by NRSRO's were considered valuable signals. In part, this was due to the fact that government regulators, particularly after January 1, 2002, allowed AA- and AAA-rated securities to have lower risk weights in bank capital requirements.

As economic circumstances improve, signals tend to have upward momentum. If a signal was trusted yesterday, it will be trusted slightly more today. And if it is still trusted today, it will be trusted slightly more tomorrow.

On the other hand, signals can lose value suddenly. Highly-rated mortgage securities went from being trusted to "toxic" in very short order. Few investors seemed willing or able to sift through these securities to determine which ones might be less risky than others.

A major reason that signals lose value so quickly is that a slight adversity can trigger a downward spiral. In a classic case of uninsured banks, this is a bank run. Once bad news circulates about the bank, it is in the interest of every depositor to withdraw funds. This weakens the bank further, leading to more withdrawal until the bank is either bailed out or has to be closed. Although consumer banks runs were mostly avoided during the most recent crisis, there were institutional equivalents. For example, as Freddie Mac and Fannie Mae in 2008 announced large credit losses for preceding quarters, their debt began to include a large risk premium charged by investors. This in turn made the two firms less viable, and they were taken into conservatorship by the Treasury. Another example was AIG whose counterparties began to be concerned about its ability to back its portfolio of credit default swaps. The large counterparties, including major investment banks, demanded that AIG post collateral. This forced AIG to sell assets in order to obtain low-risk securities. An increased demand for collateral also took place in the market for repurchase agreements. In the "repo" market, as risk premiums increased, investment banks and the trading accounts of commercial banks were compelled to post more collateral or to sell assets.

One of the problems with the idea of using subordinated debt as a market-based tool for regulating financial institutions is that investors lose confidence quickly rather than gradually. One month, Freddie Mac and Fannie Mae were borrowing at interest rates less than one-quarter of one percent above comparable Treasuries. A few months later, they had to pay over one percentage point above Treasuries. The GSEs no longer signified safety and soundness to investors, so that in order to keep them operating the Treasury had to take the firms under conservatorship.

The unstable behavior of financial signals poses another problem for regulators. Just like private investors, regulators have imperfect knowledge of the exact risks embedded in the balance sheet positions of regulated institutions. The regulators, too, must rely on signals, and they mistakenly relied on NRSRO ratings of securities as signals.

In principle, what regulators want is for the signals issued by financial intermediaries to be successful at convincing investors of soundness—but not too successful. If signals are too successful, then intermediaries will expand too much, as they did during the mortgage securitization boom. If signals are too distrusted, then intermediation will be overly curtailed, reducing economic activity. Given the natural instability of trust in signals, it would seem that the regulators' goal of maintaining risk at a level that is "just right" is not easy to achieve. Instead, it seems more likely that signals will gradually become more and more trusted, until the trust is excessive and an event triggers a crash.

In principle, what regulators want is for the signals issued by financial intermediaries to be successful at convincing investors of soundness—but not too successful ... Regulations designed with the knowledge of previous financial euphorias will not necessarily be able to stop the next euphoria ... The role that book-value accounting, lack of formal capital requirements, and interest-rate risk played in the S&L crisis, policymakers promoted market-value accounting, risk-based capital, and securitization. These were precisely the features that blew up in the most recent crisis.

This theory of financial instability has two implications for regulators. One implication is that regulators have to figure out how to take away the punch bowl when the party is getting good. This means recognizing the point where financial complacency and euphoria are too high. It means devising policies to try to curb excess without causing a severe economic slump. Finally, it means overcoming bureaucratic and political obstacles in order to execute policy.

As with many aspects of financial regulation, the goal of taking away the punch bowl at the right time can lead to two types of errors. One type of error, which we might call Type I, is taking away the punch bowl too late. The other type of error, which we might call Type II, is taking away the punch bowl before it is necessary or perhaps when it is not necessary at all.

A Type I error results in financial intermediation expanding too much, leading to excessive risk-taking. When the risks start to become apparent to market participants, a vicious downward spiral takes place. Bad investments have to be written off. Moreover, trust in the existing financial intermediation practices and signals is broken, which further exacerbates the economic costs of the financial collapse.

The economic cost of a Type II error is more difficult to assess. Once regulators crack down it is not possible to observe what might have happened had they allowed financial intermediaries to expand further. We can never know if the crackdown was premature or unwarranted. However, the political cost of a Type II error can be high, because it puts the regulator in a position of restricting a practice that appears to be generating profits for firms and benefits for consumers.

The second implication of this theory of financial instability is that regulations designed with the knowledge of previous financial euphorias will not necessarily be able to stop the next euphoria. In fact, as this paper has detailed, each era of regulation seems to contribute to the next era of euphoria. Thus, after the Great Depression, when uninsured banks and short-term "balloon" mortgages were the problem, policymakers produced a mortgage finance system dominated by 30-year fixed-rate mortgages held by savings and loans. These S&Ls were precisely the institutions that blew up in the next crisis, as the high inflation and interest rates of the late 1970's and early 1980's made them insolvent.

Next, given the role that book-value accounting, lack of formal capital requirements, and interest-rate risk played in the S&L crisis, policymakers promoted market-value accounting, risk-based capital, and securitization. These were precisely the features that blew up in the most recent crisis.

CHAPTER ELEVEN

EASY TO FIX vs. HARD TO BREAK

If economic stability inevitably gives way to financial euphoria, then it may not be possible to devise a fool-proof regulatory regime. Instead, it may be more effective to aim for a system that is easy to fix than a system that is hard to break. This means trying to encourage financial structures that involve less debt, so that resolution of failures is less complicated. It also means trying to foster a set of small, diverse financial institutions.

In the United States, tax policies tend to encourage debt financing. Higher leverage in financial structures makes a system difficult to repair when investments founder. If tax policy encouraged equity financing instead, investment failures would not cause so much difficulty. For example, the crash of the DotCom bubble in 2000 caused much less economic dislocation than the more recent housing crisis. Another way to make a financial system easy to fix would be to have small institutions with only weakly correlated risks. If that were the case, then the closure of one institution would not be a major event for the economy. Of course, arranging for risks to be only weakly correlated is easier said than done.

From the standpoint of making the regulatory system harder to break, it may make sense to have a neat regulatory organization chart, without gaps or overlaps. However, such a well-ordered regulatory system might result in a situation where all of the institutions performing a particular function, such as mortgage lending, fail together. With a messier structure, the failure of some firms might be overcome by other, overlapping firms taking a larger role. Thus, instead of aiming to bring all mortgage lending under a single regulatory regime, it might be easier to fix a system if there were a variety of mortgage lenders, regulated differently.

Of course, one problem with multiple regulators is that there can be a competitive "race to the bottom," as each type of institution asks its regulator for relief from its perceived regulatory disadvantages. It appears that bank regulators felt sympathy toward banks because of the low capital requirements for taking mortgage credit risk enjoyed by Freddie Mac and Fannie Mae. The regulators leveled the playing field not by raising the capital requirements for GSEs but by lowering the capital requirements for banks. If a system of multiple regulators is to be retained, then they need to respond to complaints about tilted playing fields by tightening up on the favored institutions at least as readily as they loosen regulations for the disadvantaged institutions.

CHAPTER TWELVE

CONCLUSION

The core of the financial crisis of 2008 consisted of unsound practices in mortgage underwriting and mortgage finance. A number of regulatory developments helped to stimulate the boom in mortgage lending and securitization.

- The Basel accord on risk-based capital set up crude risk buckets that initially favored Freddie Mac and Fannie Mae, because capital requirements were lower for mortgages securitized by the GSEs than for loans originated and held by banks.
- The January 2002 modification to the risk weights allowed NRSRO ratings to substitute for GSE guarantees. This reduced the relative advantage of the GSEs, but it increased the relative advantage of mortgage securitization. Private-label securities, consisting of pools of low-quality mortgages, expanded dramatically from 2002 through 2005.
- From the mid-1990s onward, the government pressured mortgage lenders to increase lending to low-income borrowers. Freddie Mac and Fannie Mae lowered credit underwriting standards considerably in response to this pressure, taking on significant sub-prime mortgage exposure in 2006 and 2007, just as house prices were poised to fall.

The incentives to hold AAA- and AA-rated assets stimulated various financial innovations that had unfortunate consequences. For example, AIG insurance used credit default swaps on mortgage securities to "rent" its AAA rating to banks.

Monetary policy that was intended to stabilize inflation and employment kept interest rates low from 2002 through 2004, which contributed to the housing boom.

Regulators lacked the will and the ability to enforce competitive boundaries in the financial sector. These boundaries eroded over a forty-year period, primarily as a result of innovation but also as a result of regulatory decisions and legislation. Consequently, institutions became large and complex. These "too big to fail" firms posed major challenges

to policy makers during the crisis, because they were subject to domino effects and 21st-century bank runs.

In this paper, I have stressed the differences between the way that policies were viewed at the time they were adopted and the way that they are viewed in retrospect. For example, basing capital requirements on risk and on the market value of assets made sense in light of the S&L crisis, but such policies are now recognized to be procyclical. They should not be abandoned altogether, but they need to be modified. Other policies that are now recognized as harmful, such as the reliance on credit rating agencies and approval of dispersing risk into the "shadow banking system," were at the time viewed as beneficial. The phenomenon of mortgage securitization is still viewed as beneficial, with a need to curb its excesses. However, I would question the rationale for securitization. Given that mortgage securitization was created and supported by government, it could be that without government support or the distortion of capital regulations the market would choose a different, safer method of mortgage finance. Perhaps old-fashioned "originate-to-hold" mortgages would make a comeback if the regulatory playing field were level.

Given that mortgage securitization was created and supported by government, it could be that without government support or the distortion of capital regulations the market would choose a different, safer method of mortgage finance ... The prospects for regulatory policy are even more fraught given the extremely skewed conventional narrative of the financial crisis ... The conventional narrative looks only at private-sector excesses and an alleged absence of regulatory oversight. It is unlikely that our financial system will benefit from a rush to create new rules and institutions that is based on a distorted perspective on how the crisis emerged in the first place.

Given this contrast between hindsight and the real-time perspective, the government needs to display some humility in promising to prevent future financial crises. The history of past regulatory mistakes suggests that we will not come up with a fool-proof system going forward. In fact, there is a risk of creating a financial system that is even more dependent on centralized regulation, which could leave it at least as vulnerable to catastrophic failure.

The prospects for regulatory policy are even more fraught given the extremely skewed conventional narrative of the financial crisis. Rather than examine all of the factors looked at in this paper (which in itself may not be exhaustive) the conventional narrative looks only at private-sector excesses and an alleged absence of regulatory oversight. It is unlikely that our financial system will benefit from a rush to create new rules and institutions that is based on a distorted perspective on how the crisis emerged in the first place.

Based on my research and the findings of this paper, perhaps the most useful steps that policy makers could take to prevent a recurrence of the financial markets crisis would be to tilt policies away from debt finance. One way to encourage a more stable housing market would be to provide less encouragement to mortgage indebtedness. With larger down payments and smaller mortgages, there would be less of a self-reinforcing effect of house price appreciation, speculative demand, and mortgage credit availability.

Policy makers should also re-think the mortgage interest deduction and reconsider the role played by Freddie Mac and Fannie Mae. If, without the GSEs, mortgage financing

reverted to a traditional lending undertaking by banks that might prove to be more sound, particularly if monetary policy keeps inflation under control. If mortgage interest rates are a bit higher with traditional lending than they could be with more securitization, that need not be regarded as a tragedy.

For financial intermediaries in general, a smaller disparity in the tax treatment of debt and equity might reduce the incentives for excess leverage. That in turn might help to moderate excesses. It would also discourage the sort of debt-laden financial structures that are conducive to domino effects and bank runs.

The main point of this paper is that in order to get policy right going forward, the historical narrative must be accurate. It will not help to airbrush out of history the role that regulatory policy played in setting up the crisis. It would be a mistake to create institutions with the presumption that regulators will correctly diagnose systemic problems, when the record shows that regulators were subject to the same cognitive shortcomings as private sector participants. Unless the United States come to terms with the fact that the actions of policy makers and regulators contribute to financial fragility, it has little hope of moving in the direction of a less fragile system for the future.

Perhaps the most useful steps that policy makers could take to prevent a recurrence of the financial markets crisis would be to tilt policies away from debt finance.

Appendix: The Shadow Regulatory Committee on Barriers to Entry

In 1986, one of the committee's first statements said,

> "the Committee recognizes that the legislative barrier between banking and securities activities erected by the Glass-Steagall Act is being eroded in a piecemeal and haphazard fashion...new legislation should be enacted that is more consistent with both current market forces and present economic theory and fact." [36]

The committee took the view that there was no natural boundary between investment banking and commercial banking. Investment banks were providing money market funds with checking privileges. They were underwriting commercial paper, which substitutes for bank loans. For their part, banks could buy and sell mortgage securities or municipal bonds. In the view of the committee, the attempts to maintain legislative barriers to entry in financial services were crude and counterproductive.

In a statement in 1994, the committee wrote,

> "In recent decades, bank holding companies have been induced to try to expand into an increasingly wide array of previously precluded activities, including issuance of securities and insurance products. At the same time, nonfinancial and nonbank financial firms have developed subsidiaries and affiliates whose products closely substitute for bank loans and deposits.
>
> ...As long as supervisors strive to force recapitalization before net worth can go to zero, the risks to taxpayers from banks affiliating with firms engaged in nontraditional banking or commercial activities are not qualitatively different from traditional activities provided they can be adequately monitored.
>
> ...Banking organizations now operate nationwide and have diverse product lines. Market power associated with this expansion is constrained by nonbank competitors."[37]

The barriers to entry in financial services had initially been enacted out of fear of concentrated power in financial markets. By the 1990s, it was difficult to see concentration of power as a significant threat. Instead, what economists saw was an environment with many firms offering financial services. If anything, barriers to entry were restricting competition, not protecting it. Moreover, the formal restrictions seemed increasingly arbitrary in view of all of the innovative and competitive activity that was allowing firms to get around the restrictions.

The committee was frustrated at the absence of legislative action on this issue.

> "Again this year, despite considerable efforts almost to the last day of the session, Congress failed to pass financial reform legislation. This has happened so often in recent years that it calls into question the ability of Congress to change national policy in this area, and leads many observers to believe that it is better to rely on actions by regulators than to bother with legislation.

36 Statement number 13, November 17, 1986.
37 Statement number 115, December 12, 1994.

> ...In the Committee's view, a primary cause of the failure this year as in years past--was the fallacious notion that banks must be separated from the rest of the commercial world. Misplaced allegiance to the so-called separation of banking and commerce has made it impossible for Congress to create the two-way street that would meet the needs of all the players and best serve the interests of consumers."[38]

The parties most interested in this issue were the institutions themselves, with each sector lobbying to maneuver for advantage. Insurance companies wanted to keep out competition from banks, while banks wanted to be able to offer insurance through subsidiaries. Investment banks wanted to compete with banks for consumers without suffering inroads from commercial banks in security underwriting and other traditional investment banking functions. The result of the interest-group bickering was legislative gridlock.

Sixteen months later, still frustrated, the committee wrote, "Real banking modernization would require no more than a single sentence: 'The Bank Holding Company Act of 1956 and the Glass-Steagall Act of 1933 are hereby repealed.'"[39]

To understand the economists' frustration, keep in mind all of the innovation that had taken place in banking and finance between 1960 and 1999. Credit cards had become widespread. There were interest-bearing checking accounts. There were automated teller machines. Money market funds were well established. There was now a national secondary market in mortgages. Many households had home equity lines of credit. There were exchange-traded futures and options in financial instruments. There was electronic trading of shares of common stock. Consumers were using the Internet for research and selection of financial services. It seemed that everything about the financial services environment had changed since the 1950s—with the exception of legislation.

In 1999, Congress passed the Gramm-Leach-Bliley Act, which officially ended the Glass-Steagall restrictions. Although the economists were not happy with the complexity of the final product, they expressed relief, "The Congress enacted the Gramm-Leach-Bliley Act of 1999 (GLBA), which, after almost two decades of debate, helped bring our financial laws closer to the realities of the modern financial marketplace."[40]

One year later, the committee wrote,

> "In November, the Gramm-Leach-Bliley Act reached its second anniversary-enough time, the Committee believes, to make some judgments on whether it has resulted in any significant improvement in the structure of the financial services market. Measured against the balkanized financial services industry that existed in 1999-with bank holding companies unable to affiliate with insurance underwriters, or with securities firms that were principally engaged in underwriting and dealing in securities-there has been some improvement in market structure. Many bank holding companies have been able to acquire or establish securities and insurance activities, and this has improved competition and enhanced consumer choice.

38 Statement number 142, December 7, 1997.
39 Statement number 155, April 26, 1999.
40 Statement number 166, December 4, 2000.

However, measured against what the Committee believes the Gramm-Leach-Bliley Act should have achieved-the creation of a two way street in which insurance companies and securities firms could acquire or establish banks, and vice versa-the Act has been a failure...the Act has in fact created a strong bias in favor of product expansion by banking organizations and a corresponding bias against similar expansion by the other financial services providers."[41]

41 Statement number 174, December 3, 2001.

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