



AgEcon SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

GLOBAL DEVELOPMENT AND ENVIRONMENT INSTITUTE
WORKING PAPER NO. 12-06

A Financial Crisis Manual
Causes, Consequences, and Lessons of the Financial Crisis

Ben Beachy
December 2012

Tufts University
Medford MA 02155, USA
<http://ase.tufts.edu/gdae>

View the complete list of working papers on our website:
http://www.ase.tufts.edu/gdae/publications/working_papers/index.html

Abstract:

On the fifth anniversary of the beginning of the Great Recession, there is still no consensus on the lessons to be gleaned from the lingering crisis. What provoked the largest financial and economic collapse in decades? While the housing bubble and subprime mortgage lending boom provide clear proximate causes, skewed financial sector incentives, errant economic assumptions, and inequitable socioeconomic structures laid the groundwork for crisis. The complex web of underlying factors extends from a 1960s-era economic hypothesis to the deregulation of interstate banking to a shift in how Wall Street CEOs are paid. This paper traces that causal web for a generalist audience, summarizes how the financial crisis morphed into an economy-wide recession, and synthesizes proposals for how to prevent its recurrence. Such proposals are not limited to efforts to rein in Wall Street, as exemplified by the sweeping Dodd-Frank financial reform law, but also include initiatives to harness Wall Street's vast resources for the needs of the real economy. Meanwhile, the crisis amplified calls to address crisis-prone disequilibria in the U.S. economy, and to alter the study of economics itself. As the country continues to grapple with the economic fallout of financial meltdown, such proposals merit continued discussion.

A Financial Crisis Manual

Causes, Consequences, and Lessons of the Financial Crisis

Ben Beachy

Table of Contents

3	Introduction
7	Causes of Crisis: What Prompted the Financial Collapse and Ensuing Recession?
7	The Housing Bubble: An Unsustainable Price Increase
8	<i>Speculation Gives Birth to a Bubble—1998-2003</i>
10	<i>Credit Inflates the Bubble—2003-2006</i>
13	<i>The Bubble Bursts—2007-2008</i>
19	The Subprime Boom: An Unsustainable Risk Increase
24	A Broken System: The Financial Sector’s Skewed Demand for Mortgages
25	<i>Bankers: Moral Hazard</i>
26	<i>Investors: Opacity and Overconfidence</i>
31	<i>Regulators: Misguided Theories</i>
35	The Great Recession: From Financial Crisis to Economic Crisis
36	A Collapse in Employment
40	Policy Responses to Recession
42	Deeper Causes: Structural Roots of the Housing Bubble, Risk-Taking, and Self-Regulation
42	Inequality: Did Increasing Income Gaps Set the Stage for Rising Housing Prices?
45	Bank Size: Did the Growth of Too-Big-to-Fail Incentivize Risk-Taking?
51	Management Incentives: Did Performance-Based CEO Pay Encourage Myopic Risk-Taking?
53	Regulatory Capture: Has Regulatory Policymaking been Co-opted by Regulated Firms?
57	Lessons Learned: How to Prevent the Next Crisis? How to Reorient Finance?
57	Reining in Wall Street: Dodd-Frank
62	Harnessing Wall Street: Beyond Dodd Frank
63	<i>Resizing the Banks</i>
65	<i>Restructuring the Banks</i>
67	<i>Taxing the Banks</i>
70	Conclusion: A Paradigm Shift?
70	Will economists supplant the notion of rational, efficient markets with a more realistic alternative?
71	Will policymakers and regulators find creative ways to align private interests with the public good?
72	Will activists succeed in their push to change the unequal political and economic structures that laid the groundwork for the crisis?
73	Will our society as a whole find a way to channel the vast resources of finance toward the vast needs of the real economy?
76	References

A Financial Crisis Manual

Causes, Consequences, and Lessons of the Financial Crisis

Ben Beachy¹

As housing prices reached their highest point ever in February 2006, the chief economist of the U.S. National Association of Realtors published a book entitled, “Why the Real Estate Boom Will Not Bust—And How You Can Profit From It.”² Few books have been more inaptly titled. Within a few months, the boom ended as housing prices turned south for the first time in a decade. Over the next year, default rates rose, particularly for “subprime” home mortgages. To assuage fears, Federal Reserve Chairman Ben Bernanke explained in March 2007, “At this juncture...the impact on the broader economy and financial markets of the problems in the subprime market seems likely to be contained.”³

Joseph Cassano, an executive at the insurance behemoth AIG, concurred. Responding to questions about the risks of AIG’s subprime-related business, Cassano assured investors in August 2007, “It is hard for us, and without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar in any of those transactions.”⁴ One year later, AIG had lost over \$26 billion.⁵ To save the company from imminent bankruptcy, Bernanke’s Federal Reserve pledged a \$182 billion bailout, the largest in U.S. history.⁶ The crisis had begun.

The crisis was broad enough to traverse economic sectors and international borders, deep enough to cast tens of millions into poverty, and enduring enough to be known as the “Great Recession.” From the beginning of the crisis in 2007 to its depths in 2009, collapsing housing prices and financial markets destroyed \$19.7 trillion worth of assets owned by U.S. households.⁷ This staggering amount is equivalent to losing the entire value of everything produced by the U.S. economy over 1.25 years.⁸

While much of this lost wealth stemmed from artificial price inflation fueled by Wall Street, many families relied on their overpriced assets for very real purposes, such as home equity loans (based on house values) and retirement funds (based on stock values). Over the course of just eight months in 2008-2009, the average U.S. household saw nearly \$100,000 erased from such housing and stock-based

¹ Ben Beachy is a Visiting Research Fellow at Tufts University’s Global Development and Environment Institute (GDAE) and Research Director at Public Citizen’s Global Trade Watch.

² David Lereah, *Why the Real Estate Boom Will Not Bust - And How You Can Profit from It: How to Build Wealth in Today's Expanding Real Estate Market* (New York: Crown Business, 2006).

³ Ben Bernanke, “Testimony before the Joint Economic Committee,” Board of Governors of the Federal Reserve System, March 28, 2007.

⁴ Anna Schecter, Brian Ross, and Justin Rood, “The Executive Who Brought Down AIG,” *ABC World News*, March 30, 2009.

⁵ Paul Kiel, “AIG’s Spiral Downward: A Timeline,” ProPublica, November 14, 2008.

⁶ “American International Group Inc.,” *The New York Times*, last modified November 2, 2012, http://topics.nytimes.com/top/news/business/companies/american_international_group/index.html.

⁷ Stated in 2012 dollars. “The Financial Crisis Response in Charts,” U.S. Department of the Treasury, April 2012.

⁸ Author’s calculations, based on “National Income and Product Accounts Tables: Table 1.1.5. Gross Domestic Product,” Bureau of Economic Analysis, updated October 26, 2012.

investments.⁹ Though the wealthy experienced the greatest absolute losses, middle class and poorer households suffered higher proportional hits to their net worth. From 2007 to 2010, the median household endured a nearly 40% decline in wealth.¹⁰ Even worse, many households lost the house itself. By early 2010, about one out of every eleven mortgages was in default, and by mid-2012 over eight million households had experienced a foreclosure since the crisis's inception.¹¹

The crisis soon spread from the housing and financial sectors to an economy-wide recession. As a cycle of reduced credit, reduced business investment, and reduced consumer spending took hold, employers started eliminating jobs. Production levels began stagnating in December 2007 and then fell precipitously through June 2009,¹² extinguishing 8.8 million U.S. jobs in the process.¹³ Such a loss is equivalent to the entire employed population of New York being cast out of work.¹⁴ Official unemployment, which stood at 4.7% in October 2007, more than doubled within two years, climaxing at 10% in October 2009. It remained high, only decreasing about a percentage point by 2011 and slowly declining another percentage point by October 2012, reaching a still-troubling 7.9%.¹⁵

Greater competition for fewer jobs also put downward pressure on wages. In 2008 the median income dropped by an extent not seen since 1967.¹⁶ Over the following year, the average household lost \$5,800 in actual income.¹⁷ By 2010, college graduates could expect to earn 17.5% less (if they found a job) than those who graduated before the crisis. Analysts predicted that such lackluster earnings would persist for more than a decade, during which recession-era graduates would earn \$70,000 less than preceding grads had earned in their post-graduation decade.¹⁸

Such widespread and seemingly inescapable predicaments soon affected not just people's bank accounts, but their psyches. In the first two years after the 2008 collapse, almost 40% of households had lost employment, faced foreclosure, missed housing payments, or found their homes to be worth less than their mortgage debt.¹⁹ In a survey taken in late 2008, one out of every five people expected to lose their job in the next 12 months.²⁰ Surveys also revealed that one out of every three people in the U.S. was consistently dissatisfied with household income from late 2008 through early 2010, while

⁹ Phillip Swagel, "The Cost of the Financial Crisis: The Impact of the September 2008 Economic Collapse," Pew Financial Reform Project, Briefing Paper #18, 2009, 16.

¹⁰ Jesse Bricker, et al., "Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, June 2012, 1.

¹¹ Author's calculations, based on "Quarterly Report on Household Debt and Credit" Federal Reserve Bank of New York, August 2012.

¹² "Business Cycle Dating Committee," National Bureau of Economic Research, September 20, 2010.

¹³ "The Financial Crisis," Treasury.

¹⁴ "States and Selected Areas: Employment Status of the Civilian Noninstitutional Population, January 1976 to Date, Seasonally Adjusted," Bureau of Labor Statistics, October 2012.

¹⁵ "Labor Force Statistics from the Current Population Survey—Series ID: LNS14000000," Bureau of Labor Statistics, updated November 21, 2012.

¹⁶ Anna Turner, "Jobs Crisis Fact Sheet," Economic Policy Institute, March 8, 2010.

¹⁷ Swagel, "The Cost," 9.

¹⁸ Michael Greenstone and Adam Looney, "The Long-term Effects of the Great Recession for America's Youth," The Brookings Institution, September 3, 2010.

¹⁹ Michael D. Hurd and Susann Rohwedder, "Effects of the Financial Crisis and Great Recession on American Households," National Bureau of Economic Research, Working Paper 16407, September 2010, 21.

²⁰ *Ibid.*, 39.

dissatisfaction with life in general grew from about one in every 14 just after the 2008 collapse to one out of every nine people by early 2010.²¹

While permeating most sectors of the U.S. economy, the crisis also spread to most regions of the world.²² The financial collapse directly hit foreign banks that either did business with troubled Wall Street firms or that merely appeared to have undertaken similar levels of risk. Then, as the crisis cut consumption and income in the U.S., many countries saw a significant reduction in U.S. purchases of their exports and a scaling back of U.S.-supplied aid, investment, and tourism. The resulting blow to numerous economies brought a 2% reduction in the world's total production of goods and services in 2009. As incomes fell and joblessness rose, an estimated 47 to 84 million additional people throughout the world fell into, or were prevented from escaping, extreme poverty.²³ This human tragedy was gravest for society's most vulnerable members. A World Bank study estimates that 30,000-50,000 more infants will die in sub-Saharan Africa as a result of economic fallout from the crisis that originated in the U.S.²⁴

In addition to wreaking havoc on lives across the world, the crisis sparked tumult in the disciplines of economics and financial regulation. Why had economists not anticipated the burst of the housing bubble? How had theoretically rational homebuyers, banks, investors, and regulators alike unquestioningly contributed to the collapse? While analysts impugned standard economic assumptions, neglected schools of thought like Keynesianism rushed back into the mainstream as policymakers struggled to counter the worst recession since the Great Depression.

Meanwhile, the finance industry's governmental regulators became the target of a growing chorus of criticism. How had Wall Street's buildup of risk eluded governmental oversight? Why did the government then bail out the banks, and what would prevent them from taking further economy-tanking gambles? Proposals for financial reform dominated media headlines, popular protests, and congressional debates, some eventually becoming enshrined in law.

This paper explores the causes of the crisis in the U.S. housing and financial sectors, the impacts felt across the U.S. economy, and the landmark lessons of the crisis for the structure of finance and the study of economics. Throughout this exploration, the paper will continually return to several themes that characterize the crisis and its aftermath, including:

- **Rational vs. Irrational Markets.** To what extent do markets behave rationally? Standard economics assumes that humans are rational actors, and many economists believe that the trading of financial products reflects a rational market. The housing bubble and resulting financial collapse called such theories into question and fueled interest in alternative explanations of economic behavior.

²¹ *Ibid.*, 35.

²² It is beyond the scope of this U.S.-focused paper to detail the several transmission mechanisms through which the U.S.-originated crisis spread internationally, or the widespread and diverse impacts that resulted throughout the world. Such a weighty subject deserves more space than can be allotted here.

²³ "The Global Social Crisis: Report on the World Social Situation 2011," United Nations Department of Economic and Social Affairs, 2011, 1.

²⁴ Jed Friedman and Norbert Schady, "How Many More Infants Are Likely to Die in Africa as a Result of the Global Financial Crisis?," The World Bank, Policy Research Working Paper 5023, August 2009, i.

- **Personal vs. Public Interests.** To what extent do the private interests of financial actors and the broader interest of the general public naturally align? The societal function of finance is commonly seen as providing access to credit for people to invest in their productive ambitions and ideas. Standard economics states that banks and investors, acting in their own private interest in profit, will simultaneously and efficiently fulfill this public interest. Again, the implosion of the financial sector and ensuing contraction of credit challenged this theory, prompting renewed focus on misalignment between the goals of financial corporations and those of the general public.
- **Market-Based vs. Governmental Regulation.** To what extent should the government regulate finance? This question stems in part from the answers to the first two. The three decades prior to the crisis marked a period of continual deregulation of finance. Under the assumptions of rational markets and aligned private-public interests, regulators increasingly trusted the financial sector to regulate itself. After the financial collapse cast doubt on these assumptions, the deregulatory trajectory ended with a wave of new efforts to rein in finance.

Causes of Crisis: What Prompted the Financial Collapse and Ensuing Recession?

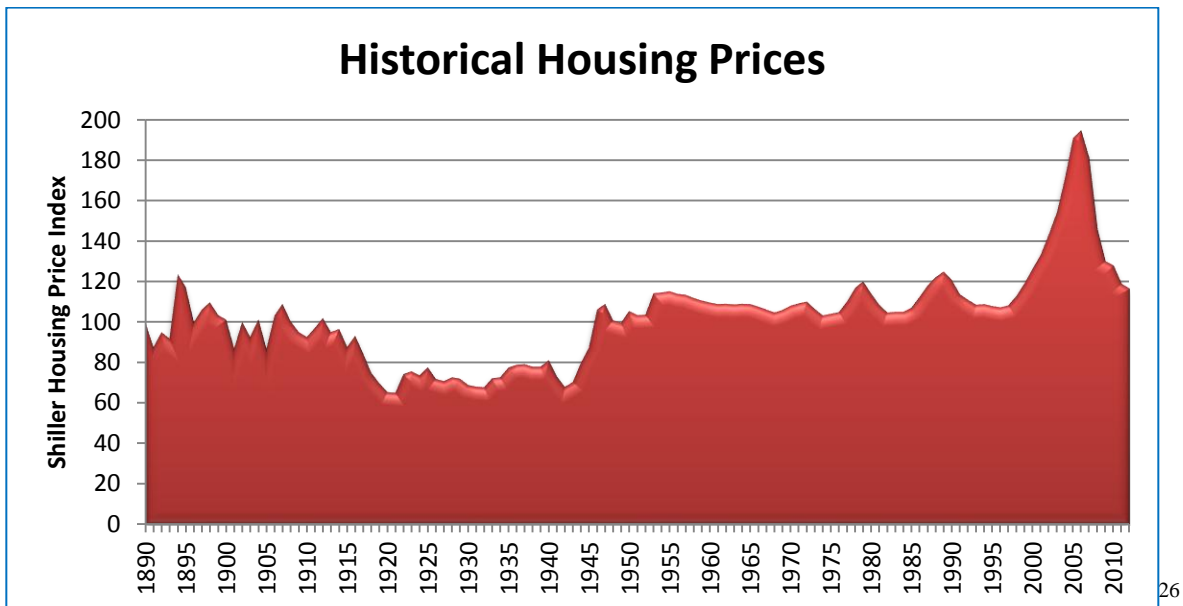
What provoked the largest U.S. financial crisis since the Great Depression? The answers include a diverse array of immediate and deeper causes in the housing and financial sectors of the U.S. economy. While the recession's initial spark can be found in housing, the fire would have remained small had the financial sector not fanned the flames. Three principal proximate causes emerge:

1. A large price bubble—an artificial and steep rise and fall in the price of a particular good or asset type—that vastly inflated and then sharply reduced the value of houses,
2. A subprime mortgage lending boom that exacerbated the bubble's size and impact, and
3. Skewed financial sector incentives that fed the subprime boom.

The Housing Bubble: An Unsustainable Price Increase

From 1890 to 1997, the real price of housing in the U.S. remained relatively stable (after controlling for inflation and differences in house size and quality), as indicated in Figure 1. The average purchasing price of a home in 1997 was only 2% more than the average price one century earlier. This remarkably flat historical trend ended as housing prices skyrocketed in the late 1990s and early 2000s. When prices peaked in 2006, the average price of a house was nearly twice the long-term average price from 1890 to 1997. Just six years later, the price had plummeted back toward its long-term trend.²⁵

Figure 1



²⁵ Author's calculations, based on Robert J. Shiller, "Data for Figure 2.1 in Robert J. Shiller, *Irrational Exuberance 2nd Edition*, Princeton University Press, 2009, as updated by author," updated through second quarter of 2012.

²⁶ Graph assembled from data in Shiller, "Data."

The enormous housing bubble was not the first instance of an unsustainable rise and subsequent fall in prices. Price bubbles date back at least to the Dutch tulip mania of 1636. In that year, the price of tulips soared until a single tulip bulb fetched a higher price than a house, only to come crashing down in the first months of 1637.²⁷ Other famous bubbles include a 1840s railroad-building frenzy in the United Kingdom and the late 1990s dot-com bubble in the U.S. (which, as explained below, actually contributed to the housing bubble).

The origin of the housing bubble is similar to that of prior price bubbles: a real increase in demand spurred a gradual rise in price, which soon morphed into a rapid and speculative price spike. In the late 1990s, most people in the U.S. who had mutual funds, stocks, or other investments in the stock market saw their wealth rise significantly as stocks doubled in value from 1996 to 2000.²⁸ This was the dot-com bubble, a separate speculative price spike in which excitement over new Internet-based companies drove investors to overvalue the worth of many stocks. Though the dot-com bubble burst after 2000 (with stock prices steadily falling until 2003), the late 1990s' rise in stock prices meant that many families who owned stocks saw themselves as richer and chose to spend their new wealth on bigger and better houses. Housing demand rose more quickly than the supply of new houses (due to the lag in construction time), resulting in an increase in house prices that was actually based on an increase in the quantity and quality of homes desired.²⁹

Speculation Gives Birth to a Bubble—1998-2003

This realistic increase in demand, however, soon spurred a self-perpetuating price increase based on speculation—a defining feature of price bubbles. Speculation is the purchasing of a financial asset in hopes of profiting from an expected change in the price of the asset. As housing prices rose, both buyers and sellers of homes grew to expect prices to continue to rise. Assuming an ongoing increase in home values, homebuyers became willing to pay even higher housing prices, believing that the increasingly valuable investment would soon pay for itself. Knowing this, real estate agencies started charging inflated rates—a price increase based not on rising real demand for houses, but on speculation that housing prices would continue to rise.

The speculative increase, in turn, only confirmed expectations of continually rising prices, encouraging more families to feel assured in buying homes, prompting both rising real demand for homes and an upward spiral of self-fulfilling speculative price hikes. In a marked change from the zero real growth rate in housing prices from 1993-1997, this spiral meant that housing prices from 1998 through the first half of 2003 climbed 1.5% every three months, reaching unprecedented heights.³⁰

The twin bubbles of dot-com stocks and housing prices, like earlier bubbles, pose a formidable challenge to the efficient market hypothesis. This hypothesis states that the price of an asset (e.g. a stock or a house) accurately incorporates all available information about the asset's value. Since the 1970s, finance economists have generally accepted this theory, first posited in the early 1960s by

²⁷ A. Maurits van der Veen, "The Dutch Tulip Mania: The Social Politics of a Financial Bubble" (University of Georgia, March 2009), 2 and 15.

²⁸ Robert J. Shiller, "Stock Market Data Used in 'Irrational Exuberance' Princeton University Press, 2005," updated June 2012.

²⁹ Dean Baker, "The Housing Bubble and the Financial Crisis," *Real World Economics Review* 46 (May 20, 2008): 73.

³⁰ Author's calculations, based on Shiller, "Data."

Professor Eugene Fama of the University of Chicago. Under the efficient market hypothesis, speculative bubbles cannot exist—if prices were to rise on the basis of self-fulfilling speculation, investors would use readily-available information to spot the price inflation, expect the price to soon drop, and thus sell the assets, causing the price to indeed drop.³¹

But investors, whether homebuyers or those who financed their mortgage loans, did not act so wisely amidst the housing bubble. The belief persisted that housing prices would rise indefinitely, despite information, readily available as early as 2002, that housing prices had grown to levels never reached in recorded history.³² Such information was largely ignored (despite warnings from several prescient economists) as prices continued to soar for several more years.

How could the hypothesis have been so wrong? In short, because the theory of naturally efficient financial markets presumes that investors, taken as a whole, are rational. While some investors may disregard information and overestimate the real worth of a given stock or house, the theory presumes that others will underestimate it, making the aggregate price a rational one. However, the aggregate irrationality of investors has been noted by many analysts, including (ironically) former Federal Reserve Chairman Alan Greenspan, who coined the term “irrational exuberance” to describe rising stock prices driven by investors’ collective zeal at the start of the dot-com bubble.³³

Behavioral economics, a subset of economics that incorporates established facets of human psychology, offers several explanations for such irrationality. For example, humans tend to excessively depend on recent and relatively small samples of information to project future trends—a bias known as the representativeness heuristic. In the case of the housing bubble, would-be homeowners (and those who financed their mortgages, as explained below) saw a recent increase in housing prices and over-extrapolated to assume that housing prices would continue rising indefinitely.³⁴ Had those investing in homes used a larger pool of data (i.e. looking at the relative stability of the last century rather than the increase of the past couple years), the speculative bubble would probably not have grown so large.

Herd mentality, the tendency of humans to base their decisions on those taken by the majority, can also explain the rise of the housing bubble. Economists as far back as John Maynard Keynes, the founder of modern macroeconomics, have argued that investors (e.g. homebuyers or those who finance their home purchases) do not primarily consider the underlying value of an asset (e.g. a house) in deciding their willingness to pay for the investment. Rather, they primarily consider whether investments of this type are increasing or decreasing in the market at large.³⁵ In the late 1990s and early 2000s, “herd” members were buying up homes and doling out mortgages at increasing rates, influencing their peers’ decisions to do the same. Such herd mentality, like the representativeness heuristic, is a typical feature of human cognition. Since investors are human (not isolated, rational, and omniscient price calculators), such behavioral tendencies probably helped inflate the self-fulfilling housing bubble.

³¹ “Efficiency and Beyond,” *The Economist*, July 16, 2009.

³² Baker, “The Housing Bubble,” 73.

³³ Alan Greenspan, “The Challenge of Central Banking in a Democratic Society,” The Federal Reserve Board, December 5, 1996.

³⁴ Nicholas Barberis, “Psychology and the Financial Crisis of 2007-2008” (Yale School of Management, August 2011), 4.

³⁵ Hersh Shefrin and Meir Statman, “Behavioral Finance in the Financial Crisis: Market Efficiency, Minsky, and Keynes” (Santa Clara University, November 2011), 24.

Credit Inflates the Bubble—2003-2006

In 2003 the unprecedented rate of growth in housing prices did not subside. It doubled. From the third quarter of 2003 through the third quarter of 2005, housing prices increased by 3% every three months,³⁶ finally peaking in 2006 at an average sale price (for new homes) of \$305,900, more than 180% of the price one decade earlier.³⁷ What drove this incredible swelling of the bubble? The primary answer is unprecedented access to credit in the form of mortgages (i.e. housing loans). Average annual total mortgage borrowing rose from \$0.2 trillion from 1993-1997, to \$0.5 trillion from 1998-2002, to \$1 trillion per year during the peak bubble years of 2003-2006.³⁸

This correlation between credit booms and price bubbles has been seen numerous times in history, since increased borrowing tends to foster increased demand for the asset in question (e.g. tulips, stocks, or houses), enabling the self-perpetuating rise in price. Indeed, while sustained access to credit is commonly seen as critical for healthy economies, a rapid increase in domestic credit has been found to be among the most consistent and significant determinants of financial crises occurring throughout the world in the last four decades.³⁹ By inflating short-lived bubbles, credit booms tend to lead to financial busts. Scholars studying the 2008 bust have found that countries that experienced a larger expansion of credit tended to experience a more severe economic collapse.⁴⁰

What prompted the burgeoning of credit in the early 2000s? While several factors could be noted, the interest rates set by the Federal Reserve played a particularly pivotal role. The Federal Reserve seeks to influence nationwide access to credit via the principal lever of monetary policy: injecting money into circulation to decrease the interest rate or withdrawing it to drive up the interest rate. The Fed can decrease the money supply by selling U.S. government bonds to banks (which takes the banks' money out of circulation), or increase the supply by purchasing bonds from banks (which puts new money into circulation). Changes in the money supply, in turn, affect the rate at which banks borrow from each other, known as the federal funds rate.⁴¹ A rising supply of money means that banks are increasingly willing to lend and decreasingly need to borrow, which places downward pressure on the federal funds rate, while a diminishing supply of money has the opposite effect. Fluctuations in the federal funds rate tend to then percolate throughout the economy, as banks that can borrow from each other at a lower rate will also tend to make loans to individual borrowers at a lower rate.

To counter economic downturns (e.g. high unemployment), Federal Reserve authorities can increase the money supply to promote lower interest rates, making it more affordable for people to borrow for consumption or investment. Increased investment can create jobs since it tends to mean the

³⁶ Prices continued to rise from the end of 2005 through their peak in the first quarter of 2006, though at a subdued rate. Author's calculations, based on Shiller, "Data."

³⁷ "Median and Average Sales Prices of New Homes Sold in United States: Annual Data," U.S. Census Bureau, updated through 2010.

³⁸ Author's calculations, based on "Flow of Funds Accounts of the United States," Board of Governors of the Federal Reserve System, September 20, 2012, Series D.2 Credit Market Borrowing by Sector, 8.

³⁹ Pierre-Olivier Gourinchas and Maurice Obstfeld, "Stories of the Twentieth Century for the Twenty-First," National Bureau of Economic Research, Working Paper 17252, July 2011, i.

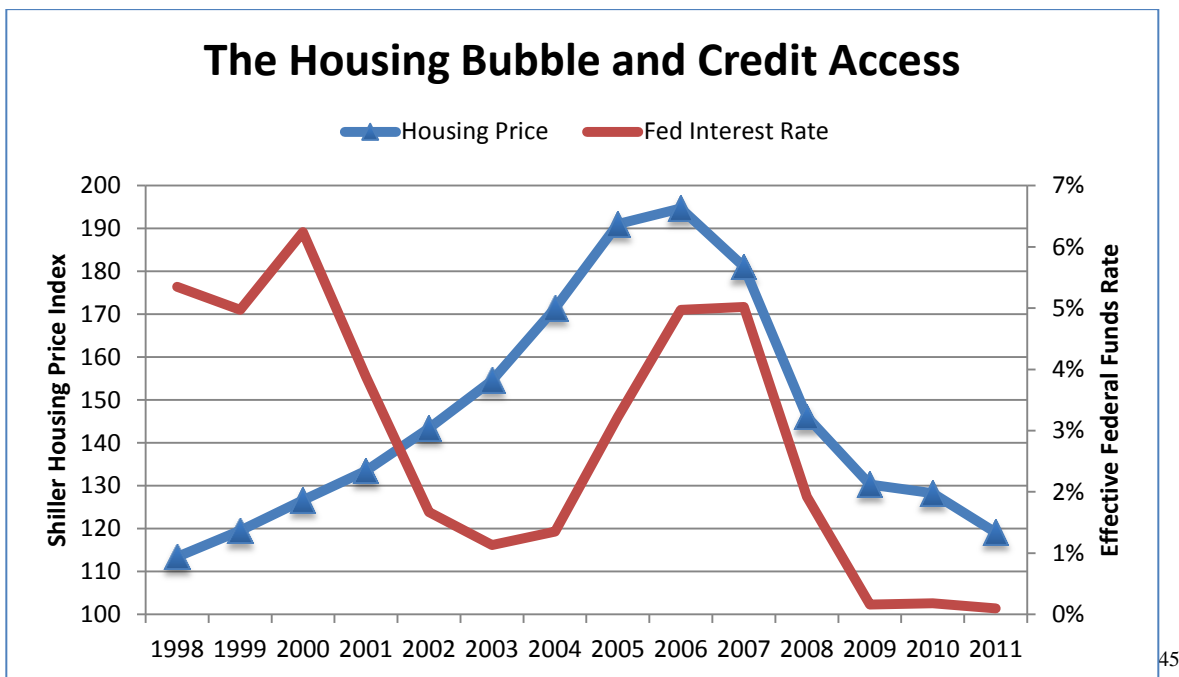
⁴⁰ Andrew K. Rose and Mark M. Spiegel, "Cross-Country Causes and Consequences of the 2008 Crisis: Early Warning," National Bureau of Economic Research, Working Paper 15357, September 2009, 27.

⁴¹ "About the Fed," Federal Reserve Bank of San Francisco, last modified 2011, <http://www.frbsf.org/publications/federalreserve/monetary/tools.html>.

expansion of businesses, while increased consumption can spur job growth by boosting income for those selling goods or services, typically leading them to hire more people. Similarly, the Fed can attempt to control economic booms (e.g. high inflation) by targeting high interest rates, slowing down the pace of consumption to dampen demand and control prices.

In 2001, a mild recession, caused in part by the bursting of the dot-com bubble, prompted the Fed, led by Chairman Alan Greenspan, to steadily lower the target federal funds rate from 6% to 1.75% in effort to stimulate employment. The Fed kept interest rates low for the next two years, dropping the rate further in the summer of 2003 to just 1%,⁴² the lowest rate in 50 years,⁴³ and not raising it again until a year later.⁴⁴ The Fed's shift to this historically low interest rate coincided with the mid-2003 acceleration of housing prices, as indicated in Figure 2.

Figure 2



45

Numerous economists have criticized the Fed's decision to keep interest rates low for three years after the 2001 recession, including John Taylor, an influential Stanford University economist who called the Fed's low post-2001 rates the longest deviation from standard monetary policy since the 1970s.⁴⁶ He argued that the housing bubble would not have grown so large had the Fed increased rates in 2002, as suggested by the Taylor Rule, a formula proposed by Taylor and generally followed throughout the 1980s and 1990s, which incorporates inflation and unemployment levels to arrive at a suggested federal

⁴² "Historical Changes of the Target Federal Funds and Discount Rates: 1971 to Present," Federal Reserve Bank of New York, updated February 2010, <http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html/>.

⁴³ Baker, "The Housing Bubble," 74.

⁴⁴ "Historical Changes," Federal Reserve.

⁴⁵ Graph assembled from data in Shiller, "Data" and "Historic Changes," Federal Reserve.

⁴⁶ John B. Taylor, "The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong," National Bureau of Economic Research, Working Paper 14631, January 2009, 3.

funds rate. As evidence, Taylor observes that the European countries that deviated most from the Taylor Rule, by keeping interest rates lower for longer, tended to have the largest housing booms.⁴⁷

There are two main channels through which low interest rates likely exacerbated the housing bubble. First, the reduction in the federal funds rate rather straightforwardly translated into lower mortgage rates. Mortgage-lending banks that could now borrow at lower interest rates could also afford to charge lower interest on mortgages. As a result, mortgage rates hit a 50-year low in 2003 (5.25% for a 30-year fixed rate mortgage).⁴⁸ Cheap mortgages, coupled with the widespread belief that housing values would continue rising, accelerated the rising demand for homes and the resulting price spike.

The second channel by which the Fed's low interest rates inadvertently contributed to the housing bubble was by prompting investors to seek more lucrative, mortgage-based investment alternatives. The interest paid on standard bond investments, such as U.S. Treasury bonds, followed the decline of the Fed's interest rates from 2000 through 2003, offering lackluster returns for investors.⁴⁹ Accordingly, investors searched for new, more profitable ways to invest their money. Meanwhile, homebuyers were seeking more accessible mortgages. Investment banks saw a unique opportunity to meet both these interests with a single financial product: mortgage-backed securities.

A mortgage-backed security (MBS) is essentially a package of many different mortgages that an investor buys to get the rights to the monthly or annual payments that homebuyers make on the mortgage loans contained in the package. That investor also inherits the risk that the homebuyers will default on the mortgage (i.e. stop paying the loan). However, a default is not so costly amidst rising housing prices, since the house would be seized as collateral in the event of a default and could be sold for a handsome sum. Before MBSs, which became prominent in the 1990s, the financing for most mortgage loans came directly from banks, which held onto the mortgages and owned both the default risk and the rights to the housing payments. With MBSs, banks act as intermediaries that make housing loans but bundle the mortgages together (a process known as securitization) to be sold for a fee to investors (which could be individuals, pension funds, hedge funds, government entities, companies, or other banks).⁵⁰

In the early 2000s, these MBSs offered more attractive rates of return to investors than many types of bonds, due in part to the Fed's low interest rates, prompting rising investor demand for MBSs. Seeing a profit opportunity in meeting this demand, private investment banks began selling large quantities of MBSs, prompting the share of residential mortgages that were bundled into MBSs to grow from 50% in 1995 to about 60% in 2000, and then to over 80% by 2008.⁵¹

To feed the escalating demand for MBSs, investment banks needed to obtain increasing numbers of mortgages to package together, meaning that they were willing to offer home loans at lower rates and to a wider array of people than before. Indeed, this boost in mortgage access has historically been cited as a key benefit of mortgage securitization. By opening up mortgage finance to not just banks, but a

⁴⁷ *Ibid.*, 8.

⁴⁸ Baker, "The Housing Bubble," 74.

⁴⁹ "Selected Interest Rates (Daily) – H.15: Historical Data," Board of Governors of the Federal Reserve System, updated through October 2012.

⁵⁰ "Preliminary Staff Report: Securitization and the Mortgage Crisis," Financial Crisis Inquiry Commission, April 7, 2010, 3.

⁵¹ *Ibid.*, 10.

wider pool of investors, securitization draws in more loanable funds, allowing more people to take out a mortgage and fulfill their dreams of homeownership. However in the early 2000s, as investors prodded banks for more MBSs, the banks' increasingly aggressive search for homebuyers fueled the post-2003 proliferation of mortgage credit that hastened the upward march of housing prices.⁵²

In 2003, an astute observer could have noted that a) the U.S. was in the midst of a credit boom (interest rates were at a 50-year-low, and mortgage credit stood at an all-time high), b) the U.S. was in the midst of a housing bubble (prices far exceeded levels seen at any point in the last century), and c) such credit booms have historically exacerbated such bubbles. Indeed, a few prescient economists did publish such early observations and warn of the bubble's unsustainable nature.⁵³ Why, then, did the Federal Reserve not take note and increase the interest rate sooner?

While several reasons could be discussed, Alan Greenspan, the Fed Chairman himself, provided insight when stating in 2004, that "a national severe price distortion [in housing] seems most unlikely in the United States."⁵⁴ The Fed Chair did not believe there was a bubble. That may be due to the fact that, despite coining the term "irrational exuberance," Greenspan was generally a believer and promulgator of the efficient market hypothesis. Since the widely-accepted hypothesis obviated the possibility of a bubble, Greenspan and other influential regulators were not inclined to notice the bubble, much less act to counter it.

The Bubble Bursts—2007-2008

By 2007, more than just a few foresighted economists were noting that the unprecedented rise in housing prices might be an unsustainable bubble (though most still underestimated the bubble's economic significance). Having plateaued in 2006, housing prices in 2007 stood on the edge of a precipice. From the second quarter of that year until the first quarter of 2009, they plummeted, falling faster than they climbed—5% every three months.⁵⁵ In those two years, U.S. houses lost nearly \$6 trillion in market value,⁵⁶ an amount equivalent to over 40% of the U.S. gross domestic product.⁵⁷ The collapse translated into a loss of about \$53,000 of financial wealth for every household in the U.S.⁵⁸ Housing prices continued to decline more gradually after 2009, sinking steadily through 2012, at which point prices approached the pre-bubble, century-long average.⁵⁹

What finally prompted the bursting of the bubble? As with many historical bubbles, the price stopped rising when the housing supply, based on a largely speculative rise in demand, actually outstripped that demand. Throughout the 2000s, developers and real estate companies had been matching homebuyers' enthusiasm for new homes with a spate of new condominium and subdivision construction. Over 2 million new housing units were constructed in 2005 alone, far more than the

⁵² Ibid., 20.

⁵³ These foresighted economists included Dean Baker (co-director of the Center for Economic and Policy Research), Robert Shiller (professor at Yale University), and Nouriel Roubini (professor at New York University). Dirk J. Bezemer, "No One Saw This Coming: Understanding Financial Crisis Through Accounting Models," MPRA Paper No. 15982 (Groningen University, June 16, 2009), 9.

⁵⁴ Greenspan, "The Challenge."

⁵⁵ Author's calculations, based on Shiller, "Data."

⁵⁶ Swagel, "The Cost," 13.

⁵⁷ Author's calculations, based on "National Income," BEA.

⁵⁸ Swagel, "The Cost," 13.

⁵⁹ Shiller, "Data."

historical average.⁶⁰ But while easy credit and misguided faith in increasing prices had encouraged record numbers of people to try homeownership, the reservoir of would-be homebuyers started to dwindle in 2006. With construction contracts still being fulfilled, the increase in housing supply exceeded the increase in demand, the portion of unoccupied new homes hit an all-time high, and the price that was believed to rise forever stopped doing so.⁶¹

Construction: An Early Casualty

The drop in demand for housing not only spurred economic fallout by puncturing the housing price bubble, thereby provoking a financial collapse. The reduction in home purchases also more immediately and directly impacted workers in housing-related sectors such as construction. While for years unemployment in the construction sector had averaged between 7-9%, that rate started rising above normal levels in March of 2008.⁶² Most other sectors did not see unemployment rise until several months after the financial collapse of September 2008 (in manufacturing, for example, the rate did not start to rise until November of that year).⁶³

The different timing indicates distinct channels through which the housing bubble provoked an unemployment crisis. While many sectors of the economy suffered most from the steep contraction of credit in the last half of 2008 (as explained below), construction workers faced unemployment because reduced housing contracts, an increasing problem in early 2008, directly translated into increased firing notices. The decline of new housing construction culminated in a 39% drop in new contracts from 2008 to 2009.⁶⁴ By the beginning of 2010, one out of every four construction workers was out of a job, making the industry not only one of the earliest casualties of the crisis, but one of the largest.⁶⁵

The deflation of bubbles tends to occur at least as quickly as their inflation, propelled by the same sort of self-fulfilling cycles that first spurred the bubble. In the case of the housing bubble, the downward spiral began with foreclosures, which started to rise after the price tipping point in 2006. A foreclosure occurs when a mortgage lender (typically a bank) legally takes a house back from the homebuyer after she or he has defaulted on the mortgage (failed to pay the monthly loan installments). Most mortgage contracts name the house itself as collateral, define default as being 30 days overdue for a mortgage payment, and stipulate that the lender can begin the foreclosure process within a few months of default.

Throughout the rise and fall of the bubble, housing prices and foreclosures exhibited an inverse relationship: foreclosures subsided as prices climbed, but rose quickly as prices fell, as indicated in Figure 3.⁶⁶ This pattern makes sense when considering the economics behind both voluntary and involuntary foreclosure. Voluntary foreclosure occurs when a homebuyer sees it in their financial interests to default on a mortgage rather than continuing to pay the remainder of the debt. This scenario

⁶⁰ Baker, "The Housing Bubble," 74.

⁶¹ *Ibid.*, 75.

⁶² "Construction: NAICS 23," Bureau of Labor Statistics, updated November 20, 2012.

⁶³ "Manufacturing: NAICS 31-33," Bureau of Labor Statistics, updated November 20, 2012.

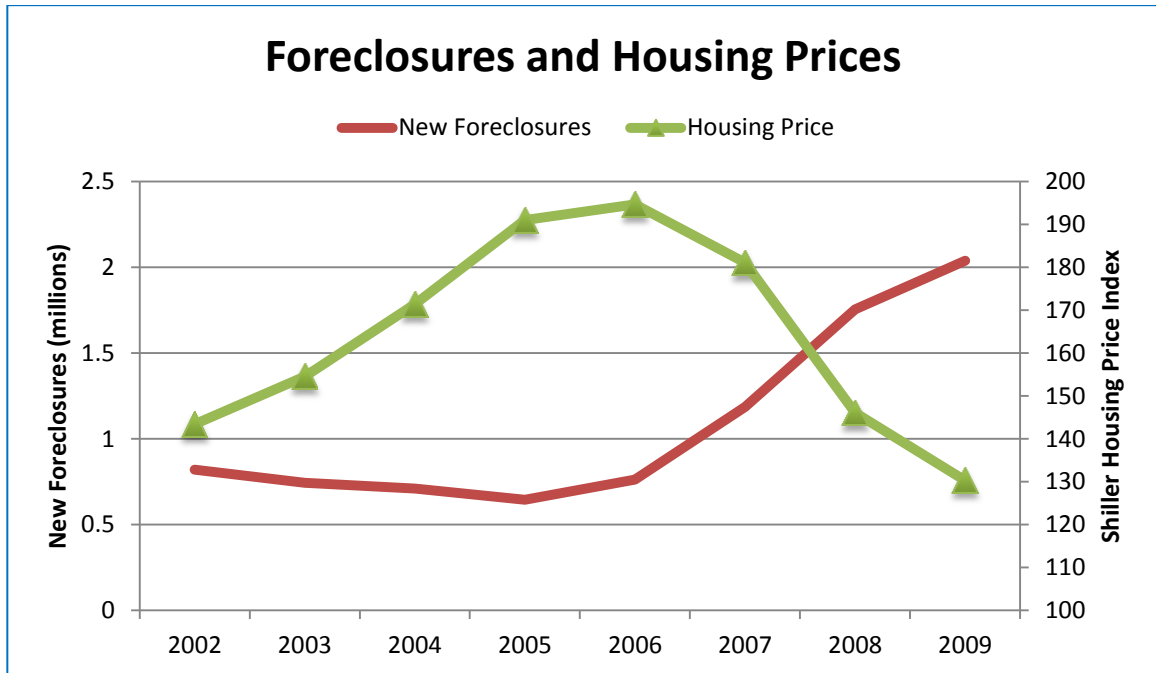
⁶⁴ Author's calculations, based on "Historical Data: New Residential Construction," U.S. Census Bureau, updated through 2011.

⁶⁵ "Construction," BLS.

⁶⁶ Taylor, "The Financial Crisis," 11.

may happen when the market value of the home declines, falling below the cost of outstanding mortgage payments. For example, an average homebuyer who purchased a \$300,000 home in February 2006 would have found their home to be worth just \$203,000 by November 2008, while likely still owing about \$285,000 after nearly three years of mortgage payments (due in part to accruing interest).⁶⁷ Faced with such an “underwater” mortgage, the homebuyer could sensibly conclude that defaulting and allowing a foreclosure would save more money than continuing to pay for a home of decreasing worth.

Figure 3



68

Other foreclosures are involuntary--when the homebuyer would prefer to keep the house but cannot afford the monthly payments. Such foreclosures also rise with falling housing prices, largely due to the associated decrease in availability of home equity loans. Home equity loans allow distressed homebuyers to borrow on the basis of their home’s value as a means of paying monthly installments to avoid default. As the value of a home shrinks, so does the availability of such loans, making it increasingly difficult for hard-hit homebuyers to avoid foreclosure.⁶⁹

For both of these reasons, foreclosures soared after prices turned south, reaching 2.3 million properties facing foreclosure in 2008,⁷⁰ 2.8 million properties a year later,⁷¹ and 2.9 million properties the year after that.⁷² By contrast, in 2005 there had been fewer than 0.85 million properties entering

⁶⁷ Author’s calculations, based on Shiller, “Data.”

⁶⁸ Graph assembled from data in Shiller, “Data” and “Quarterly Report,” Federal Reserve Bank of New York.

⁶⁹ Baker, “The Housing Bubble,” 75.

⁷⁰ “Foreclosure Activity Increases 81 Percent in 2008,” RealtyTrac, January 15, 2009.

⁷¹ Lynn Adler, “U.S. 2009 Foreclosures Shatter Record Despite Aid,” *Reuters*, January 14, 2010.

⁷² “Record 2.9 Million U.S. Properties Receive Foreclosure Filings in 2010 Despite 30-Month Low in December,” RealtyTrac, January 12, 2011.

foreclosure.⁷³ Approximately 11 million properties have faced foreclosure since the crisis began,⁷⁴ with a few million more likely to follow suit before foreclosure rates return to their historical level.⁷⁵ Of the non-foreclosed mortgages, nearly half (46%) were still underwater in 2012.⁷⁶

Racism in Foreclosures

The experience of being forced to abandon a home, lose financial security, and uproot one's family is tragic for anyone facing foreclosure. But this tragedy was not felt evenly across the U.S. Latinos and African-Americans lost their homes in disproportionately high numbers. While only 4.5% of white borrowers experienced foreclosure from 2007 through 2009, nearly double that share (8.5%) of African-American and Latino families experienced foreclosures. Even if comparing African-American, Latino, and white borrowers of the same income level, white borrowers were significantly less likely to have to face foreclosure.⁷⁷

What could explain this clear racial bias? Mortgage lenders have confessed in court to targeting black and Latino borrowers for subprime loans, which carried higher interest rates and typically predatory terms (see next section). African-American and Latino borrowers were 30% more likely than white borrowers of the same risk profile (credit score, income level, etc.) to be given a subprime loan rather than a more affordable traditional loan.⁷⁸ Federal regulators did almost nothing to counter such systematic racial profiling during the subprime boom, despite being obliged to do so under the Fair Housing Act and Equal Credit Opportunity Act. From 2000 through the height of subprime lending, neither of the two main federal groups charged with regulating bank lending raised a single case of racial or ethnic discrimination in mortgage lending.⁷⁹

The increase in foreclosures, prompted by a decrease in the average housing price, in turn caused that price to fall faster. Four factors explain this cyclical effect. First, each foreclosed house contributed further to the excess supply of housing (since banks seek to quickly resell foreclosed houses), placing downward pressure on prices. Second, foreclosed houses can have a direct negative effect on the value of nearby homes. Since people do not like to live on streets dotted with foreclosed homes, the market value of even the non-foreclosed homes in such hard-hit areas began to slump. Third, as banks watched foreclosures climb and prices fall, they became increasingly hesitant to make new mortgage loans and started charging higher interest rates and restricting eligibility criteria. Doing so further limited the number of new homebuyers, which further sank housing demand below supply.⁸⁰

⁷³ "National Foreclosures Increase in Every Quarter of 2005," RealtyTrac, January 23, 2006.

⁷⁴ Author's calculations, based on "Foreclosure," RealtyTrac; Adler, "U.S. 2009;" "Record 2.9 Million," RealtyTrac; and "2011 Year-End Foreclosure Report: Foreclosures on the Retreat," RealtyTrac, January 9, 2012.

⁷⁵ "1 Million Properties with Foreclosure Filings in First Half of 2012," RealtyTrac, July 10, 2012.

⁷⁶ Author's calculations, based on Daren Blomquist, "Short Sale Tsunami Possible in 2012," RealtyTrac, May 22, 2012.

⁷⁷ Debbie Gruenstein Bocian, Wei Li, and Keith S. Ernst, "Foreclosures by Race and Ethnicity: The Demographics of a Crisis," Center for Responsible Lending, June 18, 2010, 2.

⁷⁸ *Ibid.*, 16.

⁷⁹ *Ibid.*, 18.

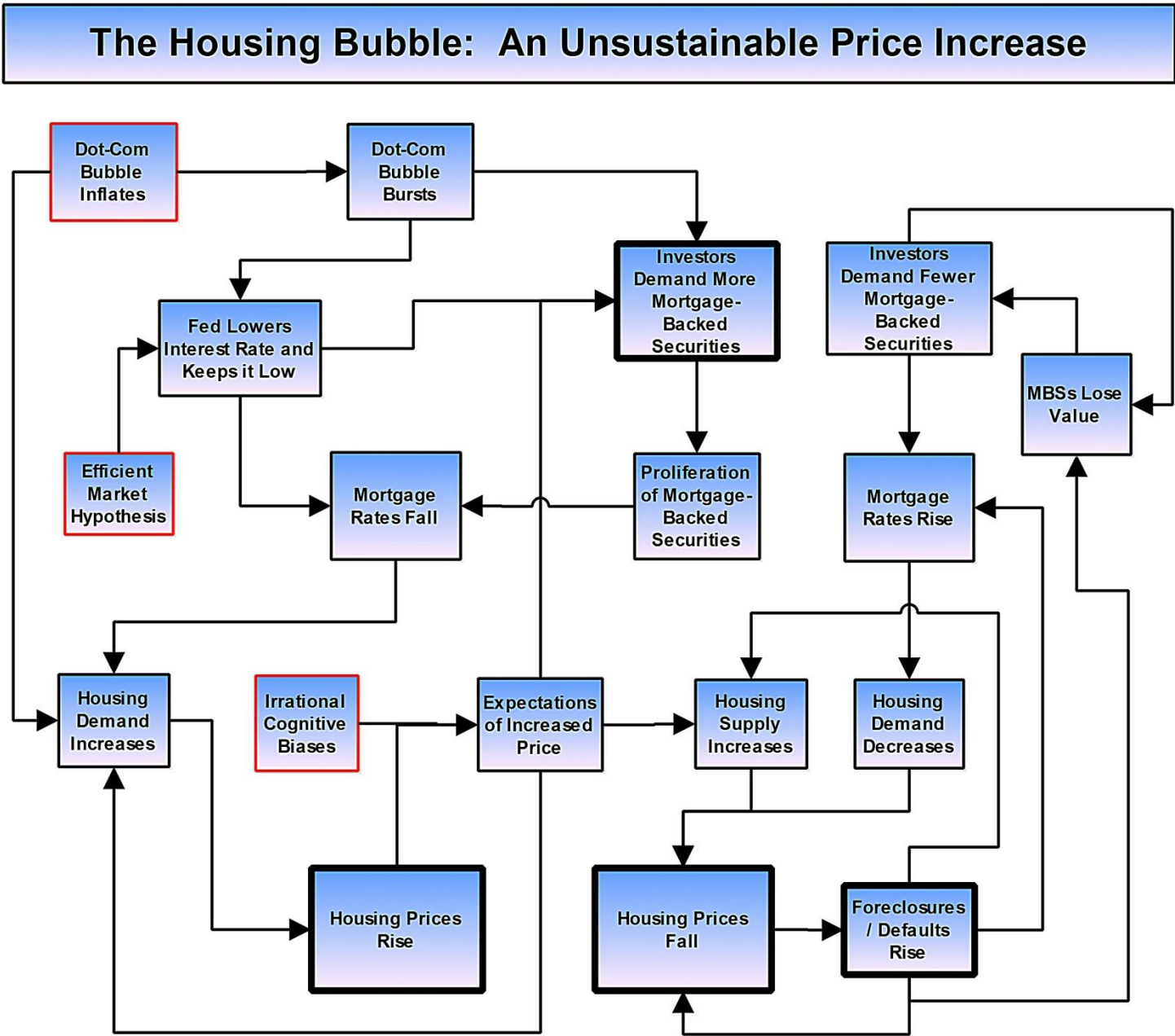
⁸⁰ Baker, "The Housing Bubble," 80.

Fourth, investors' demand for mortgage-backed securities dissipated just as quickly as it had appeared.⁸¹ Herd mentality had prompted an MBS-buying frenzy among investors who considered the actions of their peers more than the probability of a bubble. That same mentality turned into a MBS-selling frenzy when rising defaults prompted a decline in the value of MBSs, prompting some investors to sell the MBSs, provoking a glut in MBS supply that caused the value to fall further, spurring a widespread rush to sell MBSs as soon as possible. Such a self-reinforcing frenzy to sell decreasingly valuable assets is called an asset dump. The resulting collapse of the MBS market meant that banks had even less incentive to extend new mortgages, thereby further tanking housing demand and quickening the housing price atrophy. The falling price, in turn, prompted more foreclosures, restarting the vicious cycles that sealed the demise of the housing bubble (see Figure 4).

⁸¹ "US Mortgage-Related Issuance and Outstanding," Securities Industry and Financial Markets Association, updated November 8, 2012.

Figure 4

This flow chart provides a synopsis of the causal links, described in this section, which led to the housing bubble's inflation and deflation. Boxes highlighted in red indicate starting places for tracing the rise and fall of the bubble, and bolded boxes indicate pivotal factors that recur throughout this paper. Note the presence of positive feedback loops in the determination of housing demand and supply, accentuating the rise and subsequent fall of housing prices.



The Subprime Boom: An Unsustainable Risk Increase

While speculative thinking and cheap credit both contributed significantly to the housing bubble, the rise and fall of the bubble would not have been so dramatic or damaging without an additional critical element: the expansion of risky lending. Though the proliferation of risky mortgages occurred in the housing sector, the financial sector holds greater responsibility for the buildup and spread of risk.

During the rise of the housing bubble, mortgages not only became available to a greater number of homebuyers, but to a different kind of homebuyer: “subprime” borrowers, meaning people who are likely to have greater difficulty in paying off their mortgage loans. Banks who do mortgage lending typically classify subprime borrowers as people who have higher debt, lower income, and/or a history of defaulting on loans. As such, they are more likely than an average borrower to default on a mortgage. Higher default risk usually means that lending banks will either not grant the subprime borrower a mortgage, or will charge a higher interest rate to compensate for the increased risk for the bank. Amidst the housing bubble, both of these restrictions were relaxed: the criteria for mortgage eligibility fell, as did the interest rate charged to subprime borrowers.⁸²

As banks sought to attract more subprime borrowers with relaxed criteria and cheaper rates, the number of subprime mortgages soared. In 2003, less than one out of every 12 mortgages in the U.S. was subprime. Just two years later, one out of every five mortgages was subprime.⁸³ During the same period, the growth of new mortgages occurred twice as fast in zip codes with low average credit scores than in those with high average credit scores.⁸⁴

What were the impacts of this unprecedented swell in subprime lending? During the bubble’s rise, many commentators praised the trend for making homeownership a reality for many for whom it had only been a dream. That argument lost credibility several years later when the housing bubble burst, subprime credit evaporated, and subprime foreclosures skyrocketed. Not only did the explosion of subprime lending fail to provide lasting benefit to subprime borrowers; it exacerbated both the rise and the fall of the entire housing bubble, as indicated in Figure 5. As mentioned above, average annual mortgage borrowing doubled from \$0.5 trillion in 1998-2002 to \$1 trillion per year in 2003-2006. This swell in housing demand, which helped drive the rapid post-2003 price increase, can largely be attributed to the proliferation of subprime lending, which grew faster than any other housing sector during the 2003-2006 period.⁸⁵

⁸² In the early 2000s, banks began granting mortgages to people with ever-increasing loan-to-value ratios (i.e. homebuyers who needed to borrow more and pay less of the cost of the new home), high debt-to-income ratios (i.e. homebuyers who had already spent a significant share of their income on existing debts), and low documentation (i.e. homebuyers who had little proof of active employment or ownership of valuable assets). Yuliya Demyanyk and Otto Van Hemert, “Understanding the Subprime Mortgage Crisis,” *The Review of Financial Studies* 24:6 (2011), 1850.

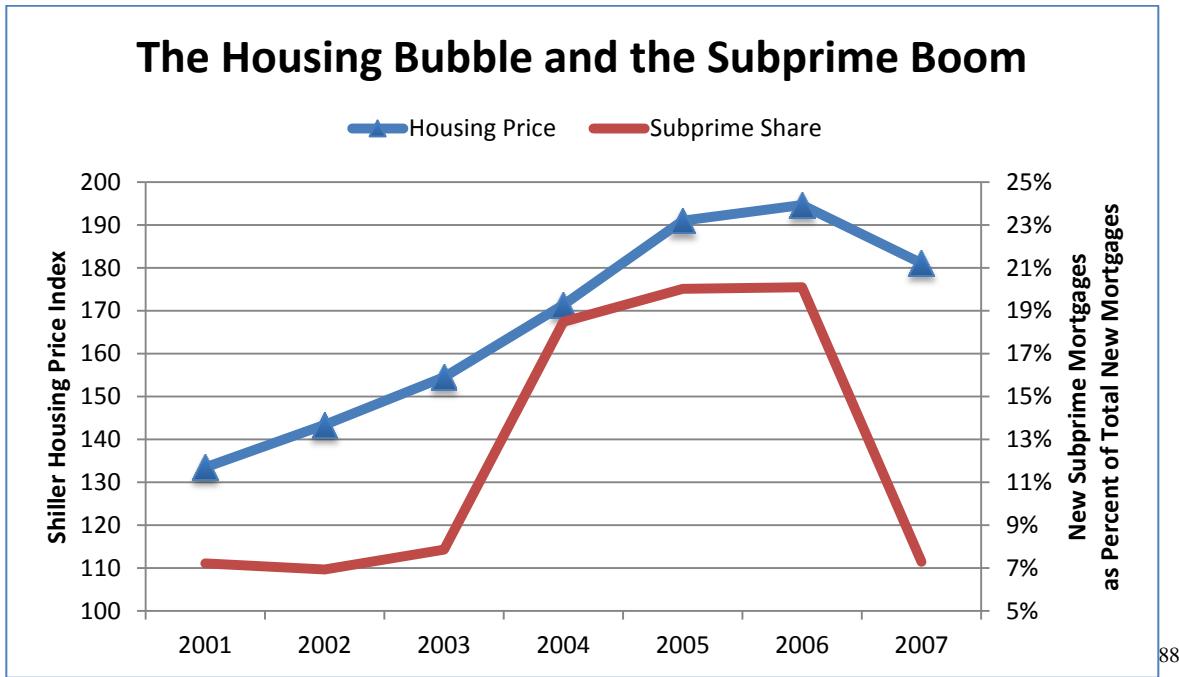
⁸³ “Mortgage Originations by Product: 2001-2007,” *The 2008 Mortgage Market Statistical Annual*, Inside Mortgage Finance, 2008.

⁸⁴ “Zip codes with low average credit scores” are those that have an above-average share of borrowers with credit scores below 660—they rank in the highest quartile among U.S. zip codes on the basis of this share. Zip codes with low average scores are those that rank in the lowest quartile on this basis. Atif Mian and Amir Sufi, “The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis” (Princeton University and University of Chicago, December 12, 2008), 1.

⁸⁵ Author’s calculations, based on “Mortgage Originations,” Inside Mortgage Finance.

When housing prices finally started turning downwards in 2006, paying for mortgages became more difficult for everyone as home equity loans shrank (as explained above). But subprime borrowers, by definition, were more prone than the average person to default on their mortgages. More likely to be poor and unemployed,⁸⁶ subprime borrowers were left with painfully few alternatives to default. Zip codes with a high proportion of subprime borrowers saw more than three times as many defaults as nearby zip codes with few subprime borrowers.⁸⁷ The resulting wave of subprime foreclosures fueled the aforementioned downward spiral of prices, as foreclosures prompted a glut in housing supply and a contraction of housing demand.

Figure 5



What drove this unprecedented subprime lending boom? While some of the rise came from predatory lenders who pushed regular borrowers into subprime loans to boost interest revenue (see box below), many other lenders who did not exhibit such predatory practices still increased subprime lending. An explanation for the market-wide subprime boom must go beyond the predatory intent of individual lenders. One plausible explanation is that millions of previously poor families became qualified for subprime mortgages during 2002-2005 due to an increase in income levels. However, the evidence shows that areas with heavy subprime borrowing actually saw a relative decrease in income during the 2002-2005 subprime boom, meaning the borrowers actually became less rather than more qualified for new mortgages.⁸⁹

⁸⁶ Mian and Sufi, "The Consequences," 39.

⁸⁷ Ibid., 1.

⁸⁸ Graph assembled from data in Shiller, "Data," and "Mortgage Originations," Inside Mortgage Finance.

⁸⁹ Mian and Sufi, "The Consequences," 3.

Another potential explanation is that the swift increase in housing prices during this period masked the risks implied by subprime lending. The upward price trajectory likely provided at least two reasons for mortgage-lending banks to downplay subprime risk. First, as mentioned, rising prices tend to coincide with lower default and foreclosure rates. In 2002-2005, mortgage borrowers had less incentive to default, given that the amount they owed paled in comparison to the rising value of the house. And they had less need to default, given that the inflated value of their homes also increased their ability to borrow via home equity loans to pay their mortgage installments. Indeed, default rates fell to new lows throughout the 2002-2005 period, signaling to mortgage-lending banks that it was safe to relax lending criteria and increase subprime mortgages.⁹⁰

The second link between rising prices and the subprime boom concerns banks' interest in collateral. Lending banks knew that even if subprime loans would result in an uptick in defaults, they would then gain ownership of the defaulted homes as collateral. Amidst rapidly rising housing prices, such collateral became more valuable, making the risks of default seem less troubling to banks.⁹¹ This price effect thus drove a wedge between the banks' private interest in mortgage profits and the interest of the public, namely homebuyers, in preventing painful defaults and foreclosures.

The tendency of increasing prices to enable increased subprime lending reveals another dangerous feedback loop of the housing bubble (see Figure 6). As housing prices rose, banks became inclined to increase subprime lending, which in turn spurred greater housing demand, thereby accelerating the price increase. While such cycles seemed to enable the bubble to inflate itself, they still depended on adherence to the irrational belief that housing prices would rise indefinitely. Bankers who allowed rising prices to overshadow the risks of subprime lending exhibited this belief. Mimicking and reinforcing homebuyers' representativeness heuristic (i.e. the belief that recent trends would continue unabated), the behavior of such bankers further challenges the assumed rationality of key economic actors.⁹²

⁹⁰ Taylor, "The Financial Crisis," 11.

⁹¹ Mian and Sufi, "The Consequences," 32.

⁹² An alternative explanation, explored in detail below, is that bankers actually expected prices to drop, but expected to be bailed out by the government for any ensuing losses. Under such a moral hazard explanation (see below), the bankers' motivation was perverse, but not irrational.

Predatory Lending

Overall, subprime mortgages impaired the economy by feeding the rise and fall of the bubble and shortchanged homebuyers by disproportionately leading to foreclosures. But some subprime loans were even more pernicious. Some were exemplary of predatory lending: loans specifically designed to extract as much money from the borrower as possible on the way to possible default. During the subprime crisis, predatory mortgage lenders often used teaser rates (charging a low 2% interest rate for the first year, and ramping it up to 10% thereafter), hid unnecessary fees in the fine print, and imposed penalties for pre-payment so as to earn more interest. In such cases, the lender typically has more information about the loan than the borrower and tries to obscure such costs to the borrower so as to gain a signature on the loan.

Such expensive mortgages often lead to default when the borrower realizes she or he cannot afford the exorbitant rates or fees. But amidst rising housing prices, predatory lenders were less concerned with default, since they could foreclose on a higher-valued home, having extracted interest income in the meantime from the borrower. Given their malicious nature, many predatory practices are illegal. Yet the entry of many new, unwitting borrowers during the subprime boom tempted a larger-than-normal number of lenders to practice such predation.⁹³

This predatory impulse may partially explain why numerous lenders not only expanded subprime loans to non-creditworthy borrowers, but needlessly coaxed creditworthy borrowers into subprime rather than normal loans. Most subprime borrowers were not profligate spenders. Many were not buying new homes, let alone second homes, but were using the mortgage to refinance their home at what was initially a lower interest rate. Indeed, 58.5% of subprime loans from 2004-2008 were for refinancing or improving existing homes rather than buying new ones.⁹⁴ Many of these subprime borrowers could have actually qualified for more affordable traditional mortgages. In 2006, nearly two out of every three subprime mortgage borrowers actually had a sufficient credit score to qualify for a cheaper, non-subprime mortgage.⁹⁵ This trend, which persisted during the subprime boom, is largely due to mortgage lenders who aggressively marketed subprime loans to ill-informed borrowers, indicating a predatory intent to profit off of the loans' higher costs.

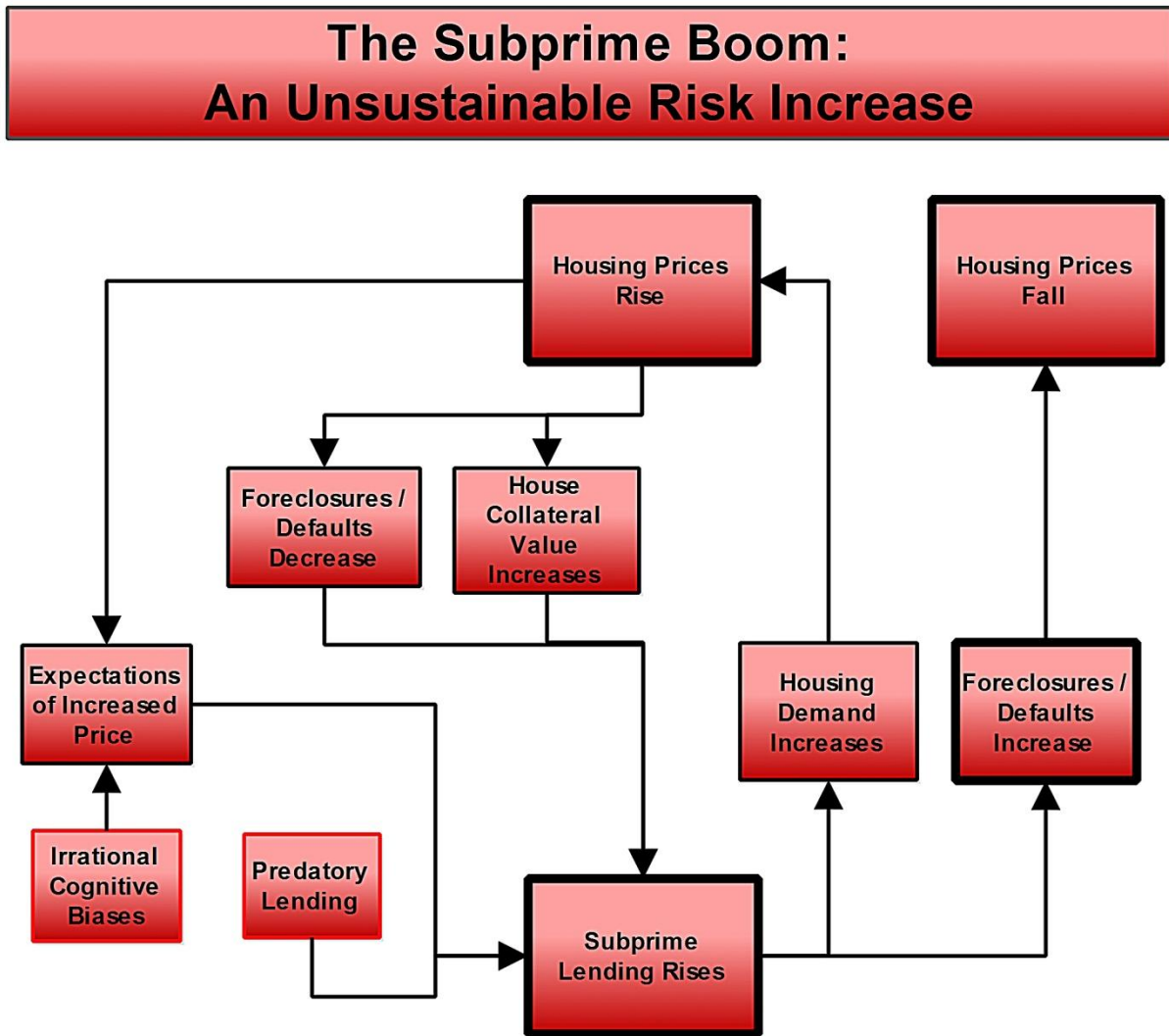
⁹³ "Victimizing the Borrowers: Predatory Lending's Role in the Subprime Mortgage Crisis," Knowledge@Wharton, The Wharton School of the University of Pennsylvania, February 20, 2008.

⁹⁴ Gruenstein Bocian, "Foreclosures," 17.

⁹⁵ Rick Brooks and Ruth Simon, "Subprime Debacle Traps Even Very Credit-Worthy," *The Wall Street Journal*, December 3, 2007.

Figure 6

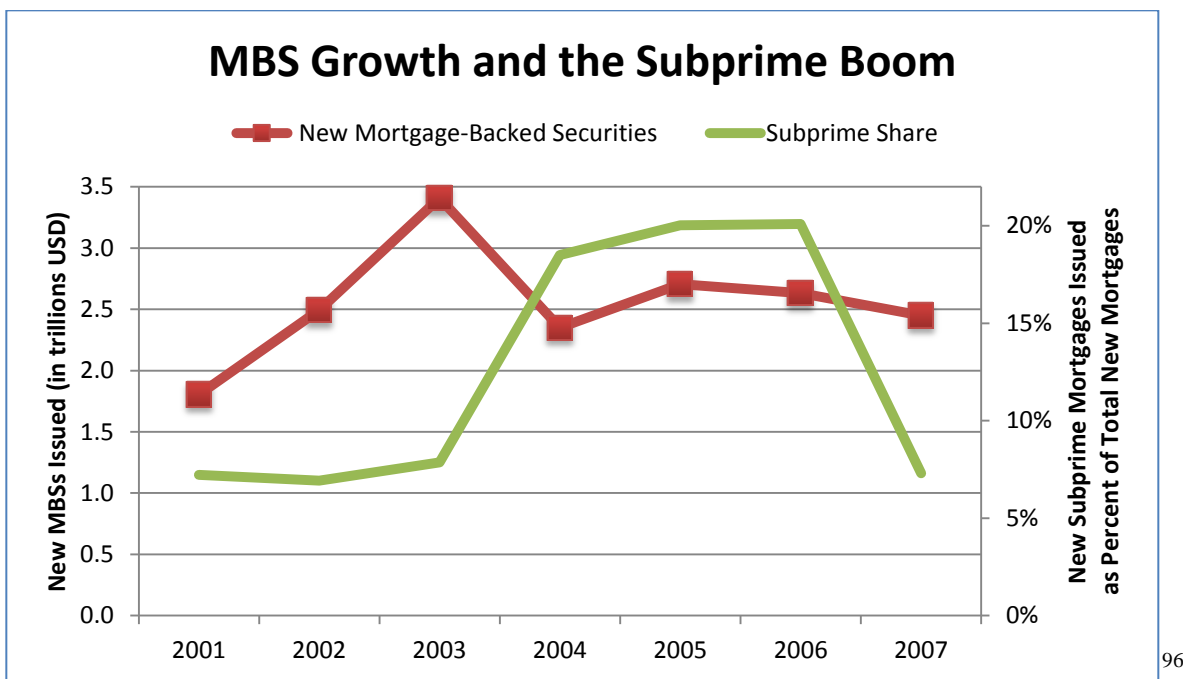
This flow chart provides a synopsis of the causal links, described in this section, which fueled the boom in subprime lending that in turn fueled the housing bubble's rise and fall. Boxes highlighted in red indicate starting places for tracing the development of the subprime boom, and bolded boxes indicate pivotal factors that recur throughout this paper. Note the positive feedback loops through which rising subprime lending contributed to the increase in housing prices that in turn reinforced growth in subprime lending.



A Broken System: The Financial Sector’s Skewed Demand for Mortgages

Rising prices were not the only reason for the swell in subprime lending. As mentioned above, throughout the early 2000s, investors in search of higher rates of return expressed increasing demand for mortgage-backed securities. Rising MBS demand contributed to the housing bubble not only by making mortgages cheaper, but by fueling the subprime boom. To bundle together an increasing supply of MBSs, the mortgage-lending banks intensified their search for homebuyers, rapidly expanding their subprime lending once the standard homebuyer market grew saturated, as indicated in Figure 7. The ensuing proliferation of subprime mortgages from 2004 through 2006 helped sustain the bubble-fueled market for MBSs even while sowing the seeds for its demise.

Figure 7

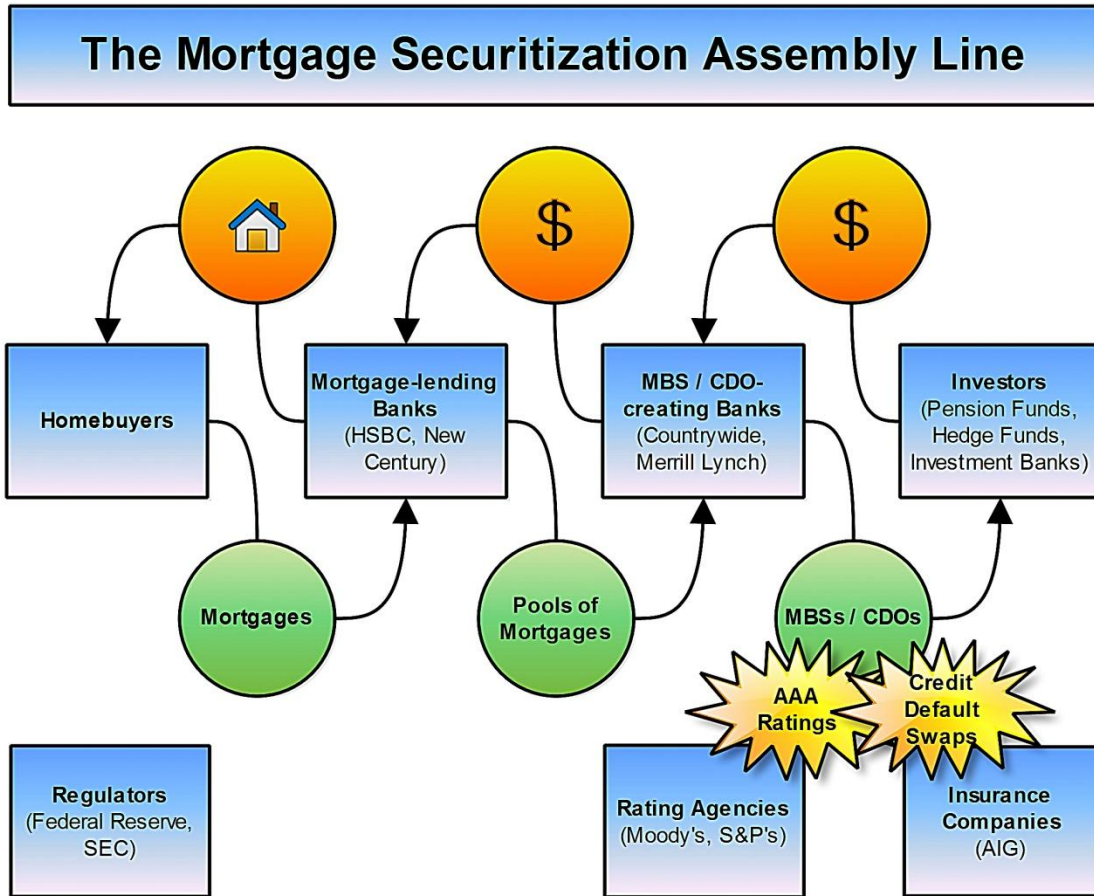


The risks of this MBS-driven push into subprime lending should have been apparent to the actors involved. From 2002 to 2004 the number of U.S. subprime borrowers doubled.⁹⁷ Mortgage-lending banks, MBS investors, regulators, and economists likely could have surmised that many of those people were not in fact suddenly qualified to pay off a mortgage, meaning a massive accrual of default risk. Why did they choose to perpetuate or at least overlook such risk? The answer lies in a complex array of perverse incentives, opaque information, and misguided theories that afflicted the mortgage securitization assembly line of bankers, investors, rating agencies, and regulators (depicted in Figure 8).

⁹⁶ Graph assembled from data in “US Mortgage-Related Issuance,” SIFMA; and “Mortgage Originations,” Inside Mortgage Finance. “New MBSs Issued” data includes securities based on home equity loans, though they constitute less than 10% of the total.

⁹⁷ Baker, “The Housing Bubble,” 76.

Figure 8



Bankers: Moral Hazard

How did increasing mortgage securitization affect banks' decision to downplay default risk and expand subprime lending? Since investors paid the banks a fee for every MBS assembled and sold, the banks had a market incentive to become increasingly aggressive in their pursuit of new borrowers and increasingly lax in their borrowing criteria. This incentive was not insignificant—from 2003-2008, securitization-related fees topped \$2 trillion globally.⁹⁸

Before securitization, banks' incentive to profit from increased subprime lending would have been tempered by the resulting increase in default risk. However, the creation of mortgage-backed securities allowed the banks to simply transfer the default risk, along with the right to mortgages, to the MBS investor. If the underlying mortgages defaulted, the investor would hold an MBS of declining value, while the banks that originated and bundled the mortgages would still hold their fee profits.⁹⁹ As such, banks in 2003 saw high benefits and low costs in vastly expanding risky lending. Such ability to capitalize on the gains of a risky decision while transferring any losses to someone else is known in

⁹⁸ James Crotty, "Structural Causes of the Global Financial Crisis: A Critical Assessment of the 'New Financial Architecture,'" *Cambridge Journal of Economics* 33 (2009), 565.

⁹⁹ Baker, "The Housing Bubble," 77.

economics as moral hazard—a source of perverse incentives that leads economic actors to act out of private interest to the public’s detriment. In the case of the housing bubble, banks manifested such misaligned incentives in their willingness to incur and then pass on billions of dollars’ worth of default risk.

Investors: Opacity and Overconfidence

Why would MBS investors be willing to hold onto so much risk? Primarily because they didn’t know they were doing so. Several financial sector creations, each ostensibly designed to limit risky investments, instead served to cloak the risk that investors were incurring. Below is a partial list.

Mortgage-Backed Securities: As described above, an MBS is an investment product that bundles together many mortgages, giving investors the right to the regular mortgage payments (and the accompanying default risk). Within an MBS, the rights to mortgage payments are divided into stratified “tranches” according to the order in which payments are made. Top tranches are the safest—investors in these tranches get paid first, while the investors in the lowest tranches only get paid after the upper tranche payments have been made. This structure is designed to ensure that when homebuyers default on their mortgages, the resulting loss in payments first hits the lower-tranche investors, thereby keeping the upper-tranche investors seemingly insulated from default risk. Interest rates paid to investors correspond to these stratified risk levels, with lower tranches getting higher rates than upper tranches.¹⁰⁰

- *Low-risk Rationale:* Two components of MBSs were thought to reduce default risk for investors. First, investors in the upper tranches of MBSs felt assured that, under normal default rates, they would be protected from default losses by the buffer of the lower tranches. Second, it was thought that defaults tend to be concentrated in particular geographic areas as a result of local economic problems (e.g. the downfall of a local industry). Thus, the fact that an MBS holds a geographically diverse array of mortgages seemed to make it less subject to widespread default than the non-securitized alternative, where a bank holds a geographically concentrated set of mortgages on its balance sheet.¹⁰¹
- *High-risk Reality:* While the stratified system described above would protect top-tranche investors under normal times of relatively low default rates, under a systemic rise in defaults (as seen in 2007-2008) the massive losses on mortgage payments would quickly erase the value of lower tranches and impact even top-tranche investors. Similarly, the assumption that geographically-diverse mortgages will protect against locally-concentrated defaults fails to hold when the causes of default are national in scope (e.g. the crash of a housing bubble). In a classic example of moral hazard, the banks that packaged and sold MBSs (e.g. Countrywide Financial, the largest MBS seller at the height of the bubble)¹⁰² had a clear incentive to overlook such systemic risks, convince investors that their products were safe, and thereby increase their MBS-

¹⁰⁰ “Preliminary Staff Report: Securitization,” FCIC, 6.

¹⁰¹ See, for example, Alan Greenspan’s remarks on the risk-dispersing benefits of mortgage securitization: Alan Greenspan, “International Financial Risk Management,” The Federal Reserve Board, November 19, 2002.

¹⁰² “Preliminary Staff Report: Securitization,” FCIC, 13.

based profits.¹⁰³ As a result, investors acquired a false sense of protection from defaults, prompting them to also overlook systemic risks and continue demanding more MBSs.

Collateralized Debt Obligations: A collateralized debt obligation is an even more complex investment product that packages together numerous assets, including MBSs, making it a bundle of bundles of mortgages. As with MBSs, CDO investors acquire both default risks and the rights to mortgage payments, structured in a similar system of stratified tranches.

- *Low-risk Rationale:* In a complicated feat of financial engineering, the investment banks that constructed CDOs often packaged more risky lower tranches of MBSs into a single CDO, and then restructured this pool of risky tranches into a new set of tranches. Using mathematical models, the bankers declared the new top tranche to now be “safe,” since it would receive payments first (despite being drawn from an MBS tranche that would receive payments last).¹⁰⁴
- *High-risk Reality:* The construction of CDOs was so complex that not even the creators of the products, much less the investors, actually understood the real worth and risk of the underlying mortgages. CDO-bundling banks like Merrill Lynch (the top CDO seller throughout the bubble)¹⁰⁵ relied on advanced computer models, subject to numerous assumptions, to determine the price and risk profile of a given CDO tranche, a process that Wall Street bankers referred to as “magic.”¹⁰⁶ The moral hazard of enacting and selling such magic matched that of MBSs—CDO-issuing banks earned more fees for more CDOs sold, and stood to sell more CDOs by engendering confidence in their abstruse mathematical models. As a result, investors trusted CDOs to be safe, yet high-yielding investment opportunities, prompting a flood of demand. Sales of mortgage-backed CDOs ballooned from \$30 billion in 2003 to \$225 billion in 2006, driving the surge in demand for subprime mortgages.¹⁰⁷

This mass display of investors’ faith in an inordinately convoluted product once again casts doubt on the efficient market hypothesis. According to the theory, investors accessed and weighed all relevant information in determining their demand for CDOs, including a rational assessment of the value of the underlying mortgages. The assumed “magical” quality of CDOs during the bubble-era CDO firesale hardly connotes such a rational assessment. Here, again, behavioral economics offers a more plausible explanation: bounded rationality. Bounded rationality is the observation that human decision making, even when rational, operates within the confines of limited available information, mental capacity, and time. Investors considering whether to invest in a CDO did not, in many cases, have access to the underlying complex mathematical risk-assessment models, nor necessarily the technical know-how or time to dissect such models.¹⁰⁸ The opaque and complex nature of such mortgage-backed investments crippled the notion of a naturally efficient financial market.

¹⁰³ Adam B. Ashcraft and Til Schuermann, “Understanding the Securitization of Subprime Mortgage Credit,” Federal Reserve Bank of New York, Staff Report no. 318, March 2008, 4.

¹⁰⁴ “Preliminary Staff Report: Securitization,” FCIC, 10.

¹⁰⁵ “Housing-Boom Players,” *The Wall Street Journal*, May 20, 2009.

¹⁰⁶ Crotty, “Structural Causes,” 567.

¹⁰⁷ Financial Crisis Inquiry Commission, *The Financial Crisis Inquiry Report* (Washington D.C.: U.S. Government Printing Office, 2011), 130.

¹⁰⁸ Richard Thaler and Cass Sunstein, “Human Frailty Caused This Crisis,” *Financial Times*, November 11, 2008.

Credit Default Swaps: After packaging mortgages into MBSs and MBSs into CDOs, investment banks would then often seek to insure the top tranches of these products against default risk to provide investors with an extra seal of security. To meet this need, insurance companies like AIG sold credit default swaps (CDSs): a sort of insurance policy against default for a debt-based asset, in which the buyer of the CDS (e.g. investment banks) pays a small fee to the seller (e.g. AIG), which agrees to cover losses in case of a default. AIG and other insurance companies commonly sold CDSs to insure the top tranches of MBSs and CDOs.¹⁰⁹

- *Low-risk Rationale:* Insurers and investors alike saw insurance against defaults on an MBS or CDO as similar to insurance against a fire in your house. If the investor paid for coverage, any losses would be covered.
- *High-risk Reality:* The assumption that CDO insurance is like fire insurance was errant—while a nationwide fire that destroys millions of homes seems outside the realm of possibility, a nationwide housing bubble that destroys millions of homes’ values proved entirely possible. Companies like AIG did not account for such systemic risk, assuming that they could collect bountiful insurance premiums without actually having to cover many losses. As such, they charged very little for the premiums and in turn sold many, compounding investors’ false assurance that top-tranche MBSs and CDOs could not incur losses.¹¹⁰ From 2000 to 2008, the CDS market skyrocketed from \$900 billion to \$50 trillion.¹¹¹ In 2008, AIG’s CDSs alone covered \$440 billion worth of assets—an amount the company was not at all prepared to actually cover when the bubble finally burst.¹¹²

Rating Agencies: In the final step in the chain from mortgage to investor, MBSs and CDOs received a credit rating to classify the degree of risk represented. The investment bank creating the bundled product would pay one of the three primary rating agencies—Moody’s, Standard and Poor’s, and Fitch—to assign a rating based on the characteristics of the underlying mortgages and the results of risk-predicting computer models.

- *Low-risk Rationale:* Most investors looked for an AAA rating—the highest possible—in deciding their investment portfolio. Some large, federally-regulated investors (e.g. big banks) were required to hold a certain portion of AAA assets on their balance sheets to tamp down risk.¹¹³ As the prevailing signal of low risk, high ratings further persuaded investors that they could safely purchase large quantities of assets backed by subprime mortgages.
- *High-risk Reality:* Throughout the buildup of the housing bubble, the three primary rating agencies consistently assigned AAA ratings to MBSs and CDOs that later defaulted en masse. To use one example, agencies granted an AAA rating to 80% of the tranches in CDOs that investment banks had actually pulled from lower-rated tranches of MBSs.¹¹⁴

¹⁰⁹ Austin Murphy, “An Analysis of the Financial Crisis of 2008: Causes and Solutions” (Oakland University, November 4, 2008), 3.

¹¹⁰ *Ibid.*, 8.

¹¹¹ *Ibid.*, 3.

¹¹² Adam Davidson, “How AIG Fell Apart,” *Reuters*, September 18, 2008.

¹¹³ Crotty, “Structural Causes,” 566.

¹¹⁴ FCIC, “The Financial Crisis,” 127.

What prompted such widespread ratings inflation? It could be that the agencies, like investors, did not really understand complex and opaque products like CDOs and were thus ill-equipped to assess their risk. Rating agencies also may have been motivated by their own variety of moral hazard. The agencies are paid by the creators of each MBS and CDO to make their assessments. These payments constitute a significant source of income for the agencies—40% of Moody’s revenue in 2005 came from rating debt securities like MBSs and CDOs.¹¹⁵ Such a setup means that an agency has an incentive to dole out high ratings to its banking customers, knowing that consistently low ratings could prompt the investment banks to take their business to one of the two competing major agencies.¹¹⁶ This conflict of interest may have led rating agencies to inflate ratings in service of their own profits and against the interest of the general public, who soon suffered the fallout of the resulting proliferation of subprime-backed MBSs and CDOs.

Duped by these multiple veils of certitude, investors chose not just to buy risky subprime-backed assets, fueling the subprime boom, but to magnify the risk through high leverage. Leverage, a common money-making strategy among banks and other large investors, means borrowing money to increase the size of an investment, thereby amplifying returns (or losses) on that investment. For example, if Citigroup, a top purchaser of MBSs during the crisis,¹¹⁷ invests \$1 million of its own money in MBSs, and the return on that investment after one year is 5%, the company makes \$50,000. But with leverage, Citigroup could borrow another \$100 million at a 2% interest rate, and invest the full \$101 million in MBSs. At the end of the year (when Citigroup would cash out its investment and repay the loan), Citigroup would have earned over \$5 million on the MBSs while owing \$2 million in interest on the loan, meaning a profit of \$3 million rather than a mere \$50,000.

Such logic proved attractive to many investing institutions, since they felt relatively confident of the security of their mortgage-backed investments. From 2000 to 2007, the average degree of leverage in the financial industry increased by 30%.¹¹⁸ Investment banks, the primary dealers in MBSs and CDOs, showed a particularly strong appetite, doubling their leverage levels from 2002 to 2007, as indicated in Figure 9.¹¹⁹

¹¹⁵ Crotty, “Structural Causes,” 566.

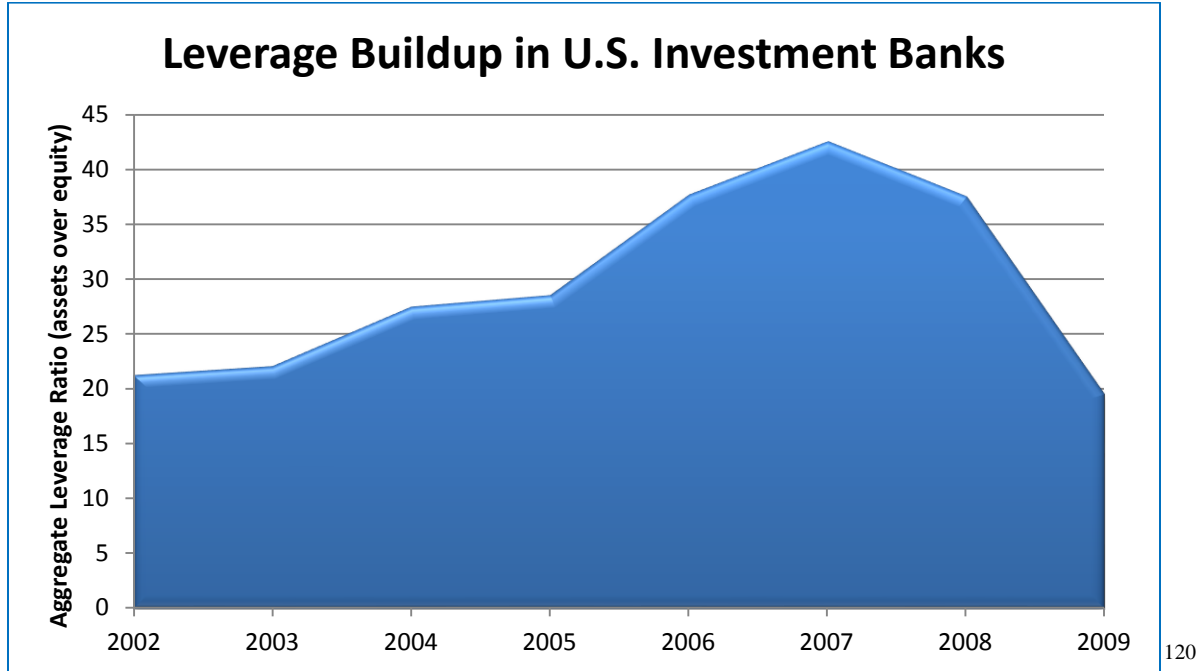
¹¹⁶ FCIC, “The Financial Crisis,” 150.

¹¹⁷ “Preliminary Staff Report: Securitization,” FCIC, 17

¹¹⁸ Leverage is measured here as the ratio of assets to equity. Erin Callan, “Lehman Brothers: Leverage Analysis,” presentation, April 7, 2008, 3.

¹¹⁹ Author’s calculations, based on “Flow of Funds,” Federal Reserve, Series L.127 Security Brokers and Dealers, 88.

Figure 9



The rise in leverage provides an example of investors' overconfidence bias, the consistently observed tendency of people to overestimate the probability that they are right. Since investors believed so strongly that the value of MBSs and CDOs would continue to rise, they were willing to gamble large sums on that possibility.

Of course, such gambles have the opposite effect when investments turn bad. To use the above example, had the rate of return on Citigroup's MBS unexpectedly fallen to 1% due to a collapse of the housing price and an ensuing wave of defaults, the company's earnings would have been reduced to \$1 million while still owing \$2 million in interest. In sum, the company would have lost \$1 million, while without leverage it would have gained \$10,000. Such loss magnification helps explain why the bursting of the housing bubble pushed highly-leveraged firms like Lehman Brothers into bankruptcy.¹²¹ Facing massive mortgage-related losses amplified by leading degrees of leverage, Lehman filed for the U.S.'s largest-ever bankruptcy on September 15, 2008, a landmark moment in the crisis.¹²²

The Lehman case underscores another key risk of leverage: not only does leverage mean magnification of losses, but that those losses can be externalized to others. If a highly-leveraged borrower like Lehman Brothers goes bankrupt and cannot repay a lender (e.g. the Royal Bank of Scotland), it means a loss on investment for the lending entity. If the lender, in turn, is highly leveraged, it might implicate their own financial stability and prompt a default on loans owed to a third bank,

¹²⁰ Graph assembled from author's calculations based on data in "Flow of Funds," Federal Reserve, Series L.127 Security Brokers and Dealers, 88.

¹²¹ Callan, "Lehman Brothers," 5.

¹²² "The 10 Largest U.S. Bankruptcies," *CNN Money*, last modified November 1, 2009, http://money.cnn.com/galleries/2009/fortune/0905/gallery.largest_bankruptcies.fortune/index.html.

placing it in financial danger. This channel of crisis proliferation can be called the domino effect: when failure in a financial institution provokes a successive chain of defaults and bankruptcies in other institutions linked by debt.

Regulators: Misguided Theories

Many analysts of the 2008 financial collapse accuse U.S. regulating agencies such as the Federal Reserve, the U.S. Treasury, and the Securities and Exchange Commission, of shirking their duty to identify and rein in the financial sector's excessive risk-taking. Indeed, since the crisis, some of the regulators themselves have regretfully concurred with this critique. In the wake of the 2008 financial collapse, Alan Greenspan, who had presided over the housing bubble and subprime lending boom as Federal Reserve Chairman, acknowledged his own negligence in a congressional hearing. As the head of the Fed, Greenspan had ample jurisdiction under the Home Owner Equity Protection Act to clamp down on the riskiest lending practices during the subprime boom. But the Fed only employed the law's restrictions for less than 1 out of every 100 mortgages during the bubble.¹²³ Why such inaction? Greenspan explained to Congress, "Those of us who have looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief."¹²⁴ In other words, the nation's top regulator expected the lending banks to regulate themselves.

Greenspan was relying on a concept called market discipline—when a private actor finds it in its own self-interest to avoid excessive risk-taking so as to ward off costs imposed by other risk-averse private actors. This oft-presumed bulwark against risk buildup occurs, for example, when a bank's creditors and shareholders punish a bank that takes on undue risk by restricting its access to credit and selling off shares, respectively, forcing the bank to offer creditors higher (and less profitable) interest rates while watching its share value drop. Such private enforcement of sound banking theoretically requires no government intervention. But Greenspan's faith in shareholders' ability to discipline risk-taking banks would require that the banks first understand the risks being undertaken. The multiple layers of opacity described above made it difficult for investors or regulators, much less removed shareholders, to grasp the true risk represented by a AAA-rated, CDS-insured, top-tranche CDO. Without seeing the risk, shareholders would not see cause for discipline.

But Greenspan was not alone—he was simply adhering to a predominant pre-crisis theory of finance. Encouraged by the efficient market hypothesis and the power of market discipline, many economists and regulators in the 1980s and 1990s came to see the financial industry as a largely self-regulating enterprise in which government impositions would do more harm than good. Indeed, this ideology drove a fairly continuous trajectory of deregulation, such that by the early 2000s, regulators had relatively few financial sector rules left to enforce.

The Commodity Futures Modernization Act of 2000 offers one example. The law, passed overwhelmingly by Congress and signed by President Clinton, explicitly barred most forms of regulation on credit default swaps, whether coming from the Securities and Exchange Commission, the Commodity Futures Trading Commission, or other regulators.¹²⁵ Larry Summers, soon-to-be Treasury

¹²³ Edmund L. Andrews, "Greenspan Concedes Error on Regulation," *The New York Times*, October 23, 2008.

¹²⁴ *Ibid.*

¹²⁵ "Derivatives," U.S. Securities and Exchange Commission, last modified July 11, 2012, <http://www.sec.gov/spotlight/dodd-frank/derivatives.shtml>.

Secretary and one of the most influential proponents of the deregulatory Act, offered the widely-accepted rationale for the hands-off approach to CDSs in a 1998 testimony before Congress. He argued, “The parties to these kinds of contract are largely sophisticated financial institutions that would appear to be eminently capable of protecting themselves from fraud and counterparty insolvencies.”¹²⁶ A decade later, AIG proved this theory wrong after its failure to account for systemic risk meant that it could not cover the hundreds of billions of dollars’ worth of MBSs and CDOs it had insured. Just one day after Lehman Brothers went bankrupt, federal regulators rescued AIG from the brink by intervening with a government bailout that would amount to \$182 billion, the largest in U.S. history.¹²⁷

The guiding theory of self-regulation also influenced a relaxing of leverage requirements in the lead-up to the crisis. Through 2003, the Securities and Exchange Commission imposed a leverage ceiling on key investment banks, limiting their borrowing to 12 times their net capital (the bank’s worth). In 2004, the SEC changed the rule, allowing borrowing of up to 40 times net capital for major banks such as Lehman Brothers, Bear Stearns, and Merrill Lynch (each of which entered bankruptcy or a forced buyout during the 2008 crisis).¹²⁸ Also in 2004, new international guidelines stipulated that permissible leverage levels should be based on the relative risk of a bank’s assets, with less risky assets requiring less stringent leverage limits. In keeping with the guidelines, the Federal Reserve decided in 2007 that large banks themselves, not regulators, should be responsible for assessing the relative risk of their assets.¹²⁹ Such self-assessment of risk gave banks significantly more autonomy in deciding what leverage levels should be considered safe.

Taking advantage of such newfound autonomy, banks began valuing the riskiness of their MBSs and CDOs based on their performance to date. Clearly demonstrating the flawed representativeness heuristic, these banks found that prior performance had been excellent (thanks to the housing bubble), assumed future performance would mimic past performance, and gave a low risk assessment, allowing for ever greater degrees of leverage.¹³⁰ See Figure 10 for a summary of how such self-serving irrational biases, enabled by lax regulation, led to the ill-fated rise in MBS demand and subprime lending.

The Mainstreaming of Behavioral Economics

In academia, the bursting of the housing bubble and resulting economic downfall has paralleled a bursting of the efficient market hypothesis and the downfall of assumed rational expectations. In October 2008, Greenspan testified before House Oversight Committee Chairman Henry Waxman, “I found a flaw in the model that I perceived is the critical functioning structure that defines how the world works, so to speak.” Waxman replied, “In other words, you found that your view of the world, your ideology, was not right, it was not working.” Greenspan answered, “Precisely. That is precisely the reason I was shocked, because I had been going for 40 years or more with very considerable evidence that it was working exceptionally well.”¹³¹

¹²⁶ Lawrence Summers, “Treasury Deputy Secretary Lawrence H. Summers Testimony Before Senate Committee on Agriculture, Nutrition, and Forestry on the CFTC Concept Release,” U.S. Department of the Treasury, July 30, 1998.

¹²⁷ “American International Group,” *The New York Times*.

¹²⁸ Julie Satow, “Ex-SEC Official Blames Agency for Blow-Up of Broker-Dealers,” *The New York Sun*, September 18, 2008.

¹²⁹ “Press Release,” Board of Governors of the Federal Reserve System, November 2, 2007.

¹³⁰ Crotty, “Structural Causes,” 571.

¹³¹ “The Financial Crisis and the Role of Federal Regulators,” Committee on Oversight and Government Reform (hearing transcript), U.S. House of Representatives, October 23, 2008.

Greenspan seemed to be speaking for much of the economics profession. Most economists throughout the 1980s, 1990s, and early 2000s taught courses and conducted research that assumed rational actors and efficient markets. Sold on such models, most economists, like Greenspan, failed to recognize and warn society of the mass irrationality of the housing bubble and vast inefficiency of the mortgage-backed security craze.¹³² Even worse, many academics (including some now-contrite economists) argue that economists helped facilitate the crisis by creating the models that bankers used to assess the values of mortgage-backed assets, and perpetuating the mistaken theories that encouraged widespread governmental deregulation (as noted above).¹³³

Not all economists, however, fell into this camp. For decades, a small minority of economists had been publishing findings on the intersection between psychology and economics. They produced many of the behavioral concepts noted here, such as “bounded rationality” and the “representativeness heuristic.” Such ideas were critiques of key economic assumptions, but were kept at the margins of the profession, rather than debated in the center. In the lead-up to the crisis, behavioral economists gained somewhat more voice as more of them entered the field.¹³⁴ But it was the crisis and the patent failure of standard economic assumptions that launched behavioral economics into the mainstream. After admissions such as the one above by Greenspan, many people both inside and outside the economics profession called for incorporation of the more realistic concepts long employed by behavioral economists.

To what extent has this occurred? When President Obama took office in the depths of the Great Recession, his administration included key adherents to behavioral economics. For example, heading the Office of Information and Regulatory Affairs, a regulation-setting body, was Cass Sunstein, the co-author of *Nudge*, a newly popular book that argued for government regulation based on behavioral understandings. Such regulators soon employed the lessons of behavioral economics in shaping health care reform legislation, nutritional policies, and, fittingly, the reregulation of finance.¹³⁵

Most university economics departments have unfortunately been somewhat slower than regulatory agencies to incorporate behavioral economics. While the collapse of 2008 largely discredited Greenspan’s 40-year-old model, many schools in the U.S. continue to teach economics as if the crisis never happened.¹³⁶ Markets are still naturally efficient, and humans are still rational. Some analysts fear that repeating such tired theories to tomorrow’s policymakers risks a repeat of the failures of the financial crisis. It has yet to be seen whether classrooms will reflect today’s realities and incorporate lessons of more realistic theories, such as those offered by behavioral economics, or remain stuck in a pre-crisis world of 20th-century economic theory (see Conclusion for further discussion on this topic).

¹³² David Colander, et al., “The Financial Crisis and the Systemic Failure of the Economics Profession,” *Critical Review: A Journal of Politics and Society* 21:2-3 (2009), 251.

¹³³ *Ibid.*, 255.

¹³⁴ Esther-Mirjam Sent, “Behavioral Economics: How Psychology Made Its (Limited) Way Back into Economics,” *History of Political Economy* 36:4 (2004), 737.

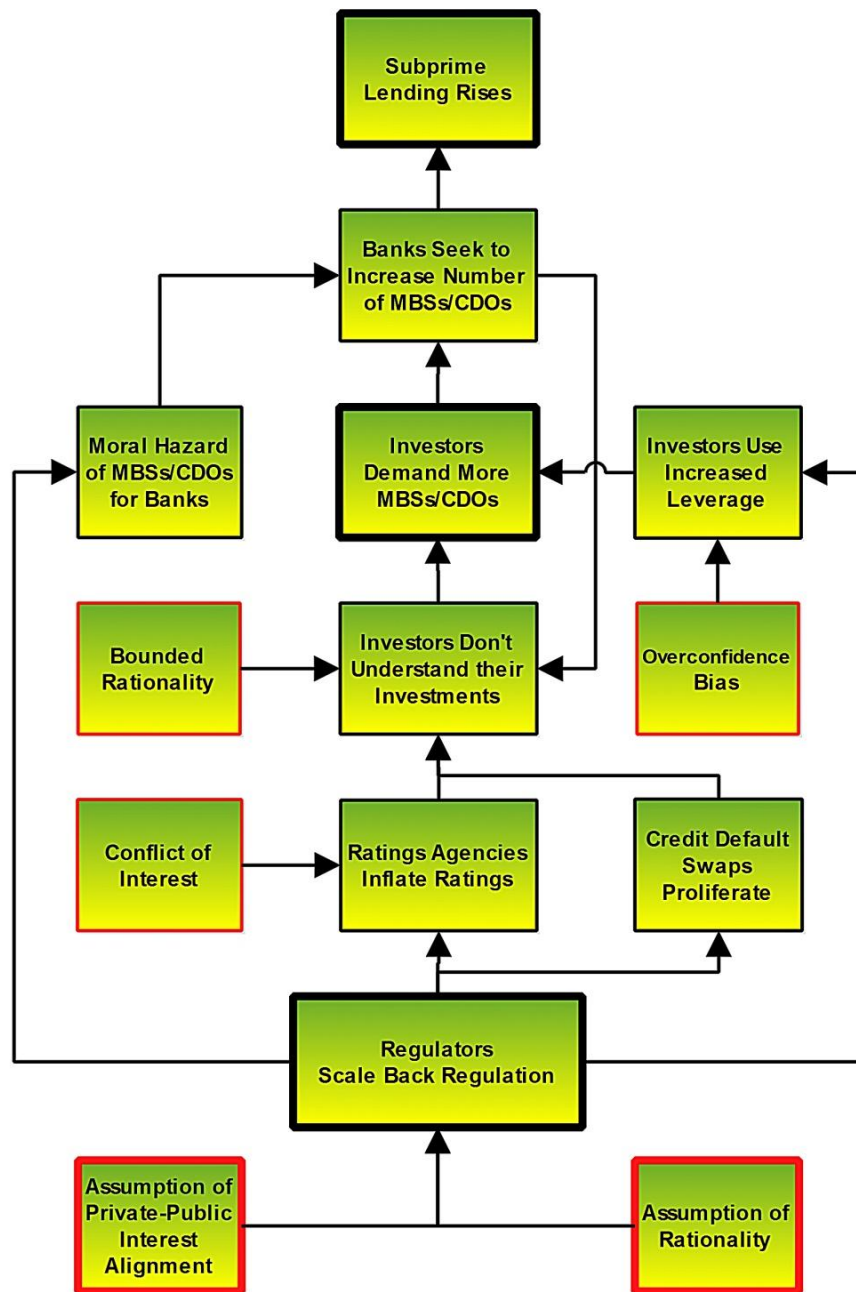
¹³⁵ Mike Dorning, “Obama Adopts Behavioral Economics,” *Bloomberg Businessweek*, June 24, 2010.

¹³⁶ Patricia Cohen, “Ivory Tower Unswayed by Crashing Economy,” *The New York Times*, March 4, 2009.

Figure 10

This flow chart depicts the causal links, described in this section, through which errant economic assumptions enabled the spread of perverse financial sector incentives, which fueled rising demand for securitized mortgages, contributing to the boom in subprime lending that intensified the housing bubble's rise and fall. Boxes highlighted in red indicate starting places for tracing the skewed system, and bolded boxes indicate pivotal factors that recur throughout this paper.

A Broken System: The Financial Sector's Skewed Demand for Mortgages



The Great Recession: From Financial Crisis to Economic Crisis

Confidence in Wall Street's capacity to regulate itself came to a decisive end during the 2008 crisis. In his congressional testimony that year, Greenspan told Congress that "the whole intellectual edifice" had "collapsed."¹³⁷ And the financial sector fell with it. As housing prices plunged, surging default rates gutted the trillions of dollars' worth of MBSs and CDOs held by virtually every major financial institution. By early 2009, half of all CDOs ever issued defaulted. Those that remained lost between 32 and 95% of their value due to defaults in the underlying mortgages.¹³⁸ The loss prompted a self-reinforcing asset dump in which banks feared a further decline in values and started selling off MBSs/CDOs en masse, causing a glut in the MBS/CDO market that caused the prices to drop further, which prompted more banks to sell and exacerbate the downward spiral.

This collapse of value prompted a wave of investors to ask insurers like AIG to make good on their credit default swaps. As defaults started exceeding CDS payments from investors, AIG began to run out of funds, forcing the company to start charging investors a higher rate for the CDS guarantee. But facing an increasing rate and decreasing assurance that AIG would actually be able to cover MBS/CDO losses, investors decided to stop buying CDSs, which only exacerbated AIG's lack of money.¹³⁹

Meanwhile, highly leveraged banks, facing massive losses on MBSs/CDOs and seemingly useless credit default swaps, found it increasingly difficult to pay off loans taken from other financial institutions. Lehman Brothers, one of the most highly-leveraged financial firms, declared bankruptcy. Such failures spurred the domino effect discussed above, where Bank A cannot pay back Bank B, making it difficult for Bank B to pay its debts to Bank C, etc. Soon, generalized fear of defaults on loans prompted many banks to stop lending altogether. Such panic can prompt a contagion effect: when the failure of one firm prompts a panic-induced contraction of credit, causing unconnected firms (even financially stable ones) to suffer due to the inability to take out new loans.

Due to both domino and contagion effects, banks throughout the financial sector stopped lending to each other, to businesses, and to individual borrowers, signaling a system-wide credit freeze. In 2005, the share of banks that were loosening standards for business loans had outweighed (by 24 percentage points) the share that was tightening business credit. By 2007, as many banks were restricting business credit as were loosening it. In the months after the September 2008 failure of Lehman Brothers and near-failure of AIG, nearly all banks reported placing increasing limits on business loans (an 84% net share of banks), and consistently greater restrictions of business credit remained the trend through 2009.¹⁴⁰

¹³⁷ Andrews, "Greenspan Concedes."

¹³⁸ Crotty, "Structural Causes," 567.

¹³⁹ Murphy, "An Analysis," 14.

¹⁴⁰ "Senior Loan Officer Opinion Survey on Bank Lending Practices Chart Data: Figure 1—Measures of Supply and Demand for C&I Loans," The Federal Reserve Board, updated April 26, 2012.

A Collapse in Employment

When businesses cannot easily or cheaply borrow money, they find it more difficult to invest in the supplies, machinery, and/or personnel necessary to continue producing goods or offering services at full capacity. Reduced production means reduced profits, and reduced profits tend to mean pay cuts, forced hours reductions, and layoffs for workers.¹⁴¹ From the first signs of trouble in 2007 to the depths of the crisis in 2009, the economy shed nearly 9 million jobs and unemployment lines grew longer.¹⁴² Thus the massive loss of speculative financial wealth on Wall Street prompted widespread loss of real wealth on Main Street, turning the financial crisis into a broad-based economic crisis.

While most families experienced hardship in the ensuing economic turmoil, certain groups faced disproportionately large struggles with mass layoffs. Young people endured the brunt of the unemployment crisis. While older, more experienced workers tended to retain their jobs, younger workers were often the first fired. Meanwhile, each year brought a new wave of recent graduates into the workforce, adding to the young masses who were facing dismal job prospects.¹⁴³

Certain industries were also particularly hard-hit. As mentioned, construction workers faced the most concentrated layoffs, given that the industry was saddled with both the direct effect of decreasing housing demand and the indirect effect of reduced access to the loans necessary to build new homes. Construction unemployment rates nearly tripled from 2007 to 2010.¹⁴⁴ Factory workers faced a comparable increase in joblessness as manufacturing unemployment jumped from 4.3% in 2007 to 12.1% in 2009.¹⁴⁵ Though unemployment in the financial sector rose by a similar proportion, unemployment rates among bankers remained among the lowest in the economy: under 7% during the height of the crisis.¹⁴⁶

Due largely to the disproportionate number of men who work in these hard-hit sectors, men were somewhat more likely to be without work than women during the recession.¹⁴⁷ Meanwhile, unemployment hit all racial groups fairly evenly, meaning that the historically higher rates of unemployment for racial minorities remained skewed. African-Americans faced joblessness at about twice the rate of white people (peaking at 16% in 2010)¹⁴⁸ and Latinos endured a rate about 1.5 times that seen by white people (peaking at 12.5% in 2010).¹⁴⁹

Not only was the erasure of jobs massive in scope, but enduring in length. Throughout 2009, 2010, and 2011, the official rate of unemployment remained over 75% higher than the last decade's

¹⁴¹ Philippe Bergevin, Pierre Duguay, and Paul Jenkins, "When Nightmares Become Real: Modelling Linkages between the Financial Sector and the Real Economy in the Aftermath of the Financial Crisis," C.D. Howe Institute, *Commentary*, No. 332, August 2011, 4.

¹⁴² "The Financial Crisis," Treasury.

¹⁴³ Greenstone and Looney, "The Long-term Effects."

¹⁴⁴ "Construction," BLS.

¹⁴⁵ "Manufacturing," BLS.

¹⁴⁶ "Finance and Insurance: NAICS 52," Bureau of Labor Statistics, updated November 20, 2012.

¹⁴⁷ "Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Noninstitutional Population 16 Years and Over by Sex, 1971 to Date," Bureau of Labor Statistics, updated March 1, 2012.

¹⁴⁸ "Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Population by Race, Sex, and Age," Bureau of Labor Statistics, updated through October 2012.

¹⁴⁹ "Labor Force Statistics from the Current Population Survey: Employment Status of the Hispanic or Latino Population by Sex and Age," Bureau of Labor Statistics, updated through October 2012.

average rate.¹⁵⁰ Why did the jobs not return more quickly? A major reason is that recessions caused by financial crises have a stronger self-reinforcing tendency than ordinary cyclical recessions.

When credit-strapped businesses force workers to accept pay cuts and layoffs, those affected have less income to spend. Normally, if families face income losses and need help making necessary purchases, they can borrow money. But during a credit crunch, this option has been largely eliminated. Starting in 2008, the vast majority of banks reported using harsher standards for credit card loans (a net 67% of banks surveyed). Credit card access continued to shrink until 2010, choking off a potential flow of funds.¹⁵¹ In addition, many families that might have taken out a home equity loan (posting the value of a home as collateral to take out significant loans) found that they could no longer do so, since the bursting of the housing bubble had degraded the worth of their homes.

With little ability to borrow, many families facing income shortfalls had no option but to reduce the amount they spent and consumed. From 2008 to 2011, U.S. consumers on average spent an estimated \$175 per month less than they would have in the absence of a recession.¹⁵² A general reduction in consumption, in turn, meant a drop in sales for businesses across the economy, compounding the decline in credit access. In response to declining business, many employers further reduced their payrolls and fired workers, closing the loop in a vicious recessionary cycle of unemployment (see Figure 11).

The multiple links in this cycle help explain why unemployment in the U.S. peaked two years after the height of the financial crisis in 2008. While a downfall in the value of mortgage-backed securities can happen nearly overnight (i.e. during an asset dump), it takes time for the resulting contraction of credit to affect business's investment decisions sufficiently to prompt layoffs, and for those layoffs to lead to reduced spending and more layoffs.

The Wealth Effect

While the bubble-prompted recession meant a loss of income for millions of households, it also brought a downfall in household wealth—the financial worth of owned assets such as a house, savings account, or retirement fund. The value of an owned home is the single greatest contributor to a U.S. household's financial wealth.¹⁵³ After years of largely speculative growth in the market value of a home, the bursting of the bubble destroyed about \$7 trillion of such housing “wealth” by 2011,¹⁵⁴ forcing the average homeowner to watch 42% of the market worth of her home vanish.¹⁵⁵ The value of financial assets (stocks, mutual funds, retirement accounts, etc.) plummeted alongside housing prices, falling even faster and deeper. The atrophy of stock-based assets owed to a decline in demand for stocks as investors lost confidence that businesses would continue growing amidst the incipient recession. From mid-2007

¹⁵⁰ Author's calculations, based on “Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Noninstitutional Population, 1941 to Date,” Bureau of Labor Statistics, updated March 1, 2012.

¹⁵¹ “Senior Loan Officer,” Federal Reserve.

¹⁵² Kevin J. Lansing, “Gauging the Impact of the Great Recession,” Federal Reserve Bank of San Francisco, July 11, 2011.

¹⁵³ Rakesh Kochhar, Richard Fry, and Paul Taylor, “Wealth Gaps Rise to Record Highs between Whites Blacks, Hispanics,” Pew Social & Demographic Trends, July 26, 2011.

¹⁵⁴ Author's calculations, based on “Flow of Funds,” Federal Reserve, Series B.100 Balance Sheet of Households and Nonprofit Organizations, 113.

¹⁵⁵ Author's calculations, based on Shiller, “Data.”

to the depths of the crisis in early 2009, U.S. families lost \$10.9 trillion held in such financial investments, amounting to an average loss of nearly \$100,000 per household.¹⁵⁶ While losses in stocks alone would primarily impact the wealthy, over half of U.S. households held 401K plans and other retirement funds that suffered during the crisis, jeopardizing the retirement plans of millions of middle class families.¹⁵⁷

The combined collapses in housing and stock investments amounted to a \$16.8 trillion erasure of household wealth in the first two years of the crisis, or \$150,000 lost per household.¹⁵⁸ Such a toll is equivalent to all goods and services produced by the U.S. economy over 1.2 years.¹⁵⁹ From 2007 through 2010, the median household lost nearly 40% of owned wealth,¹⁶⁰ effectively undoing 18 years of wealth accumulation.¹⁶¹ The poor were the hardest hit in proportional terms—while the richest 10% of the population effectively lost nothing in net worth thanks to offsetting increases in the value of bonds and other financial assets, the poorest 25% saw median wealth fall by 100%, hitting a net worth of zero.¹⁶²

While the financial insecurity prompted by such a wealth loss was tragic in its own right, the downfall also exacerbated the self-reinforcing cycle of decreasing consumption and increasing unemployment described above. The evaporation of household wealth likely contributed to the decline in household spending through a phenomenon known as the wealth effect—when changes in wealth affect changes in consumption. As people see the value of their houses, stocks, and savings falter, their sense of financial security wanes, and they tend to exert more caution over spending habits. Some economists believe that for every dollar in reduced wealth, a household will spend six cents less.¹⁶³ Using this ratio, the trillions lost in housing and financial wealth would explain much of the observed cutback in consumption that fueled unemployment. While the widespread contraction of credit described above also inhibited consumption by restricting business investment and consumer borrowing, the wealth effect highlights an additional, and more direct, channel through which a bursting bubble led to the Great Recession.

¹⁵⁶ Swagel, “The Cost,” 14.

¹⁵⁷ Bricker, “Changes in U.S. Family Finances,” 36.

¹⁵⁸ Expressed in 2009 dollars. Swagel, “The Cost,” 14.

¹⁵⁹ Author’s calculations, based on “National Income,” BEA.

¹⁶⁰ Bricker, “Changes in U.S. Family Finances,” 1.

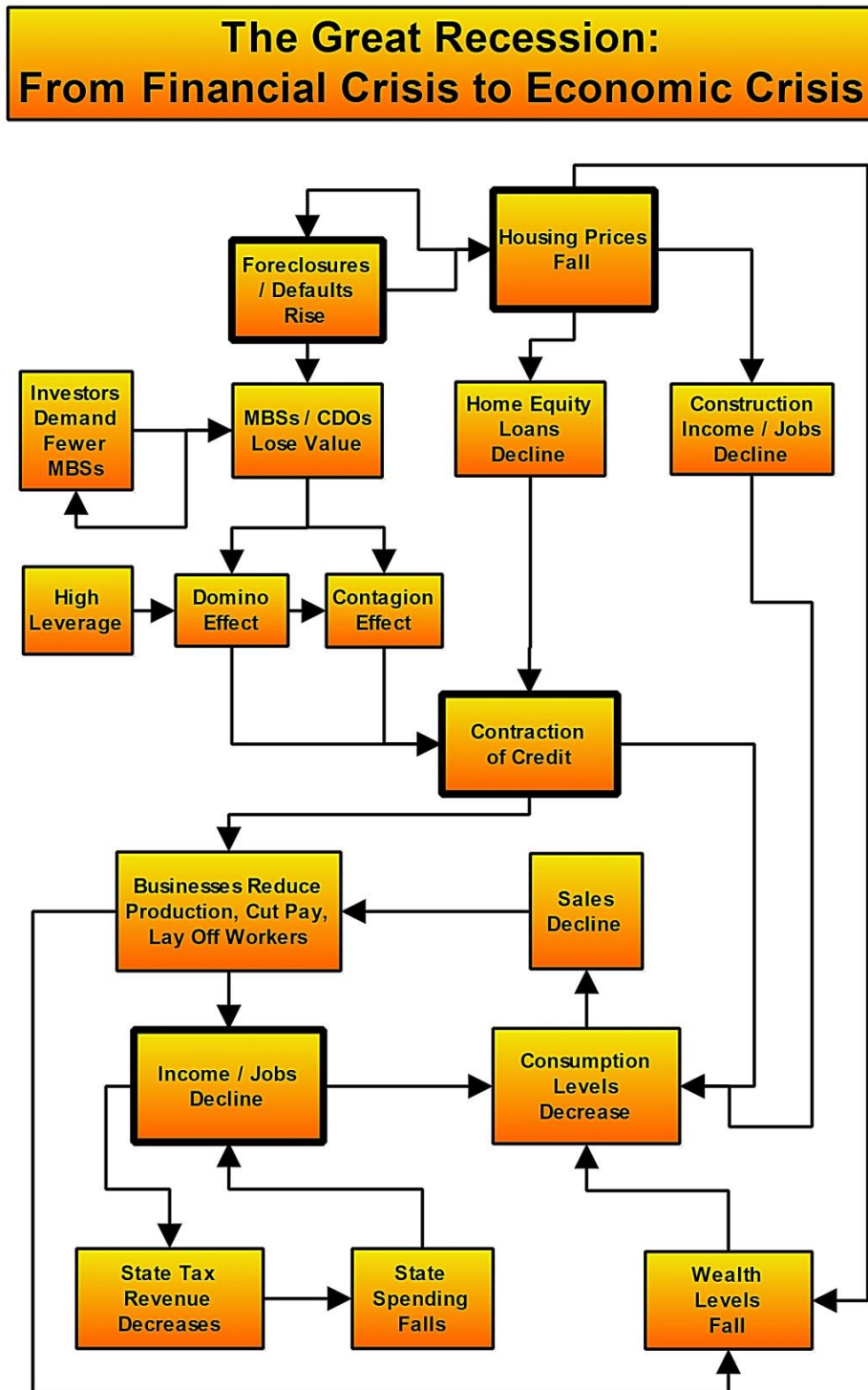
¹⁶¹ Jeff Kearns, “Fed Says U.S. Wealth Fell 38.8% in 2007-2010 on Housing,” *Bloomberg*, June 12, 2012.

¹⁶² Author’s calculations, based on Bricker, “Changes in U.S. Family Finances,” 20.

¹⁶³ Dean Baker, *The End of Loser Liberalism: Making Markets Progressive* (Washington, D.C.: Center for Economic and Policy Research, 2011), 18.

Figure 11

This flow chart provides a synopsis of the causal links, described in this section, through which the collapse of the housing bubble sparked housing and financial crises that soon morphed into an economy-wide recession. Bolded boxes indicate pivotal factors that recur throughout this paper. Note the positive feedback loops of declining consumption, production, income, wealth, and state spending, which help to explain the recession's self-reinforcing tendency.



Policy Responses to Recession

To break recessionary cycles of low consumption and high unemployment, governments often employ Keynesian fiscal policy—reducing taxes and increasing government spending to stimulate increased consumption. As stated above, falling income during a recession prompts a reduction in consumption that leads to further losses in income. Keynesian economists argue that the government should reverse this cycle by spending government funds on large construction projects, public employee salaries, or even checks sent directly in the mail to taxpayers. Each dollar that the government spends (or that the government chooses not to tax) will be an additional dollar of income in the hands of a consumer (e.g. a worker on a government-funded construction project), who will then spend a portion of that dollar (e.g. \$0.95) on something else (e.g. a restaurant tip). The person receiving that money (e.g. a waitress) will then spend part of the extra cash (e.g. \$0.90) on another product (e.g. groceries), continuing an upward cycle of increasing consumption and income. Soon, businesses (e.g. the grocery store) will see sales rise and begin to hire back fired employees, reversing the unemployment scourge.

Such corrective policy is named after John Maynard Keynes, the famous British economist who, in the wake of the Great Depression, pioneered the theory that governments should alter government spending and taxation to respond to significant bouts of unemployment or inflation. Keynes' approach became the guiding logic of most U.S. policymakers until the 1970s, when a more hands-off stance toward government policy supplanted the more active government role required by Keynesianism. The Great Recession of the early twenty-first century marked a resurgence of Keynesianism, as even former critics of Keynesian policy agreed that the government should probably boost spending and cut taxes to stop the downward spiral of reduced consumption, income, and employment.¹⁶⁴

The Obama Administration's hallmark Keynesian response came with the 2009 passage of the American Recovery and Reinvestment Act, an \$831 billion government spending bill. Debate remains wide-ranging as to whether the spending was appropriate in size, timing, or destination.¹⁶⁵ Independent government analysts estimate that the stimulus package created anywhere from 1.5 to 7.9 million new jobs from 2009 through 2012.¹⁶⁶ Yet employment remained lackluster even in 2012, with the unemployment rate sticking above 8% until September.¹⁶⁷

Some economists argue that the spending was too large, creating a massive deficit; others believe that it was not large enough to match the magnitude of the recession. Some analysts argue that the legislation came months too late, allowing the downward economic spiral to plunge the economy deeper into recession. And still other critics say that the spending bill included too many misdirected and ineffectual measures such as corporate tax breaks, rather than focusing on more direct routes of job stimulation. Of course, many economists and policymakers also defend the stimulus package as having stopped an economic freefall by jumpstarting business growth in late 2009 after a year of collapsing

¹⁶⁴ Justin Fox, "The Comeback Keynes," *Time*, October 23, 2008.

¹⁶⁵ While this paragraph outlines the broad parameters of this debate, the formation and impact of the 2009 stimulus bill is too large and complex an issue to fully undertake in a paper that is primarily focused on responses to the causes of the financial crisis at root, rather than responses to the resulting economic crisis.

¹⁶⁶ "Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from October 2011 through December 2011," Congressional Budget Office, February 2012, 3.

¹⁶⁷ "Labor Force Statistics—Series ID: LNS14000000," BLS.

production.¹⁶⁸ While the debate remains unresolved, one indisputable legacy of the legislation is that it brought Keynesian economics back to the fore of U.S. federal policymaking.

However, while the federal government was boosting spending during the unemployment crisis, many state and local governments were doing the opposite. The broad drop in families' income from layoffs and depressed wages meant that state governments could collect fewer taxes, which brought the largest drop in state government tax revenue in recorded U.S. history.¹⁶⁹ State budget deficits ballooned, climaxing at \$191 billion in 2010, but remaining high at \$55 billion even for fiscal year 2013.

Since all states except for Vermont have balanced budget laws, state governments do not have the federal option of borrowing the missing billions. State governments did receive federal assistance as part of the federal stimulus package of 2009, though this only covered about 40% of the budget shortfalls from 2009-2011. To make up for the rest, most states were forced to cut spending; some also increased revenue via more taxation. By 2012, 46 states had cut spending on services while 30 states had increased taxes.¹⁷⁰ Both efforts are the opposite of Keynesian fiscal policy (since they mean decreased cash for consumers, stemming the flow of money from consumption to income to employment). Economic accounting suggests that the anti-Keynesian state responses to budget shortfalls have cost U.S. workers over 3.6 million jobs from 2009 to 2012, undercutting the reported job gains of the federal stimulus program.¹⁷¹

Whether due to the counterproductive effect of state budget shortfalls or the inadequate effect of the federal stimulus package, policy efforts thus far have not been able to create the number of jobs that should exist in a healthy economy. The stubborn nature of today's unemployment is perhaps best represented by the long-term unemployed. At the beginning of 2012, nearly one out every three unemployed people had been out of work for more than a year, the highest rate by far in recorded U.S. history.¹⁷² Recovery has also been sluggish for the persistently swollen ranks of the underemployed—those who have jobs but cannot find sufficient work at the level of hours or pay that they would otherwise choose.¹⁷³ To dispel the despair that afflicts millions of unemployed workers and recover the level of employment enjoyed before the crisis (taking into account labor force growth), the U.S. would need to add 11 million jobs to the economy. Even if the job growth rate were to accelerate significantly, economists now predict this task would take until 2020.¹⁷⁴ The "Great Recession" has earned its name.

¹⁶⁸ "The Financial Crisis," Treasury, 4.

¹⁶⁹ Phil Oliff, Chris Mai, and Vincent Palacios, "States Continue to Feel Recession's Impact," Center on Budget and Policy Priorities, June 27, 2012, 1.

¹⁷⁰ *Ibid.*, 2-6.

¹⁷¹ Author's calculations, using a fiscal multiplier of one and a borrowed GDP to jobs ratio of 1% decrease in GDP = one million fewer jobs, based on data and analysis in Oliff, Mai, and Palacios, "States Continue."

¹⁷² "Addendum—A Year or More: The High Cost of Long-Term Unemployment," Pew Charitable Trusts, 2012, 1.

¹⁷³ "Labor Force Statistics from the Current Population Survey—Series Id: LNS13327709," Bureau of Labor Statistics, updated November 22, 2012.

¹⁷⁴ "Evolution of the 'Job Gap' and Possible Scenarios for Growth," The Hamilton Project at the Brookings Institution, July 6, 2012.

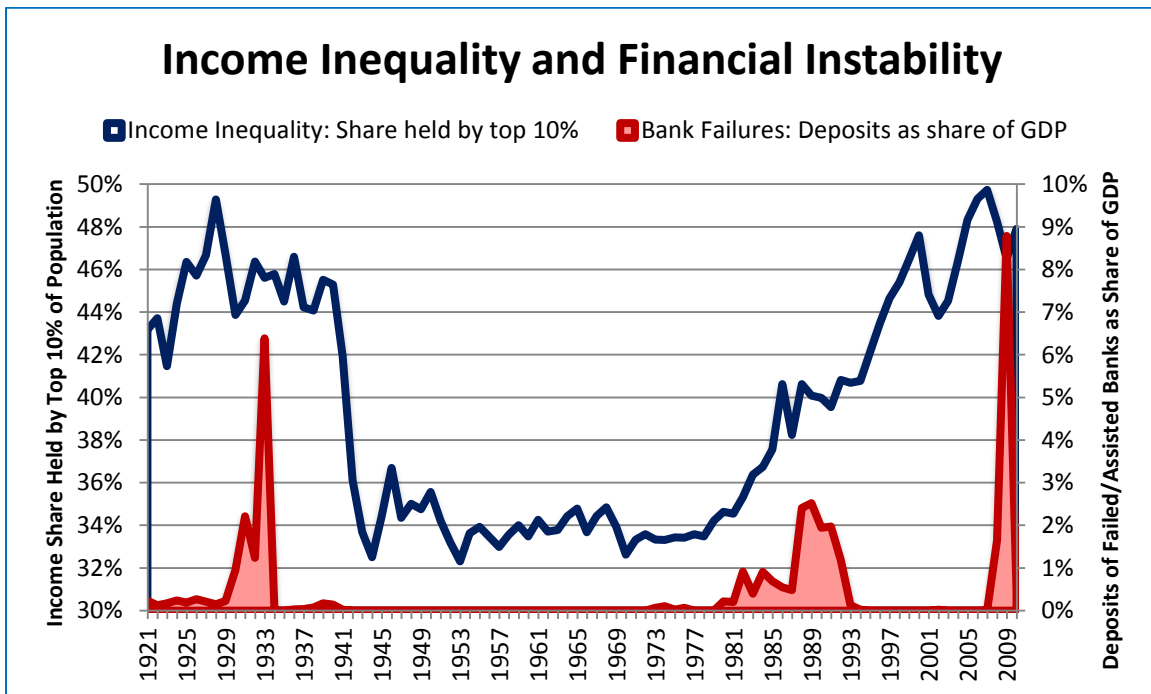
Deeper Causes: Structural Roots of the Housing Bubble, Risk-Taking, and Self-Regulation

As detailed in earlier sections, the enduring recession grew out of a Wall Street-centered financial crisis. While the crisis’s primary proximate causes include the housing sector’s subprime-fed boom, the financial sector’s appetite for risk-taking, and the government’s hands-off regulatory approach to finance, each of these factors can in turn be attributed to underlying structural features of the U.S. economy, banking sector, and government. These structural roots include the following: rising inequality; increasing bank size; shortsighted management incentives; and regulatory capture.

Inequality: Did Increasing Income Gaps Set the Stage for Rising Housing Prices?

Over the last century, inequality levels and financial crises have shown strong correlation, rising and falling in tandem, as indicated in Figure 12. Throughout the 1920s, U.S. income inequality grew to historic highs alongside increasing bank failures, peaking just before the 1929 Stock Market crash and ensuing Great Depression. In the 1940s, after the New Deal and regulatory reforms, inequality plummeted to low levels and bank failures virtually vanished, staying that way for the next 40 years. Beginning in the 1980s, income inequality and bank failures started to climb again, with inequality reaching peaks as high as the late 1920s just before the 2008 financial collapse.¹⁷⁵

Figure 12



176

¹⁷⁵ David A. Moss, “Bank Failures, Regulation, and Inequality in the United States,” August 2010.

¹⁷⁶ This graph has been adapted from an original version created by David Moss (Moss, “Bank Failures.”) This adaptation was assembled from the following data: deposits of failed banks 1934-2011 (Failures and Assistance Transactions, Federal Deposit Insurance Corporation, Table BF01, 2012); deposits of failed banks 1921-1934 (*Historical Statistics of the United*

Does this consistent correlation mean that income inequality caused the crisis? Not necessarily. A third factor could be spurring the rise in both inequality and financial instability. But some economists have described channels through which inequality may well have contributed to the crisis.

During the 1980s and 1990s, income inequality levels approached heights not seen since the 1920s not because of an absolute loss in real income for the poorer quintiles of the population, but a relative loss. While each quintile of the income distribution saw rises in real income, the richer quintiles enjoyed greater income gains than the poorer ones, likely making many families in the latter category feel a need to catch up.¹⁷⁷ But the situation worsened as the 1990s ended. From 1999 through 2004, the real median income in the U.S. consistently fell, meaning that the poorer half of the population actually saw an absolute drop in their income.¹⁷⁸ Far from catching up to the rich, the majority of families (particularly the poorest) now faced difficulty even sustaining their own level of consumption.

Seeing the growing gap between rising expectations for consumption and decreasing real incomes, policymakers faced three main options. First, they could do nothing. But many politicians faced political pressures not to simply ignore rapidly rising inequality. Second, they could change taxation and/or government spending policies to redirect income from the rich to the poor. However, such redistribution efforts were very difficult politically, given Congress's consistent push since the beginning of the Reagan presidency to limit both taxation and social spending.¹⁷⁹ One final option remained: increased borrowing. If lower-income families could be given wider access to loans, they could borrow to fill the growing gap between desired and actual consumption, despite stagnant or falling incomes.

One means of amplifying credit availability was to expand access to homeownership. If granted more accessible mortgages, those facing declining incomes could more easily acquire a new house, making the widening income gap seem less offensive. Moreover, such newfound homeownership would also open the possibility of home equity loans, providing another line of credit to increase consumption in the face of falling income.

Such a solution not only avoided the political pitfalls of the prior two options; it comported with the broadly-supported notion that homeownership should be encouraged. Both political parties have shown their backing for an agenda of increased homeownership: President Clinton touted programs dedicated to "affordable housing" during the 1990s, after which President George W. Bush expressed desire to cultivate an "ownership society."¹⁸⁰ The political expediency of granting increased mortgage access likely made it an attractive option for ameliorating, or at least masking, rising inequality

States: Colonial Times to 1970, U.S. Department of Commerce, (Washington, D.C.: Government Printing Office, 1975), 1038); GDP 1929-2011 ("National Income," BEA); GDP 1921 to 1928 (John W. Kendrick, *Productivity Trends in the United States*, (Princeton: Princeton University Press, 1961), Table A-III); and income share held by the top 10% (Thomas Piketty and Emmanuel Saez, "Income Inequality in the United States, 1913-1998," *Quarterly Journal of Economics* 118:1 (2003), data updated March 2012).

¹⁷⁷ Markus Christen and Ruskin M. Morgan, "Keeping Up with the Joneses: Analyzing the Effect of Income Inequality on Consumer Borrowing," *Quantitative Marketing and Economics* 3 (2005), 149.

¹⁷⁸ Carmen DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith, "Income, Poverty, and Health Insurance Coverage in the United States: 2010," U.S. Census Bureau, September 2011, 34.

¹⁷⁹ Raghuram Rajan, "Fault Lines: How Hidden Fractures Still Threaten the World Economy," speech, Brookings Institution, June 21, 2010, 6.

¹⁸⁰ *Ibid.*

concerns. Such motivation could help explain why most congressional policymakers and federal regulators responded to the unprecedented boom in housing credit with optimism rather than skepticism.

Before the crisis, the expansion of mortgage credit did successfully offset some of the negative impact of growing inequality. Consumption levels increased throughout the 1990s and 2000s, even amidst the declining median incomes of 1999 through 2004.¹⁸¹ Some of this increase can be explained by the fact that people began using a rising share of their monthly paycheck for spending rather than saving,¹⁸² perhaps trusting in the continual growth in the value of their homes (an example of the aforementioned wealth effect). Much of the rise in consumption, however, stemmed from households' increasing ability to reach beyond the paycheck and take out mortgages and other loans, causing debt levels to steadily climb. The average U.S. household in 1980 had a debt equivalent to 60% of their disposable income.¹⁸³ By 2007, the average household's debt load exceeded 130% of its disposable income,¹⁸⁴ a rise driven primarily by increasing mortgage-related debt.¹⁸⁵

Numerous factors likely contributed to this massive debt buildup, including, as mentioned, the post-2001 fall in federal interest rates. Yet statistical analysts have found that income inequality levels were actually a larger determinant of household debt levels than interest rates from 1980 to 2003. During this period, rises in income inequality consistently coincided with increases in household debt.¹⁸⁶

While increased mortgage borrowing for the poorer half of the country provided a politically attractive means of grappling with historic inequality, this stopgap solution soon contributed to the ill-fated housing bubble. As described above, the increased access to mortgage credit fueled rising demand for new homes, while the particular expansion of credit to lower-income subprime borrowers infused the resulting bubble with default risk. Had the U.S. economy not fostered such steady growth in income inequality, or had policymakers found a more durable response to it, the bubble might not have grown so large, and the impacts of its collapse might not have been so severe.

¹⁸¹ "Table 2.3.3 Real Personal Consumption Expenditures by Major Type of Product, Quantity Indexes," Bureau of Economic Analysis, updated June 28, 2012.

¹⁸² "Table 2.1. Personal Income and Its Disposition," Bureau of Economic Analysis, updated May 31, 2012.

¹⁸³ Christen and Morgan, "Keeping Up," 145.

¹⁸⁴ Author's calculations, based on "Flow of Funds," Federal Reserve, Series B.100 Balance Sheet of Households and Nonprofit Organizations, 113.

¹⁸⁵ Christen and Morgan, "Keeping Up," 146.

¹⁸⁶ *Ibid.*, 148.

Inequality as Cause and Effect?

Ironically, it appears that income inequality not only contributed to the financial crisis, but grew in its aftermath. One study finds that the poorest 20% of income-earners in the U.S. saw their incomes drop faster and farther than those with higher incomes. Those in the lowest income quintile watched earnings fall more than 30% during the recession, while those earning a median level of income experienced only a 5% decrease.¹⁸⁷ Such a large jump in disparity had not occurred since World War II.¹⁸⁸ This finding raises concerns that income inequality and financial crises may be intertwined in a vicious cycle, in which rising inequality contributes to crises that exacerbate the inequality, sowing the seeds for further crises. Such self-perpetuation underscores the need for policy responses to break the cycle.

Bank Size: Did the Growth of Too-Big-to-Fail Incentivize Risk-Taking?

While the structure of the U.S. economy likely played a role in the financial crisis, analysts have also placed blame on the structure of the banks and firms at its center. The primary critique is that banks have grown so large in recent decades that they have become “too big to fail,” and awareness of this systemic importance has prompted them to engage in excessive risk-taking.

Since the 1980s, increasing bank consolidation has prompted the rise of large banks and the decline of small ones, as indicated in Figure 13. From 1984 to 2007, the number of banks with over \$10 billion in assets jumped from 24 to 119. During this same time span, the large banks' share of banking sector assets soared from 28% to over 75%. Meanwhile, the number of community banks with \$100 million or less in assets shrank from 14,034 to 3,597, and their asset share plummeted from 14% to less than 2%.¹⁸⁹ Within the large bank category, the biggest of the big banks have been capturing an increasing share of wealth, with a mere 19 megabanks controlling over 60% of the assets of the entire banking sector in 2010.¹⁹⁰ In 2012, the seven largest financial firms collectively hold assets equivalent to two-thirds of the U.S.'s gross domestic product.¹⁹¹

¹⁸⁷ Fabrizio Perri and Joe Steinberg, “Inequality and Redistribution during the Great Recession,” Federal Reserve Bank of Minneapolis, February 2012, 6.

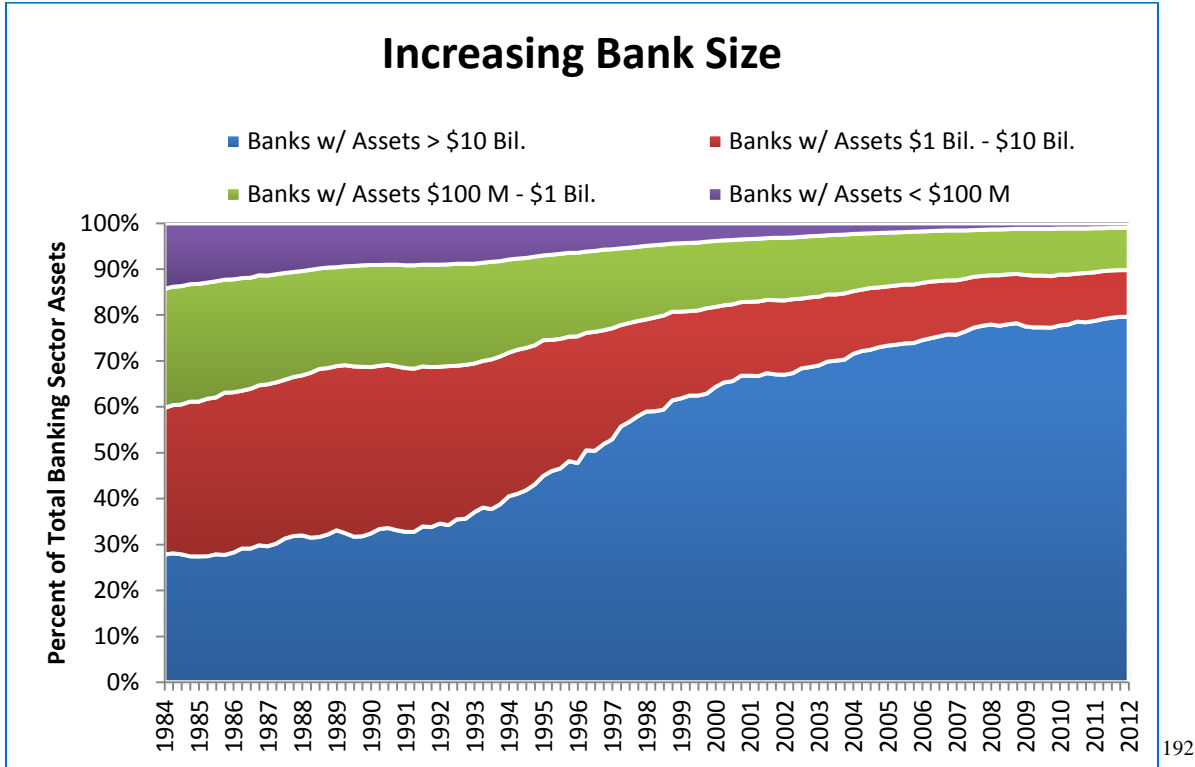
¹⁸⁸ *Ibid.*, 1.

¹⁸⁹ “Quarterly Banking Profile: Ratios by Asset Size Group,” Federal Deposit Insurance Corporation, updated for 2012, first quarter.

¹⁹⁰ Erik Devos, Srinivasan Krishnamurthy, and Rajesh Narayanan, “The Competitive Consequences of Size in Banking: Evidence from Megabank Mergers,” December 2010, 2.

¹⁹¹ Author’s calculations, based on “National Income,” BEA; “Top 50 Holding Companies,” National Information Center, updated September 30, 2012, <http://www.ffiec.gov/nicpubweb/nicweb/Top50Form.aspx>.

Figure 13



192

How did banks become so large, and their sector so concentrated? While explanations abound, two key shifts can explain much of the trend: geographic consolidation and subsector consolidation. Before the 1980s, state governments restricted out-of-state banks from owning subsidiary banks within their boundaries, effectively barring any one bank from growing via interstate expansion. Throughout the 1980s and early 1990s, states began signing agreements that permitted such interstate banking.¹⁹³ On average, these agreements prompted an over 50% increase in the rate of bank acquisitions in the state, as national banks started buying up local banks.¹⁹⁴ In 1994, Congress ratified this deregulatory trajectory by passing the Riegle-Neal Banking and Branching Efficiency Act, permitting national banks to own branches throughout most states.¹⁹⁵

While crossing state boundaries, large banks also started to cross lines that had historically separated commercial banking from investment banking. Commercial banking includes the banking services that most people in the U.S. use—deposit accounts (savings and checking), loans, and certificates of deposit. By contrast, investment banks traditionally do not hold deposits, but do sell securities, whether bonds, stocks, or complex products like MBSs and CDOs. Amidst the depths of the Great Depression in 1933, Congress passed the Glass-Steagall Act to separate investment and commercial banking, primarily to protect depositors' federally-insured money from the higher risk

¹⁹² "Quarterly Banking Profile," FDIC.

¹⁹³ Philip E. Strahan, "The Real Effects of U.S. Banking Deregulation," *Federal Reserve Bank of St. Louis Review* 85:4 (July/August 2003), 112.

¹⁹⁴ Author's calculations, based on Strahan, "The Real Effects," 115.

¹⁹⁵ *Ibid.*, 113.

associated with investment banks' securities trading. By stipulating that commercial banks could not buy or sell securities and that investment banks could not hold deposits, the regulation effectively limited the size of both bank types by barring entrance into the other type's market.¹⁹⁶

The Federal Reserve slowly eroded this Glass-Steagall barrier throughout the 1980s and 1990s by allowing commercial banks to deal increasingly in securities. Confirmation of this deregulatory trajectory came when Congress passed the Financial Services Modernization Act (FSMA) of 1999. The FSMA allowed a single large financial company to engage in commercial banking, investment banking, and insurance, effectively repealing Glass-Steagall.¹⁹⁷ The decision had significant impacts on bank size by permitting megamergers between depository and non-depository firms, as demonstrated most clearly by Citigroup, the offspring of a 1998 merger between a commercial bank and an insurance company. The historic merger, sanctioned by the FSMA, made Citigroup the largest financial company in the world.¹⁹⁸

But does increasing bank size necessarily mean increasing risk-taking? Many finance theorists have argued that size actually brings less risk and more stability, citing several reasons. First, a larger bank is more likely to make loans to a geographically dispersed array of borrowers than a smaller community bank, making it less susceptible to locally-concentrated defaults.¹⁹⁹ Second, a bank with both commercial and investment activities will have more diverse income sources (e.g. loans, stocks, and bonds) than a smaller commercial bank, increasing the chances that losses in one type of revenue could be compensated by gains in another.²⁰⁰

Third, larger banks will tend to be more profitable than smaller banks because of economies of scale—the ability to spread fixed costs over more units of production so as to reduce average cost per unit.²⁰¹ For example, if banks need to buy a particular computer that costs \$1000 (a fixed cost) to track loans, then a small bank that makes 1000 loans per year will pay one dollar per loan for the use of the computer, while a large bank making 100,000 loans per year will pay just one cent per loan for the same computer. Some finance economists aver that this predisposition toward higher profit margins and more stable returns helps bank managers feel confident that financial success will not require risky loans or investments—an alignment between banks' private interest in growth and the public's interest in low risk.²⁰²

However, other economists, who do not dispute these same big-bank advantages, argue that large banks tend to be emboldened by their low-risk advantage to take on offsetting degrees of higher risk elsewhere. Empirical studies have shown, for example, that larger banks tend to use higher leverage,

¹⁹⁶ James R. Barth, R. Dan Brumbaugh Jr. and James A. Wilcox, "Policy Watch: The Repeal of Glass-Steagall and the Advent of Broad Banking," *The Journal of Economic Perspectives* 14:2 (Spring, 2000): 196

¹⁹⁷ Lissa Lamkin Broome and Jerry W. Markham, "The Gramm-Leach-Bliley Act: An Overview," University of North Carolina School of Law, 2001, 1.

¹⁹⁸ Mitchell Martin, "Citicorp and Travelers Plan to Merge in Record \$70 Billion Deal: A New No. 1: Financial Giants Unite," *The New York Times*, April 7, 1998.

¹⁹⁹ Jakob De Haan and Tigran Poghosyan, "Bank Size, Market Concentration, and Bank Earnings Volatility in the US," *Journal of International Financial Markets, Institutions & Money* 22 (2012), 37.

²⁰⁰ Barth, Brumbaugh, and Wilcox, "Policy Watch," 198.

²⁰¹ David Wheelock and Paul W. Wilson, "Do Large Banks Have Lower Costs? New Estimates of Returns to Scale for U.S. Banks," Federal Reserve Bank of St. Louis, Working Paper 2009-054E, May 2011, 4.

²⁰² De Haan and Poghosyan, "Bank Size," 37-38.

perhaps because their lower-risk portfolio reassures them that riskier borrowing levels are permissible.²⁰³ Such findings weaken the case that banks' quest for growth is in society's best interests.

But the primary argument against large bank size that emerged from the crisis is that large banks know that they are "too big to fail." Too-big-to-fail is a designation ascribed to financial institutions commonly seen as so large and interconnected that their failure would jeopardize the health of the entire financial system. As mentioned, the banking sector is more concentrated than ever, with a handful of megabanks controlling the majority of all banking sector assets. Were one of these banks to incur major losses and/or go bankrupt, the impact could be felt not just by that bank's shareholders, but by large swaths of the economy. Large banks' creditors tend to include numerous other important financial institutions. As such, a large bank's bankruptcy could provoke the domino effect described above if the bank could not repay those creditor institutions, making it more difficult for them, in turn, to pay back their creditors. Since large banks also tend to be very visible, their demise could also prompt the aforementioned contagion effect by spurring generalized panic and a resulting reduction of credit.²⁰⁴

The fear that such megabanks are "too big to fail" prompted federal regulators to bail out large banks (via grants, loans, or assisted mergers) at several points before the crisis. Such governmental bailouts occurred in response to the bank failures of the Great Depression and after a 1980s banking crisis.²⁰⁵ In 1991, Congress formalized the too-big-to-fail rationale for bank bailouts by passing the Federal Deposit Insurance Corporation Improvement Act, which allowed for bailouts if the bank's failure would be large enough to threaten "serious adverse effects on economic conditions or financial stability."²⁰⁶

Numerous analysts argue that the 1991 Act's codification of the too-big-to-fail status, in addition to the precedent of prior big bank bailouts, convinced megabanks (and their creditors and shareholders) that they could expect a government bailout if risk-taking led to financial failure.²⁰⁷ Such an expectation weakens the concept of market discipline, in which creditors and shareholders are expected to punish a firm's excessive risk-taking. Studies have shown that when creditors and shareholders believe that the bank has reached too-big-to-fail status, they relinquish their enforcement role, since they expect to have any losses covered by a government bailout.²⁰⁸ For example, when medium-sized banks undergo a merger and cross into presumed too-big-to-fail territory, creditors tend to be willing to loan them money at lower interest rates, suggesting that expectations of government protection have diminished creditors' concern with the banks' risk-taking.²⁰⁹

This weakening of market discipline increases the chances that the megabank's actions will reflect moral hazard. Assuming a too-big-to-fail status, a bank can expect to profit from risks that end

²⁰³ Rebecca S. Demsetz and Philip E. Strahan, "Diversification, Size, and Risk at Bank Holding Companies," *Journal of Money, Credit and Banking* 29:3 (August 1997), 301.

²⁰⁴ "Preliminary Staff Report: Governmental Rescues of 'Too-Big-to-Fail' Financial Institutions," Financial Crisis Inquiry Commission, August 31, 2010, 2.

²⁰⁵ *Ibid.*, 3.

²⁰⁶ *Ibid.*, 10.

²⁰⁷ *Ibid.*, 3.

²⁰⁸ Edward J. Kane, "Incentives for Banking Megamergers: What Motives Might Regulators Infer from Event-Study Evidence?," January 25, 2000, 7.

²⁰⁹ Maria Fabiana Penas and Haluk Unal, "Gains in Bank Mergers: Evidence from the Bond Markets," *Journal of Financial Economics*, May 21, 2003, 27.

well, but pass on to taxpayers the losses from those that do not. As discussed previously, such detachment from downside losses tends to incentivize risky behavior, divorcing the public's interests from the banks' interests. Many commentators on the 2008 crisis argue that this risk-taking incentive motivated the mistakes made by too-big-to-fail firms, such as Bear Stearns' decision to employ unprecedented leverage, AIG's decision to issue credit default swaps it could not honor, and the decision of nearly all actors to not really investigate the underlying worth of their MBSs and CDOs.

Once such decisions led to financial ruin, the Federal Reserve fulfilled the seemingly widespread expectation of bailout by lending tens of billions of taxpayer dollars to Bear Stearns, AIG, and several other key players in 2008.²¹⁰ Despite the notable exception of Lehman Brothers' failure, the string of major government bailouts convinced many observers that too-big-to-fail was here to stay.

Beyond such individual bailouts, Congress passed a more sweeping bailout package, the Troubled Asset Relief Program (TARP), in October of 2008. TARP initially authorized the U.S. Treasury to spend up to \$700 billion in loans, stock purchases, and asset buyouts for distressed banks.²¹¹ The rates and terms of these infusions of capital were more favorable for the banks than could be found on the open market. Though the rules of TARP technically allowed banks of any size to access such preferential bailout options, the vast majority of the funds were used for the largest financial firms. The Treasury, for example, purchased \$220 billion in stock from the 19 largest banking companies, but only \$41 billion from all smaller banks combined.²¹²

Such a large bailout package for the big banks behind the crisis proved quite controversial among policymakers and the U.S. public. Three years after TARP, popular demonstrations linked to the Occupy movement often included the chant, "Banks got bailed out! We got sold out!" The refrain encompasses several oft-expressed concerns with TARP, the first of which is that the bailout constituted a huge expense for taxpayers. Yet the U.S. Treasury happily reported in 2012 that 94% of all TARP investments in banks have been returned, while taxpayers have actually seen a \$19 billion gain via the rising value of those investments.²¹³ Critics argue, however, that the scenario could have ended much worse, given the very uncertain economic outlook at the time TARP was passed, meaning that the Treasury was irresponsible in forcing taxpayers to incur \$700 billion worth of risk.

This argument leads to another common and critical question: was the bailout necessary, or should the banks have been allowed to fail? Proponents of TARP argue that the bailout was essential in forestalling enormous bank failures that would have caused such panic as to essentially seal off all access to credit, thereby driving the already sorry economy into an absolute freefall.²¹⁴ Some critics of TARP acknowledge that large-scale government lending to banks was probably necessary to calm the financial panic and vanishing credit of September 2008. However, they raise an additional critique of TARP—that while the bailout helped the banks at fault for the crisis, it ignored the foreclosed homebuyers suffering from it.

²¹⁰ "Preliminary Staff Report: Governmental Rescues," FCIC, 4.

²¹¹ Luigi Spaventa, "A (Mild) Defence of TARP," *The First Global Financial Crisis of the 21st Century: Part II: June—December, 2008*, eds. Andrew Felton and Carmen M Reinhart, (London: Centre for Economic Policy Research, 2009), 261.

²¹² "Preliminary Staff Report: Governmental Rescues," FCIC, 32.

²¹³ "The Financial Crisis," Treasury.

²¹⁴ Spaventa, "A (Mild) Defence," 261.

Indeed, TARP was initially intended to accomplish much more than to reassure banks. Neil Barofsky, the special inspector general of TARP, argued that the massive package was originally written to also bail out millions of distressed homebuyers facing underwater mortgages and potential foreclosure. Barofsky bemoaned that instead of providing this much-needed relief to Main Street, the Treasury diverted nearly all of the bailout to Wall Street.²¹⁵

Another common concern about TARP centers on the bailouts' contribution to the too-big-to-fail mentality that contributed to the crisis in the first place. Indeed, TARP not only confirmed the banks' expectation for emergency loans, but included large U.S. Treasury purchases of the banks' stocks, making even more explicit the governmental incentive to rescue the banks.²¹⁶ Such a move would not necessarily contribute to banks' moral hazard if the government would accompany the bailout with new regulations to limit the banks' ability to take the sort of risks that forced the bailout. In this scenario, the government would essentially be doing away with market discipline (since creditors refrain from disciplining risks under such explicit government backing), but replacing it with governmental discipline.

However, few such regulatory conditions were included in TARP to tamp down future risk-taking. Barofsky reported that the banks were not even required to reveal how they used the bailout money.²¹⁷ Indeed, a study of the bailed-out banks reveals that with few constraints and ample assurance of government backing, the financial firms that got bailed out actually started making investments of *greater*, not *less*, risk.²¹⁸ As such, while the bailout importantly stemmed the financial collapse, it also largely confirmed and perpetuated the too-big-to-fail moral hazard that helped precipitate the collapse.

Fannie Mae and Freddie Mac: The Two Biggest to Fail?

Fannie Mae and Freddie Mac constitute a unique type of housing finance firm known as Government-Sponsored Enterprises (GSEs). The two institutions were created in 1938 and 1970, respectively, as wholly public institutions mandated to make long-term mortgage credit more affordable by increasing the supply of available mortgages.²¹⁹ They did so by pioneering the securitization of mortgages—buying mortgages, packaging them into MBSs, and selling them to investors.

Unlike the private MBS-issuing banks that rose to prominence during the housing bubble, all Fannie/Freddie-issued MBSs came with a built-in, government-backed guarantee that they would cover any losses in the MBS due to defaulting mortgages.²²⁰ After Fannie and Freddie were privatized in 1968 and 1989, respectively, they continued issuing large quantities of MBS guarantees. Despite being ostensibly private entities, Fannie and Freddie still enjoyed a widely-held perception of government

²¹⁵ Neil M. Barofsky, "Where the Bailout Went Wrong," *The New York Times*, March 29, 2011.

²¹⁶ "Preliminary Staff Report: Governmental Rescues," FCIC, 29.

²¹⁷ Barofsky, "Where the Bailout."

²¹⁸ Ran Duchin and Denis Soysura, "Safer Ratios, Riskier Portfolios: Banks' Response to Government Aid," Ross School of Business, Working Paper No. 1165, January 2012, i.

²¹⁹ "Preliminary Staff Report: Government Sponsored Enterprises and the Financial Crises," Financial Crisis Inquiry Commission, April 7, 2010, 3.

²²⁰ "Preliminary Staff Report: Securitization," FCIC, 4.

backing. Given the GSEs' history and their role as two of the country's largest mortgage purchasers, investors believed that the government would not let the GSEs or their MBS guarantees fail.²²¹

Two key questions arise from this history. First, did the GSEs' implicit too-big-to-fail status and the resulting weakening of market discipline prompt them to engage in undue risk-taking in their mortgage purchases? The evidence is mixed. Fannie and Freddie both increased their purchases of higher-risk mortgages (e.g. those in which the homebuyer borrowed a greater share of the house's value) from the mid-1990s through the early 2000s.²²² However, in 2003 both entities came under tighter regulation (e.g. stricter leverage limits),²²³ and a number of commentators argue that their purchase of actually "subprime" mortgages was small in comparison to other banks.²²⁴

Second, the question that naturally follows is whether any increase in GSE risk-taking, if it did occur, played a significant role in causing the crisis. Historically, the two GSEs have certainly played enormous roles in the mortgage securitization business—at the end of 2003, their MBSs constituted nearly half of all outstanding mortgages.²²⁵ However, their role shrank thereafter as they faced tighter regulation, while private investment banks flooded the MBS market to capitalize on rising housing prices. From 2003 to 2006, the years of the housing bubble's fastest growth, the share of mortgages purchased by MBS-creating private banks jumped from 12% to nearly 40%, while the GSEs' share fell from nearly 50% to below 30%.²²⁶ The GSEs' declining share seems to indicate diminished responsibility for the housing bubble and subprime boom.

However, in addition to the MBSs that they directly created, Fannie and Freddie also guaranteed trillions of dollars' worth of MBSs created by the private banks. Seeking a means of mitigating default risk for a given MBS, private banks would simply buy the GSEs' contractual guarantee to cover any default losses.²²⁷ Much like AIG's credit default swaps, the GSEs' guarantees, which came with implicit government backing, provided investors with a false veil of assurance in the soundness of buying MBSs. Fannie and Freddie might not have sold the guarantees to such a massive extent without the expectation that the government would provide support in the case of widespread MBS default. In turn, the proliferation of MBS guarantees propelled the post-2003 surge in MBS creation among private banks that helped inflate the housing bubble.

Management Incentives: Did Performance-Based CEO Pay Encourage Myopic Risk-Taking?

While the risk-taking incentives of large banks have been influenced by expectations of government bailout, the risk-taking incentives of the banks' managers have been shaped by a changing payment structure. Before the 1990s, most bank CEOs' pay was not tied to their performance. Salaries and bonuses were doled out to CEOs independent of financial ups and downs.²²⁸ In 1990, influential

²²¹ "Preliminary Staff Report: Governmental Rescues," FCIC, 16.

²²² "Preliminary Staff Report: Government Sponsored," FCIC, 15.

²²³ "Preliminary Staff Report: Governmental Rescues," FCIC, 17.

²²⁴ Joe Nocera, "An Inconvenient Truth," *The New York Times*, December 19, 2011.

²²⁵ "Preliminary Staff Report: Governmental Rescues," FCIC, 17.

²²⁶ "Preliminary Staff Report: Securitization," FCIC, 10.

²²⁷ "Preliminary Staff Report: Government Sponsored," FCIC, 11.

²²⁸ Michael C. Jensen and Kevin J. Murphy, "CEO Incentives—It's Not How Much You Pay, But How," *Harvard Business Review*: 3 (May-June 1990), 1.

finance economists like Michael Jensen (based at Harvard Business School) argued that such delinked payments meant that CEOs had little incentive to take innovative measures to prioritize growth in shareholder value. To better align CEO and shareholder interests, he argued that a larger portion of CEO pay should come via stock options, and that bonus levels should be conditioned on the bank's share value. Such restructuring, Jensen posited, would encourage CEOs to show "greater risk-taking, effort and ability."²²⁹

A decade later, many banks had heeded Jensen's advice and were paying their CEOs significantly in stock options and performance-linked bonuses. However, the change did not result in the sort of "risk-taking" Jensen had imagined. Bonuses and stock options both suffered from a similar problem—managers could make decisions with short-term gains but long-term risks and still benefit from the performance-linked pay.

The bonuses paid to executives of Lehman Brothers and Bear Stearns, both of which faced failure during the financial collapse, provide a fitting example of such moral hazard. From 2000 to 2007, as the housing bubble was inflating and share prices were rising, Lehman Brothers and Bear Stearns paid their CEOs \$61 million and \$87 million, respectively, in performance-linked bonuses.²³⁰ Both companies cited unprecedented increases in stock price as cause for the massive rewards. Such payouts did not reflect the fact that to attain these inflated stock prices, the CEOs were undertaking nearly unparalleled leverage and blanket trust in CDOs. When such risks materialized in 2007 and 2008, the share prices fell to a small fraction of their pre-bubble levels.²³¹ But the CEOs had already pocketed the bonuses and were under no obligation to return them.

Similarly built for moral hazard, stock options for CEOs are typically structured such that CEOs can exercise the options (or sell the stock) quickly, frequently, and at times of their choosing.²³² As such, CEOs can again cash out before the long-term consequences of their decisions become manifest. In the case of Lehman Brothers and Bear Stearns, their CEOs earned a total of \$461 million and \$289 million, respectively, from exercising stock options each year between 2000 and 2008.²³³ Such skewed payments, in part, prompted Jensen himself to recant his recommendation of stock options, arguing that they gave CEOs too much latitude to take risks with short-term gain and then "sell the stock or exercise the options before anything hits the fan."²³⁴

Given such incentives, self-interested CEOs could have been acting rationally in trying to profit from the housing bubble, even if they saw it as short-lived. As discussed above, many key actors (homebuyers, investors, regulators) exhibited an irrational belief that housing prices would continue to rise indefinitely. While certainly some bank CEOs fall into this category, executives' short-term

²²⁹ *Ibid.*, 4.

²³⁰ Lucian A. Bebchuk, Alma Cohen, and Holger Spamann, "The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008," Harvard Law School, Discussion Paper No. 657, February 2010, 11.

²³¹ *Ibid.*, 6.

²³² *Ibid.*, 18.

²³³ *Ibid.*, 15.

²³⁴ Claudia H. Deutsch "An Early Advocate of Stock Options Debunks Himself," *The New York Times*, April 3, 2005. Jensen also objected to common features of stock option compensation packages that allow CEOs to take gambles that could bring future increases in the value of their options while prompting immediate losses for shareholders. For details, see Michael C. Jensen, "How Stock Options Reward Managers for Destroying Value and What to Do about It," Harvard NOM Research Paper No. 04-27, April 17, 2001.

payment structure allows for the possibility that some CEOs may have actually seen housing prices as unsustainable, but still moved ahead with mortgage-backed gambles, knowing that they could reap handsome payments before the bubble's inevitable burst.²³⁵

Why would shareholders allow for such skewed performance-based pay if it poses such a threat to the value of their shares? The answer lies largely in the fact that shareholders in major banks do not actually possess much power over CEOs. Boards of Directors, as the authorities tasked with determining CEO compensation, are supposed to act on behalf of shareholders' interests in deciding executive payment. However, numerous industry analysts explain that Boards tend to care more about the CEOs' interests than those of shareholders. CEOs in many banks have the authority to influence the Board members' own compensation and re-election prospects, providing incentive for mutual favors.²³⁶ Sometimes a Board member in one bank (Bank A) is the CEO of another bank (Bank B) that has a Board on which the CEO of Bank A sits, providing an incentive for each Board member to cater to the CEO's interests.²³⁷ About one out of every ten CEOs at major firms enjoys such a direct reciprocal relationship with a Board member.²³⁸

Even looser (and more prevalent) CEO-Board relationships have been found to lead to increased CEO compensation. One large-scale study found that CEOs who have colleagues in common with members of their Board's compensation committee earn nearly \$500,000 more per year on average than CEOs without such connections.²³⁹ Such a symbiotic network serves to perpetuate the unaccountable pay structure that allows CEOs to gain personal profit from short-term growth, even if such growth is due to a gamble that later destroys value for shareholders and society.

Regulatory Capture: Has Regulatory Policymaking been Co-opted by Regulated Firms?

In the same way that many Board members have catered to CEOs while shirking their accountability to shareholders, some critics argue that U.S. policymakers have bent to the interests of financial firms while neglecting their duty to safeguard the general public. From the early 1980s until the financial crisis, U.S. financial sector regulations were slowly but steadily eroded by acts of Congress or decisions from administrative regulators (e.g. the Federal Reserve).²⁴⁰ During the bubble years of 2000-2006, congressional bills that sought to tighten regulation were three times less likely to pass Congress than those that called for reduced regulation.²⁴¹ Policymakers' increasing adherence to the theory of self-regulating finance (as discussed above) can help explain some of this trajectory, but the potential role of bank lobbying, campaign contributions, and quid-pro-quo favors should also be examined.

Empirical studies have found that lobbying by the finance industry has had a significant effect on the outcome of regulatory legislation. From 2000-2006, the probability that a given congressional

²³⁵ Crotty, "Structural Causes," 565.

²³⁶ Lucian A. Bebchuk and Jesse M. Fried, "Pay Without Performance: Overview of the Issues," *Journal of Applied Corporate Finance* 17:4 (Fall 2005), 12.

²³⁷ *Ibid.*, 13.

²³⁸ Kevin F. Hallock, "Reciprocally Interlocking Boards of Directors and Executive Compensation," *Journal of Financial and Quantitative Analysis* 32:3 (1997), 331.

²³⁹ David F. Larcker, et al., "Back Door Links between Directors and Executive Compensation," February 22, 2005, 27.

²⁴⁰ Moss, "Bank Failures."

²⁴¹ Deniz Igan and Prachi Mishra, "Making Friends," *Finance and Development* 48:2 (June 2011), 28.

representative would vote “no” on a pro-regulation bill or “yes” on an anti-regulation bill increased with the amount of money that financial firms spent to lobby that individual. An even more effective approach for the banks was to use a lobbyist who had previously worked for the legislator, a tactic enabled by frequent rotation of employees between Capitol Hill and Wall Street lobbying firms.²⁴²

The tendency of policymakers to be swayed by banks’ private interests seems to have particularly influenced the major deregulatory moves during the 1990s that laid the groundwork for the financial crisis. For example, legislators were more likely to support the early 1990s legislation to permit interstate banking, which facilitated the rise of megabanks, if their district included a high share of large banks.²⁴³

In a more explicit case, the financial sector launched a massive lobbying blitz to pressure policymakers to pass the two landmark deregulatory bills of the pre-bubble era: the Financial Services Modernization Act (FSMA) of 1999 (which ended Glass-Steagall and facilitated bank growth) and the Commodity Futures Modernization Act (CFMA) of 2000 (which deregulated credit default swaps). Senator Phil Gramm, then-Chair of the powerful Senate Banking Committee, proved the most influential backer of both bills—he co-authored the FSMA and pushed for the CFMA’s inclusion of credit default swap deregulation. It may not be a coincidence that from 1989 to 2002 he also received more campaign contributions from commercial banks than any other member of Congress.²⁴⁴

In addition to Congress, banks actively sought the support of Clinton Administration officials on both bills. Citigroup had particular interest in seeing FSMA pass—the megabank had just formed under a merger that would be considered illegal without FSMA’s overturning of Glass-Steagall. Citigroup executives placed personal lobbying calls to President Clinton, Fed Chair Alan Greenspan, and Secretary of Treasury Robert Rubin, the last of whom resigned to become Citigroup’s executive committee chairman in the year of FSMA’s passage.²⁴⁵

The efficacy of financial firms’ lobbying, personal connections, and campaign donations likely helped foster the hands-off regulatory approach that characterized the housing bubble and subprime boom. By catering to these private interests, legislators effectively subordinated the interest of the general public in limiting systemic risk in the financial sector. Studies have shown that the financial companies that spent the most time and money lobbying legislators from 2002-2006 tended to acquire mortgages more rapidly, deal more heavily in high-risk mortgages, and securitize a greater share of those mortgages than less politically active firms. When the bubble burst, mortgages issued by these hard-lobbying firms tended to show the highest default rates, and their stock prices tended to plummet fastest.²⁴⁶

²⁴² *Ibid.*, 29.

²⁴³ Randall S. Kroszner and Philip E. Strahan, “What Drives Deregulation? Economics and Politics of the Relaxation of Bank Branching Restriction,” National Bureau of Economic Research, Working Paper 6637, July 1998, 27.

²⁴⁴ Eric Lipton and Stephen Labaton, “Deregulator Looks Back, Unswayed,” *The New York Times*, November 16, 2008.

²⁴⁵ Matthew Sherman, “A Short History of Financial Deregulation in the United States,” Center for Economic and Policy Research, July 2009, 10.

²⁴⁶ Deniz Igan, Prachi Mishra, and Thierry Tressel, “A Fistful of Dollars: Lobbying and the Financial Crisis,” IMF Working Paper 09/287, December 2009, 5.

As one example, Countrywide Financial spent \$8.7 million in lobbying and campaign contributions from 2002-2006,²⁴⁷ in addition to running a now-infamous “VIP” program in which influential politicians were granted fee waivers and preferential interest rates on their personal mortgages.²⁴⁸ While enjoying lax regulation from Capitol Hill, Countrywide rose to become the number one issuer of mortgage-backed securities by 2007, specializing in subprime loans.²⁴⁹ The following year, Countrywide faced a cascade of defaults, an over 90% decline in its net worth, and an eventual buyout by Bank of America that left debts unpaid and homes foreclosed.²⁵⁰

Regulatory Gaps

While bank-promoted legislation steadily weakened existing financial regulation in the decades before the crisis, gaps in the federal regulatory structure meant that several components of the financial sector had never been regulated in the first place. Two key examples stand out.

First, the federal regulatory architecture before the crisis did not include any agency responsible for regulating the insurance subsector. Large firms classified as insurance companies, such as AIG, were therefore able to sidestep much of the regulation imposed on commercial and investment banks. Insurance regulation had been the domain of the states, not the federal government, since an 1869 Supreme Court decision declaring it so.²⁵¹ While states could monitor in-state branches of nationwide companies like AIG, any one state was ill-equipped to monitor and respond to cross-state activities of nationally-important firms.²⁵² Such regulation could have proven consequential in the case of AIG, which contributed to risk across the financial system by selling mass quantities of underpriced credit default swaps, giving mortgage-backed securities the false veil of default-free safety.²⁵³

Second, the pre-crisis financial regulatory structure did not clearly designate any one government entity as a regulator of systemic risk. Systemic risk in the financial sector is the threat that an economic trigger (e.g. a collapse of housing prices) could prompt a chain reaction of significant losses or failures for financial firms throughout the financial system, resulting in significantly decreased access to credit for the general population.²⁵⁴ Several such chain reactions have already been described, including the domino effect, contagion effect, and asset dumps.²⁵⁵ Prior to the crisis, no single regulatory body considered it a primary responsibility to predict and preempt such chain reactions or the economic triggers that set them off.

Rather than overseeing the entire financial system, most regulatory bodies were established to examine one type of financial actor (e.g. commercial banks) or product (e.g. stocks).²⁵⁶ But the buildup of

²⁴⁷ *Ibid.*, 4.

²⁴⁸ “Dodd and Countrywide,” *The Wall Street Journal*, October 10, 2008.

²⁴⁹ “Preliminary Staff Report: Securitization,” FCIC, 13.

²⁵⁰ Alex Dobuzinkis, “Factbox: Countrywide’s Subprime Lending,” *Reuters*, October 15, 2010.

²⁵¹ Viral V. Acharya, et al., “On the Financial Regulation of Insurance Companies,” NYU Stern School of Business, August 2009, 8.

²⁵² *Ibid.*, 9.

²⁵³ *Ibid.*, 1.

²⁵⁴ Steven L. Schwarcz, “Systemic Risk,” *The Georgetown Law Journal* 97:193 (2008), 204.

²⁵⁵ Martin F. Hellwig, “Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis,” *De Economist* 157:2 (2009), 182.

²⁵⁶ Hellwig, “Systemic Risk,” 199.

systemic risk during the housing bubble involved many different types of actors (e.g. investment banks like Lehman Brothers, insurance firms like AIG, etc.) and a diverse array of products (e.g. CDOs, CDSs, etc.). Foreseeing the systemically-important moral hazard of the securitization process, for example, would have required understanding the activities and incentives of the commercial banks that made mortgage loans, the investment banks that packaged them into collateralized debt obligations, and the insurance agencies that insured them with credit default swaps. With no governmental body taking such a preemptive birds-eye role, systemic risk only became apparent after materializing into systemic breakdown.

Lessons Learned: How to Prevent the Next Crisis? How to Reorient Finance?

The financial crisis of 2008 produced not just the worst recession in decades, but an unraveling of the assumptions that had undergirded economic theory and financial policies for many of those decades. In the aftermath of the crisis, policymakers and regulators have taken some steps to reform financial regulation, but debate continues as to whether further action is needed. Meanwhile, the crisis bolstered proposals to not just better discipline the financial sector, but to better direct its wealth toward societal needs. Though such proposals have yet to see large-scale implementation, several budding initiatives may signal broader policy shifts to come.

Reining in Wall Street: Dodd-Frank

From the late 1970s until 2008, federal policymakers gradually stripped away regulation of the financial sector as academics and regulators expressed increasing trust in the efficient markets hypothesis and the power of self-regulating market discipline. Buoyed by the assumption that financial actors behave rationally, top regulators such as former Fed Chairman Alan Greenspan expected that investors could be counted on to punish any excessive risk-taking by banks, allowing governments to relax regulations. This deregulatory consensus burst along with the housing bubble. The rise and crash of the bubble defied notions of market rationality, while investors and bankers' unquestioning thirst for high-risk subprime mortgage-backed securities eroded trust that finance could regulate itself. Calls to rein in Wall Street emanated from across the political spectrum.

The primary policy change arising out of this chorus for regulatory reform was the Dodd–Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank”), passed and signed into law in 2010. Co-sponsored by Representative Barney Frank and Senator Chris Dodd and signed by President Obama, the 2,319-page law marked the most sweeping financial regulation since the Great Depression.²⁵⁷ The massive legislation addresses many, though not all, of the finance-related causes of the crisis discussed above.

First, the law takes on the deteriorating lending standards that directly contributed to the boom in subprime mortgages, which intensified the rise and fall of the housing bubble. Dodd-Frank requires mortgage lenders to use basic criteria for a would-be borrower (e.g. credit history, income level, debt level, etc.) to determine that she or he “has a reasonable ability to repay” before extending a mortgage.²⁵⁸ The law also seeks to clamp down on predatory lending by explicitly prohibiting predatory elements of mortgage contracts, such as prepayment penalties.²⁵⁹ Dodd-Frank creates a new Consumer Financial Protection Bureau to enforce such borrower protections and to monitor loosely-regulated lenders notorious for predatory practices, such as payday loan shops.²⁶⁰

²⁵⁷ Baird Webel, “The Dodd-Frank Wall Street Reform and Consumer Protection Act: Issues and Summary,” Congressional Research Service, July 29, 2010, i.

²⁵⁸ Zachary B. Marquand, “Ability to Repay: Mortgage Lending Standards after Dodd Frank,” *North Carolina Banking Institute* 15 (2011), 295.

²⁵⁹ Webel, “The Dodd-Frank,” 13.

²⁶⁰ *Ibid.*, 11.

Second, Dodd-Frank addresses the financial sector's role in fueling the subprime boom by seeking to amend the chain of moral hazard, opacity, and overconfidence that prompted bankers and investors to collectively ignore risk and demand more and more mortgage-backed securities.

- The law aims to reduce the moral hazard evident in the securitization practices of investment banks. Dodd-Frank requires banks that package together mortgages to retain some of the risk that those mortgages will default, rather than merely passing off default-prone products for a profit. For securitized subprime mortgages, banks must hold at least 5% of the default risk for each MBS by keeping some of the higher-risk mortgages on their books.²⁶¹ While 5% is not a large share, Dodd-Frank proponents hope the risk retention requirement will be sufficient to incentivize securitizing banks to exercise more caution in deciding the quantity and quality of mortgages that they bundle and sell.
- Dodd-Frank also seeks to eliminate some of the factors that masked the risks inherent in the MBSs that banks created. The law calls for the regulation of previously unregulated credit default swaps, which gave investors the unfounded assurance that MBSs were insured against default. As stated above, AIG and other large insurance companies sold millions of credit default swaps, but discounted the possibility of system-wide defaults and thus failed to set aside nearly enough money to cover the ensuing wave of defunct MBSs. Dodd-Frank requires companies like AIG to post greater collateral for products like credit default swaps, making it more costly for the firms to heedlessly sell the CDS seal that contributed to investors' demand for subprime mortgages.²⁶²
- Similarly, Dodd-Frank imposes new rules on the large rating agencies that stamped the risky mortgage-backed securities with AAA ratings. Under the legislation, agencies like Moody's and Standard & Poor's are required to disclose their rating methodologies. The law also intends to limit the conflict of interest inherent in the fact that the agencies get paid by the banks that they rate. For example, the employees who sell the credit ratings are barred by Dodd-Frank from also determining the ratings.²⁶³ However, the law does not outright prohibit rating agencies from getting directly paid by the firms they rate.²⁶⁴
- Dodd-Frank also aims to reverse the escalation in leverage levels seen during the crisis. To curb the massive borrowing gambles that bankrupted Lehman Brothers and nearly sank others, Dodd-Frank imposes on large financial firms a stricter leverage limit than those allowed during the deregulatory 1990s.²⁶⁵

Third, Dodd-Frank takes several measures to target the deeper causes of the crisis. To address bank size and the too-big-to-fail mentality, the law takes two broad approaches:

- First, it imposes stricter regulation on those firms that have already achieved too-big-to-fail status. Dodd-Frank outlines a process to designate certain large and interconnected firms as "systemically important," including a stipulation that bank-holding companies (financial firms

²⁶¹ *Ibid.*, 8.

²⁶² *Ibid.*, 14.

²⁶³ John Ramsay, "Testimony Concerning Oversight of the Credit Rating Agencies Post-Dodd-Frank," U.S. Securities and Exchange Commission, July 27, 2011.

²⁶⁴ James Vickery, "The Dodd-Frank Act's Potential Effects on the Credit Rating Industry," Federal Reserve Bank of New York, February 15, 2012.

²⁶⁵ Webel, "The Dodd-Frank," 4.

that include deposit-holding banks) with assets over \$50 billion will automatically be designated as such.²⁶⁶ Thirty-nine bank-holding companies currently surpass this \$50 billion threshold, including many of the firms who received the most government assistance during the 2008 crisis: Wells Fargo, Citigroup, JP Morgan Chase, Bank of America, Morgan Stanley, Goldman Sachs, and others.²⁶⁷ Dodd-Frank instructs the Federal Reserve to develop and impose tighter regulations on these firms, such as lower leverage limits and greater disclosure requirements.²⁶⁸ In essence, this approach proposes to replace market discipline, weakened by the companies' now-explicit too-big-to-fail status, with government discipline.

- Second, the law includes a few measures to restrict further growth of the largest firms. In particular, Dodd-Frank prohibits any mergers that would result in a single bank or firm holding more than 10% of the liabilities (e.g. deposits and loans) of the entire financial sector.²⁶⁹ Only four financial firms are currently within range of this ceiling (each with over 5% but less than 10% of total sector-wide liabilities): Wells-Fargo, JP Morgan Chase, Citigroup, and Bank of America.²⁷⁰ While these firms are widely considered already too-big-to-fail, the liabilities concentration cap seeks to prevent a higher level of market concentration that would make the possibility of firm failure all the more ominous. However, the law does not seek to prevent medium-sized firms from growing large enough to cross the threshold into “too-big-to-fail” status. While such firms would presumably face tighter regulation upon being deemed “systemically important,” no provision in Dodd-Frank bars continuing growth in the number of too-big-to-fail banks.

Dodd-Frank also incorporates some provisions on executive compensation. The law does not place absolute maximum limits on salaries, bonuses, or stock options. It also does not directly address or seek to alter the performance-based pay structure for bank CEOs that has incentivized short-term gambles that carry long-term consequences. However, the legislation does institute a few changes in attempt to give shareholders greater say over executive compensation. In particular, the law requires major financial firms to allow a shareholder vote on executive compensation every three years, though the vote is non-binding.²⁷¹ Dodd-Frank also calls on the Securities and Exchange Commission to enact rules that would seek to ensure that the Board members who determine CEO payment do not have private interests (e.g. getting paid as a consultant to the company) that might incentivize them to favor high CEO pay regardless of shareholders' interests.²⁷²

Finally, the legislation seeks to fill in the regulatory gaps, noted above, that contributed to federal regulators' inability to spot and preempt the budding financial crisis before its 2008 climax:

²⁶⁶ “Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Enacted into Law on July 21, 2010,” Davis Polk, July 21, 2010, 7.

²⁶⁷ “Top 50,” NIC.

²⁶⁸ “Summary,” Davis Polk, 7.

²⁶⁹ *Dodd-Frank Wall Street Reform and Consumer Protection Act*, Public Law 111-203, *U.S. Statutes at Large* 124 (2010): 1633, Sec. 14(b).

²⁷⁰ “Study & Recommendations Regarding Concentration Limits on Large Financial Companies,” Financial Stability Oversight Council, January 2011, 8.

²⁷¹ “Summary,” Davis Polk, 86.

²⁷² Victor I. Lewkow, “Compensation Committees and Adviser Independence under Dodd-Frank,” The Harvard Law School Forum on Corporate Governance and Financial Regulation, July 16, 2012.

- Dodd-Frank creates the U.S.’s first regulatory body explicitly charged with monitoring systemic risk, the Financial Stability Oversight Council (FSOC). As a roundtable of representatives from other regulatory bodies, FSOC is tasked with “identifying risks to the financial stability of the United States that could arise from the material financial distress or failure, or ongoing activities, of large, interconnected bank holding companies or nonbank financial companies...”²⁷³ To fill its early-warning-system role, FSOC’s duty is to identify financial firms and activities, across all financial subsectors (e.g. banking, insurance, and securities), where failure could spur chain reactions leading to a system-wide credit crunch. (Such FSOC-designated firms stand in addition to bank-holding companies automatically designated as “systemically important” for having over \$50 billion in assets, as noted above.) FSOC then recommends to the Federal Reserve the heightened regulatory requirements that the Fed should employ to mitigate the systemic risk represented by these critical firms and activities. However, FSOC itself cannot make or enforce these regulatory rules.²⁷⁴
- Dodd-Frank also addresses the gap in federal regulation of insurance companies by creating a Federal Insurance Office. The powers and duties of this office include gathering information and providing non-binding advice to other regulators in attempt to identify gaps in insurance regulation. While the new office could not directly impose regulation on a nationally-important insurance company like AIG, it could recommend to FSOC that such a company be designated as “systemically important” and thus fall under tighter regulation from the Fed.²⁷⁵

While Dodd-Frank generally stipulates all of the above regulations, the law does not spell out the specific rules that determine exactly how broadly or deeply such regulations should be applied. For example, while the law states that FSOC-designated “systemically important” firms will face stricter regulations from the Fed, it does not specify exactly what those regulations should be.²⁷⁶ The law left nearly 400 such rules to be decided by the existing regulatory agencies. Two years after the approval of Dodd-Frank, only one-third of these rules have been finalized, which has already generated 8,843 pages of technical regulations.²⁷⁷

Several critiques have emerged from this extended process. First, those who see Dodd-Frank as overstepping the bounds of appropriate regulation argue that the massive new body of rules will create significant costs for financial firms, forcing them to increase interest rates and slow job creation while the economy remains in a slump.²⁷⁸ Second, some critics argue that the vast quantity of Dodd-Frank-prompted rules will be too complex, and perhaps too contradictory, to develop a coherent set of readily-implementable new regulations for Wall Street.²⁷⁹ Third, analysts note that the long lapse of rulemaking has allowed financial companies to water down the breadth and depth of the law’s regulations via intense lobbying of the regulatory bodies who are determining the rules.

²⁷³ *Dodd-Frank, U.S. Statutes*, 1394, Sec.112(a)(1)(A).

²⁷⁴ Webel, “The Dodd-Frank,” 4.

²⁷⁵ “Summary,” Davis Polk, 114.

²⁷⁶ Webel, “The Dodd-Frank,” 4.

²⁷⁷ “Dodd-Frank Progress Report,” Davis Polk, July 18, 2012, 4.

²⁷⁸ Jeb Hensarling, “Dodd-Frank’s Unhappy Anniversary,” *The Wall Street Journal*, July 25, 2012.

²⁷⁹ “The Dodd-Frank Act: Too Big Not to Fail,” *The Economist*, February 18, 2012.

Indeed, large banks and investment firms spent over \$150 million on lobbying (an unprecedented amount) and deployed 1,200 lobbyists during the Dodd-Frank rulemaking year of 2011.²⁸⁰ Many of the initially-conceived regulations have in fact been loosened via loopholes and exemptions. For example, Dodd-Frank's measures to launch regulation of credit default swaps, notorious for exacerbating the 2008 crisis, were undercut by a new rule in April 2012. In a seeming example of regulatory capture, federal regulators, under significant financial industry pressure, decided that new CDS regulations would not apply for any bank or firm selling less than \$8 billion in CDSs per year--80 times the \$100 million threshold that regulators initially proposed. This "exception" freed about 85% of financial companies from CDS oversight.²⁸¹

Even those regulations that escape such a watering-down process are still at risk of being challenged and curtailed under U.S. trade commitments. Throughout the 1990s, the U.S. pushed other members of the World Trade Organization to agree to expansive liberalization of financial services, meaning that each member country would grant unfettered access for foreign firms to provide banking, investment, and insurance services to its citizens. These signed agreements committed the U.S. to a "standstill" on domestic financial regulation, meaning that the U.S. government vowed to refrain from adding to the limited regulations that were on the books in the deregulatory 1990s.²⁸² Dodd-Frank would appear to contravene this blanket moratorium on new regulations. Even more pointedly, U.S. trade commitments under the WTO prohibit limits on bank size (e.g. the Dodd-Frank rule that no one bank can possess 10% of sector-wide liabilities) and limits on the sale of any particular financial service (e.g. possible Dodd-Frank rules to limit the number of credit default swaps a given firm can sell).²⁸³

Implementation of such Dodd-Frank rules thus risks exposing the U.S. to trade suits brought by other WTO member countries. If a WTO panel were to rule against a U.S. regulation in such a suit, the U.S. would need to scale back Dodd-Frank regulations or risk facing indefinite WTO-authorized trade sanctions. Some foreign financial firms have already warned that Dodd-Frank rules contravene trade law, and some U.S. financial sector lobbyists have used the possible threat of a trade suit to bolster their campaign for weaker regulations in Dodd-Frank.²⁸⁴ An alternative response to the trade suit threat, rather than freezing reregulation efforts, would be to alter the U.S.'s trade commitments such that they do not impinge on the domestic policy space needed for regulatory reform.

While some Dodd-Frank rules may be weakened by trade suits or intensive financial industry lobbying, critics have noted that other needed rules were omitted entirely in the legislation. For example, even before being watered down, Dodd-Frank contained no provision to limit the growth of banks into too-big-to-fail status, no measure to definitively end rating agencies' conflict of interest in rating those who pay them, and no attempt to alter CEO compensation structures that reward short-term gambles. Though the law tackled many of the manifold causes of the financial crisis, these gaps are not insignificant.

²⁸⁰ Gary Rivlin, "Wells Fargo, JPMorgan, Goldman Sachs Fight Consumer-Protection Law," *The Daily Beast*, January 30, 2012.

²⁸¹ Ben Protess, "Regulators to Ease a Rule on Derivatives Dealers," *The New York Times*, April 17, 2012.

²⁸² *Understanding on Commitments in Financial Services*, World Trade Organization, Article A.

²⁸³ See *General Agreement on Trade in Services*, World Trade Organization, Article XVI(2)(b). For more analysis, see Todd Tucker, "How to Reform WTO and FTA Rules to Confront Too-Big-to-Fail Banks," Public Citizen memo, May 10, 2011.

²⁸⁴ Gretchen Morgenson, "Barriers to Change, From Wall St. and Geneva," *The New York Times*, March 17, 2012.

At the end of the day, does Dodd-Frank sufficiently address the roots of the 2008 financial crisis, thereby reducing the chance of another recession-spurring financial meltdown? It depends on whom you ask. Scholars on the subject are divided, some arguing that the law's key provisions move in the right direction despite some gaps (e.g. Yale economist and housing bubble expert Robert Shiller),²⁸⁵ some questioning whether governmental regulators can effectively foresee and counteract future crises (e.g. Columbia law professor John Coffee Jr.),²⁸⁶ and many waiting to opine either way until the law's concrete rules are finalized.

The U.S. public, meanwhile, has been decidedly pro-reform, but ambivalent about Dodd-Frank itself. Even before the bill was signed, many in the U.S. were skeptical that the legislation would effectively fix what was broken on Wall Street. In a Bloomberg poll just nine days before the bill became law, 44% of respondents said that they were "not confident" that the legislation would prevent or mitigate a future financial crisis, while an additional 35% were "just somewhat confident." Why such doubt? The same poll revealed that nearly half of the U.S. public (47%) believed the legislation would do more to protect "the financial industry" than "consumers," while only 38% believed consumers would be most protected. Meanwhile, a plurality of respondents saw a need for "more regulation."²⁸⁷

Two years after Dodd-Frank's passage, polls and headlines indicated that people favored Wall Street reform more than ever, but had mixed views on the reform law. In a July 2012 Lake Research Partners poll, after hearing arguments for and against tougher regulation, 68% of respondents favored "strong financial reform," while only 28% saw financial regulation as a "job-killer." After hearing some of the general provisions envisioned in Dodd-Frank, 73% expressed support for the law.²⁸⁸ However, in an April poll from American Banker, 57% of respondents said that Dodd-Frank would not end too-big-to-fail, while a mere 10% believed the law would be effective in this regard.²⁸⁹ Meanwhile, headlines about the lobbying-induced watering-down of Dodd-Frank appeared in publications from the conservative Daily Beast,²⁹⁰ to the liberal Huffington Post,²⁹¹ to centrist outlets like Bloomberg.²⁹² In sum, while the U.S. public overwhelmingly favors tough financial regulation in the wake of the financial crisis, they remain unsure as to whether Dodd-Frank will provide it.

Harnessing Wall Street: Beyond Dodd-Frank

Amidst fears that Dodd-Frank does not go far enough in addressing structural flaws of the U.S. financial system, scholars and activists have advanced numerous proposals for more systemic solutions to deep problems exposed by the crisis. Many of these proposals start by asking a fundamental question: what is the societal purpose of finance?

²⁸⁵ William Alden, "Shiller: Dodd-Frank Does Not Solve Too Big to Fail," *The Huffington Post*, October 26, 2010.

²⁸⁶ John C. Coffee, Jr., "Systemic Risk after Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies beyond Oversight," *Columbia Law Review* 111:795 (2011).

²⁸⁷ "Bloomberg National Poll," Selzer & Company, July 9-12, 2010.

²⁸⁸ Celinda Lake, David Mermin, and Jeff Klinger, "Two Year Anniversary of the Wall Street Reform Law, Survey Findings on Behalf of AARP, Americans for Financial Reform, the Center for Responsible Lending and the National Council of La Raza," Lake Research Partners, July 18, 2012.

²⁸⁹ "Poll Results: Do Regulators Really Have the Power to Let Banks Fail?," *American Banker*, April 5, 2012.

²⁹⁰ Rivlin, "Wells Fargo."

²⁹¹ Alexander Eichler, "Dodd-Frank Won't Stop 'Too Big to Fail' Banks, Public Poll Says," *The Huffington Post*, April 6, 2012.

²⁹² William D. Cohan, "Does Congress Want another Economic Meltdown?," *Bloomberg View*, June 10, 2012.

The textbook answer, as stated earlier, is to provide access to credit for people to invest in their productive ambitions and ideas. Finance fills this function by acting as an intermediary between lenders, who gain interest income by making a loan, and borrowers, who can then make investments that would not have been possible without the borrowed money. Ideally, this intermediation enables as many productive investments as possible while minimizing risks. Key to this definition is the idea that finance should be at the service of the real economy—the portion of the economy that actually produces goods and services for human consumption, rather than simply producing more financial wealth.

Over the last several decades, growth of the financial sector has been vastly outstripping that of the real sector. In 1980, all financial assets in the U.S. amounted to four times all the real goods and services produced in the economy. By 2007, this financial wealth outnumbered real wealth by ten to one.²⁹³ The ballooning of finance stems from an array of factors: decades of persistent deregulation, a shift from bank-held savings to stock market investments, credit booms, and other causes.

Today, some analysts see the enormous financial sector as too often feeding off itself and too rarely promoting increases in real wealth. It would be difficult, for example, to frame AIG's selling of billions of dollars' worth of credit default swaps as a benefit to the real economy. Rather, the real economy was benefitting AIG, since a rise in real demand for houses initially spurred the housing price increase that fed the profitable CDS surge. That surge then ironically fueled the crisis that tanked the real economy. Reflecting on such bitter ironies, Joseph Stiglitz, a Nobel laureate in economics, concludes, "Finance is a means to an end, not an end in itself. It is supposed to serve the interests of the rest of society, not the other way around."²⁹⁴

Based on this assessment of the public purpose of finance, many analysts of the financial crisis ask a different question than Dodd-Frank. While the law sought to address how to limit societal harm caused by the financial industry, these economists, organizations, and movements are asking how to redirect finance to increase societal benefit. Out of the numerous proposals that have emerged, three have received a particularly high degree of academic debate and public support.

Resizing the Banks

The crisis produced wide-ranging calls for fundamental change in the nature of banking in the U.S. Since the crisis, the largest banks have only grown larger, thanks in part to the government's response to the crisis—in the government-facilitated mergers of 2008, several of the largest banks acquired the assets of troubled banks, expanding their behemoth balance sheets.²⁹⁵ Such outcomes have reinvigorated proposals to reduce soaring bank size.

Perhaps the most ironic endorsement of the resize-the-banks goal came from Sandy Weill, former CEO of Citigroup, the financial behemoth that Weill co-created in 1998 via the largest financial merger in U.S. history, which made Citigroup the largest financial firm in the world.²⁹⁶ In June 2012, Weill said in an interview, "What we should probably do is go and split up investment banking from

²⁹³ Crotty, "Structural Causes," 575.

²⁹⁴ Joseph E. Stiglitz, "Taming Finance in an Age of Austerity," *Project Syndicate*, July 8, 2010.

²⁹⁵ David Cho, "Banks 'Too Big to Fail' Have Grown Even Bigger," *The Washington Post*, August 28, 2009.

²⁹⁶ Martin, "Citicorp and Travelers."

banking, have banks be deposit takers, have banks make commercial loans and real estate loans, have banks do something that's not going to risk the taxpayer dollars, that's not too big to fail."²⁹⁷

In essence, Weill advocated for the reinstatement of Glass-Steagall, the very law that he had pushed to repeal in 1999 so as to permit the creation of Citigroup. For decades, Glass-Steagall had prohibited deposit-holding commercial banks from engaging in riskier investment bank activities (e.g. securities, derivatives, etc.), as explained above. Divorcing investment and commercial banking once again would mean splitting apart the U.S.'s largest financial firms (including Citigroup), resulting in a significantly diminished average bank size.

While Weil's rationale for this prescription was to prevent banks from becoming too big to fail, other advocates of reducing bank size (whether via Glass-Steagall reinstatement, explicit legislation of size limits, or other means) note that small banks are also better at fulfilling the societal function of finance. Studies have found that small banks provide the largest share of funding to small businesses (compared to medium or big banks), despite having the lowest share of overall bank assets. In the depths of 2009's recession, small banks accounted for only 11% of banking sector assets but provided 34% of small business loans, while the 20 largest U.S. banks held 57% of bank assets but constituted only 28% of small business lending.²⁹⁸ Small business lending is critical to a healthy real economy, since small businesses create the vast majority of new jobs—between 65% and 90% of net new jobs in the U.S. have been created by small businesses since the early 1990s.²⁹⁹

Why do large banks not lend more of their massive wealth to small businesses? Analysts point out that large banks, typically located far away from a non-chain business, tend to employ complex computer models that determine that loans to the unknown small business would be too risky. By contrast, small community banks, typically located in close proximity to the small business, can qualitatively assess its ability to repay, and thus are more apt to lend.³⁰⁰

If large banks tend to avoid lending to the economy's biggest job creators, then advocates argue that policies should be enacted to support small banks, reverse big bank conglomeration, and thereby boost credit access for those who create real economic growth. Such has been the guiding rationale behind the Move Your Money campaign, a broad-based effort to encourage people to close their accounts with big banks and open new accounts with small, local community banks and credit unions. From 2010 to 2011, depositors closed an estimated four million big bank accounts, replacing them with accounts in small banks.³⁰¹ In 2011, the campaign got a boost from the Occupy movement and new big-bank fees, prompting a surge in bank switches that brought a \$4.5 billion increase in credit union savings accounts in just five weeks time.³⁰²

²⁹⁷ "Wall Street Legend Sandy Weill: Break Up the Big Banks," *CNBC.com*, July 25, 2012.

²⁹⁸ Stacy Mitchell, "Why Small Banks Make More Small Business Lending Loans," Institute for Local Self-Reliance, February 10, 2010.

²⁹⁹ Brian Headd, "An Analysis of Small Business and Jobs," Small Business Administration, March 2010, 10.

³⁰⁰ Mitchell, "Why Small Banks."

³⁰¹ Sara Ackerman, "Over 4 Million Move their Accounts from Wall Street Banks in 2010," *The Huffington Post*, March 25, 2011.

³⁰² "Hundreds of Thousands of Consumers, Billions of \$\$ Move to Credit Unions," Credit Union National Association, November 3, 2011.

Restructuring the Banks

As financial reform advocates tout the real economy benefits of smaller bank size, many also highlight concrete advantages of alternative bank ownership. While most banks in the U.S. are for-profit, private entities owned by shareholders, two other models have gained increasing interest in the wake of the financial crisis: credit-unions and public banks. Advocates of both claim that they contribute more to the real economy than the traditional model does.

Credit unions are not-for-profit institutions owned by members—typically the employees of a given institution or residents of a nearby community who choose to deposit money in the credit union. The U.S. currently has about 7,000 credit unions that serve over 93 million members.³⁰³ Without needing to carve out the largest possible profit margin for shareholders, not-for-profit credit unions are able on average to grant members lower interest rates on loans, higher interest rates on savings accounts, and significantly fewer fees.³⁰⁴

In addition, the decision-making structure of credit unions tends to incentivize long-term stability over short-term gambles. While most private banks are led by CEOs and Boards of Directors who are paid based on short-term performance and over whom shareholders exhibit little control, credit union decisions are made by an uncompensated Board of Directors that is directly and democratically elected by members.³⁰⁵ The fact that credit unions uniquely grant such institutional control to the depositors themselves may explain why they tended to engage in less risky lending practices than banks in the advent of the financial crisis. As a result of their prudence, credit unions' loan delinquency rates were less than half those seen at banks from 2008 to 2011, allowing the credit unions to *expand* overall lending by 7%, while banks *contracted* their lending by 7%.³⁰⁶

Rising interest in credit unions' commitment to affordable lending has not ebbed, even after the dissipation of the Occupy movement. From September 2011 through June 2012, credit unions added 1.7 million new members in just nine months, growing at three times the rate seen previously.³⁰⁷ As credit unions' membership grows, so does their capacity to dole out loans to local businesses and consumers at preferential rates, with some reporting a doubling of their lending activities in 2012.³⁰⁸

As credit unions become increasingly popular, publicly-owned banks, another alternative structure, remain a tiny exception to a nearly categorically private U.S. banking system. North Dakota currently has the only state-owned bank in the country. That exception has been making headlines in the wake of the financial crisis for yielding unique public benefits. By virtue of being publicly-owned, the state bank is legally obliged to direct its lending activities expressly toward public interests decided by

³⁰³ "PACA Facts Data: Federally Insured Credit Unions," National Credit Union Administration, June 2012.

³⁰⁴ "Comparison of Average Savings and Loan Rates at Credit Unions (CUs) and Banks," National Credit Union Administration, March 2012.

³⁰⁵ "Basic Information about Credit Unions," Credit Union National Association, accessed November 23, 2012, <http://www.cuna.org/press/basicinfo.html>.

³⁰⁶ Mike Schenk, "Commercial Banks and Credit Unions: Facts, Fallacies, and Recent Trends," Credit Union National Association, third quarter 2011, 16-18.

³⁰⁷ Author's calculations, based on "5300 Call Report Quarterly Summary Reports," National Credit Union Administration, updated through June 2012.

³⁰⁸ Karina Ioffe, "Nearly Year after Occupy, Community Banks, Credit Unions Report Steady Growth," *Healdsburg Patch*, July 16, 2012.

the state's electorate, not the interests defined by CEOs or shareholders. The majority of the Bank of North Dakota's deposits come from the state government, given a state law requiring that most state funds be deposited in the bank.³⁰⁹

With a mission "to promote agriculture, commerce, and industry in North Dakota," the state bank grants most of its loans not to individuals, but as "partnership loans" for North Dakota's community banks to dole out to job-creating borrowers.³¹⁰ Driven by this decades-old statutory mandate rather than the quarter-to-quarter business plans of CEOs seeking upticks in share value, the state bank currently funnels over \$1 billion per year to local banks to augment their lending to small businesses and farmers.³¹¹

Thanks to the Bank of North Dakota's supplementary lending and other assistance for the state's community banks, North Dakota did not see a single bank failure throughout the financial crisis,³¹² and the state currently boasts four times as many banks per capita as the U.S. overall.³¹³ Over 75% of those financial institutions are small or medium-sized banks, which disproportionately finance job-creating small businesses, while only 30% of banks fall into this category nationwide.

Even among small banks, those found in North Dakota, most of which channel the state bank's partnership loans, are inordinately supportive of small businesses. Small banks in North Dakota lend 50% more per capita to small businesses than the amount seen in neighboring South Dakota, and 434% more than the per capita amount coming from small banks nationwide.³¹⁴ In addition to funneling business-destined funds through local banks, the public bank also directly runs loan and scholarship programs for low-income students, revolving funds for community water projects, and financing initiatives for the developmentally disabled.³¹⁵

Many analysts have credited the expansive, countercyclical, and small business-targeted lending of the Bank of North Dakota for the state's exceptionally low unemployment amidst the recession. The state has enjoyed the lowest unemployment in the country every year since 2008, boasting a rate of 3.0% or lower from March through August in 2012 (compared to a national rate consistently above 8.0%). While some of the state's remarkable success is likely due to its oil wealth, other oil-rich states such as Montana and Alaska have had consistently higher unemployment than North Dakota, spurring increasing interest in not just the state's anomalous success, but its anomalous public bank.³¹⁶

While lending for the public interest, the Bank of North Dakota also earns profit for the same purpose. The bank has seen considerable financial success over the last twenty years, with net income more than quadrupling between 1990 and 2010. Indeed, the public bank has performed better financially than the majority of banks in the country, posting a return on assets in 2010 that was 239%

³⁰⁹ "BND FAQs," Bank of North Dakota, accessed November 23, 2012, http://banknd.nd.gov/about_BND/pdfs/faqs.pdf, 2.

³¹⁰ *Ibid.*, 1.

³¹¹ "Bank of North Dakota," Institute for Local Self-Reliance, May 5, 2011.

³¹² Jason Judd and Heather McGhee, "Banking on America: How Main Street Partnership Banks Can Improve Local Economies," Demos, April 2011, 1.

³¹³ Mitchell, "Why Small Banks."

³¹⁴ "Bank of North Dakota," ILSR.

³¹⁵ "BND FAQs," BND, 7-10.

³¹⁶ "Local Area Unemployment Statistics: Statewide," Bureau of Labor Statistics, updated November 23, 2012.

above the median U.S. bank.³¹⁷ After using some of the surplus revenues to expand its lending portfolio, the state bank does something that no other U.S. bank does—it sends the remaining profits back to the state’s coffers.³¹⁸ Today the bank contributes about \$30 million each year to the state, helping to fund its democratically-determined spending programs.³¹⁹

Seeing the job-creating and revenue-earning track record of the Bank of North Dakota, other states are now beginning to pursue similar models. Currently 20 states have legislation or official initiatives to create public state banks or related banking structures. Many financial reform advocates hope that in time the gains offered to the real economy by the public state bank model will become not the exception, but the rule.³²⁰

Taxing the Banks

Another longstanding proposal to push the financial sector to help rather than hinder the real economy is to place a tax on certain Wall Street transactions. One of the primary purposes of such a financial transaction tax would be to control speculation. Economists have long expressed concern that speculative trading can hurt the real economy by contributing to damaging price bubbles and destabilizing price volatility.

John Maynard Keynes, the father of modern macroeconomics, first proposed a financial transaction tax in 1936 as a means of curbing short-term stock market speculation, which he saw as contributing to price volatility for the companies that issued the stock. Keynes quipped, “Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation.”³²¹ Decades later, economist and Nobel laureate James Tobin proposed a similar tax on currency transactions, widely known as the “Tobin tax,” after observing that speculative currency sales were contributing to unprecedented swings in exchange rates.³²²

The rise and fall of the housing bubble has reignited concerns over the damaging real-world impact of financial speculation. The dramatic collapse of speculation-fed MBS and housing values, and the wave of foreclosures and unemployment that followed, prompted many analysts and activists to repeat Keynes’ call to slow down the “whirlpool of speculation.”

That whirlpool has grown much larger and faster since the days of Keynes. In 1990, financial transactions throughout the world (the financial economy) amounted to over 15 times the value of all goods and services produced globally (the real economy). By 2009, financial transactions outweighed the real economy by more than 73 to 1, an increase led primarily by rapid growth in high-frequency

³¹⁷ “Bank of North Dakota,” ILSR.

³¹⁸ “BND FAQs,” BND, 3.

³¹⁹ Judd and McGhee, “Banking on America,” 7.

³²⁰ “State Activity, Resource and Contact Info,” Public Banking Institute, accessed November 23, 2012, <http://publicbankinginstitute.org/state-info>.

³²¹ John Maynard Keynes, *The General Theory of Employment, Interest, and Money* (Cambridge, UK: Macmillan Cambridge University Press, 1936), ch. 12(VI).

³²² Stephan Schulmeister, “A General Financial Transaction Tax: A Short Cut of the Pros, the Cons and a Proposal,” Austria Institute of Economic Research, WIFO Working Paper No. 344, 2009, 2.

trading, in which speculators buy and then quickly sell large quantities of assets after a slight price increase.³²³

How might a financial transaction tax slow this surge in speculation? If speculators had to pay a minute fee on every transaction (e.g. 0.1% of the value of the transaction), it would undercut the profits that could be earned from engaging in a large number of very short-lived transactions, while having an insignificant effect on longer-term transactions. By forcing speculators to engage in fewer and longer-lived transactions, the tax would compel them to consider long-term price movements of the underlying asset, rather than short-lived demand created on Wall Street. Slower and more reality-based trading would mean fewer speculative bubbles, reducing the frequency of extreme booms and busts in the real economy.

It remains an open question whether a financial transaction tax would have had such a dampening effect on the mortgage-backed security bubble in particular. Some economists argue that while MBS demand was significantly speculative, MBSs were not actually traded in high frequency (investors typically held onto MBSs rather than selling them soon after buying). As such, they suggest that a financial transaction tax would not have stemmed the rising MBS demand and price.³²⁴

Even if the tax would not have proven effective for MBS trading, proponents point to other damaging bubbles fueled by high-frequency speculative trading, where a financial transaction tax could have mitigated unrealistic price swings. Examples include the global commodity price bubble that immediately followed the housing bubble. Amidst the financial collapse of 2008, speculative investors pulled out of mortgage-based assets and searched for new outlets for lucrative, short-term trading. Observing that the prices of food and oil commodities were rising, speculators began rapidly buying and selling commodity-based derivatives. The surge of high-frequency trading accelerated the increase in commodity prices, causing them to rise above what real supply and demand would predict.³²⁵ As speculation exacerbated other inflationary factors, international food prices climbed to unprecedented heights in 2008, sparking a wave of food riots in developing countries and pushing 40 million people into hunger.³²⁶ A financial transaction tax might have mitigated this tragedy by “throwing sand in the wheels” of Wall Street’s high-frequency speculation.³²⁷

Beyond tamping down such destructive price swings, a financial transaction tax could also produce constructive gains for the real economy by generating significant revenue. Many critics of speculation argue that, price bubbles aside, the trillions of dollars spent each year on speculative trades constitute a societal waste, serving at best the private interests of few investors rather than the real-economy interests of the vast majority.

To what extent would the financial transaction tax alter this balance? One study estimates that if a financial transaction tax of less than half of a percentage point were applied to all major U.S.-based financial transactions (stocks, bonds, currency, and derivatives), it would generate between \$190 and

³²³ *Ibid.*, 5-12.

³²⁴ Tim Worstall, “The Stupidity of the Robin Hood Tax Reaches America,” *Forbes*, June 20, 2012.

³²⁵ David Bicchetti and Nicolas Maystre, “The Synchronized and Long-lasting Structural Change on Commodity Markets: Evidence from High Frequency Data,” March 20, 2012, 28.

³²⁶ Olivier De Schutter, “Food Commodities Speculation and Food Price Crises,” Briefing Note 2, September 2010, 2.

³²⁷ This phrase comes from James Tobin’s 1978 proposal for a currency transaction tax: James Tobin, “A Proposal for International Monetary Reform,” *Eastern Economic Journal* 4:3/4 (July-October, 1978), 154.

\$380 billion in revenue per year for the U.S. (depending on the degree to which the tax could reduce trading volumes).³²⁸ That amount is equivalent to two to five years worth of federal financing for the U.S. public education system.³²⁹ If a 1% tax were imposed globally on all financial transactions, studies estimate that the annual revenue would amount to 1.0-2.4% of global gross domestic product,³³⁰ or between 0.7 and 1.7 trillion dollars each year.³³¹

Advocates of a financial transaction tax, often calling it a “Robin Hood tax,” have advanced a menu of proposals for how this revenue could be appropriately spent: redistributing income to the poor to reverse the inequality that contributed to the financial crisis, reducing the government deficits that grew in the fallout of the crisis, financing global responses to climate change, and/or tackling international epidemics such as HIV/AIDS.³³²

Since the crisis, support for a financial transaction tax has extended beyond circles of academics and activists, becoming an increasingly prominent policy proposal in numerous governments. Indeed, 28 countries at the beginning of 2012 were already implementing financial transaction taxes of 0.1% or more.³³³ The European Commission has proposed that a financial transaction tax be levied by 2014 on all stock, bond, and derivative trading conducted in the European Union.³³⁴ Calls have also increased for a financial transaction tax in the United States, the epicenter of the financial crisis, with supporters including Microsoft founder Bill Gates, the editorial boards of major newspapers including the *New York Times*, renowned investor Warren Buffet, and federal regulators ranging from former Federal Reserve Chairman Paul Volcker to former Treasury Secretary Larry Summers.³³⁵

³²⁸ Expressed in 2012 dollars. Dean Baker, Robert Pollin, Travis McArthur, and Matt Sherman, “The Potential Revenue from Financial Transaction Taxes,” Center for Economic and Policy Research and Political Economy Research Institute, December 2009.

³²⁹ Author’s calculations, based on “Budget of the U.S. Government, Fiscal Year 2013,” Office of Management and Budget, February 13, 2012, 100.

³³⁰ Schulmeister, “A General Financial Transaction Tax,” 13.

³³¹ “GDP,” World dataBank, World Bank, updated 2011.

³³² “The Big Idea,” The Robin Hood Tax, accessed November 23, 2012, <http://www.robinhoodtax.org/how-it-works>.

³³³ David Hillman and Christina Ashford, “Financial Transaction Tax: Myth-Busting,” Stamp Out Poverty, March 2012, 9.

³³⁴ “Financial Transaction Tax: Making the Financial Sector Pay Its Fair Share,” European Commission press release, September 28, 2011.

³³⁵ “Statements of Support for a Financial Transaction Tax (FTT),” Center for Economic and Policy Research, updated June 2012.

Conclusion: A Paradigm Shift?

Paradigm shifts are rare. Belief systems and traditional ways of operating tend to go relatively unchanged for decades, until a crisis breaks the inertia. In such a moment, society faces a unique opportunity to rethink guiding theories and to question underlying structures. The financial crisis of the early 21st century has provided just such a chance. Will the U.S. seize it? At least four fundamental questions should be asked.

Will economists supplant the notion of rational, efficient markets with a more realistic alternative?

Some economists have responded to the crisis with refreshing contrition for perpetuating false ideas, and curiosity for how to replace them. Daron Acemoglu, an MIT economics professor rated as one of the ten most influential economists in the world,³³⁶ has described the crisis as “an embarrassment for economic theory.”³³⁷ He then calls on his colleagues to reflect:

...it is a critical opportunity for many in the economics profession—unfortunately, myself included—to be disabused of certain notions that we should not have accepted in the first place. It is an opportunity for us to step back and consider which, among the conclusions to [which] our theoretical and empirical investigations led us, remain untarnished by recent events—and to figure out what intellectual errors we have made, and what lessons these errors offer.³³⁸

One month after Acemoglu published those words in 2009, Robert Lucas, a University of Chicago economist who rates just below Acemoglu as one of the world’s ten most influential economists,³³⁹ penned an article in *The Economist* called “In Defence of the Dismal Science.” Lucas argues that economists could not have predicted the 2008 downfall (but does not address their capacity to identify the unprecedented housing price bubble), and then defends the “accuracy” of the battered efficient markets hypothesis.³⁴⁰ It remains to be seen whether the economics profession as a whole will take the advice of Acemoglu and treat the crisis as an opportunity to reevaluate shaken theories, or follow the lead of Lucas and stand steadfastly by pre-crisis notions of rational actors and efficient markets.

This decision between reflection and reiteration also faces those who teach economics in college classrooms throughout the country. A few professors have begun to reexamine textbooks and redesign lesson plans. Alan Blinder, an economics textbook author and professor at Princeton, wrote in 2010, “Today’s textbooks and course syllabi were developed over decades that never witnessed anything remotely close to the events of 2007-2009. So many of the basic pedagogical decisions made over the

³³⁶ “Top 10% Authors, as of October 2012,” IDEAS, RePEc, updated October, 2012, <http://ideas.repec.org/top/top.person.all.html>.

³³⁷ Daron Acemoglu, “The Crisis of 2008: Lessons for and from Economics,” *Critical Review: A Journal of Politics and Society* 21:2-3 (2009), 185.

³³⁸ *Ibid.*, 186.

³³⁹ “Top 10%,” IDEAS.

³⁴⁰ Robert Lucas, “In Defence of the Dismal Science,” *The Economist*, August 6, 2009.

years—either tacitly or explicitly—need to be reconsidered.”³⁴¹ He then heeded his own advice by outlining concrete changes he planned to make to his own course, adding concepts such as asset bubbles and moral hazard.³⁴²

Such pedagogical reform has not been the norm thus far. After surveying an array of prominent economics professors, the *New York Times* concluded in 2009, “mathematical models and hostility to government regulation still reign in most economics departments...[and] the belief that people make rational economic decisions and the market automatically adjusts to respond to them still prevails.”³⁴³ When asked, most economics professors stated that they knew of no plans to alter these central tenets of their curriculum. Others noted that mainstream academia is particularly slow to respond to shifts in reality, and that curricular change may still come, even if slowly.³⁴⁴

Will policymakers and regulators find creative ways to align private interests with the public good?

After watching the U.S. economy sink into the Great Depression following a Wall-Street-sparked financial crash, policymakers in 1933 passed the law known as Glass-Steagall. The sweeping legislation established the Federal Deposit Insurance Corporation and separated commercial banks from investment banks so that the sort of gambles that led to the collapse could not be repeated with depositors’ money.³⁴⁵ After the Act’s passage, the rampant bank failures of the depression dropped tremendously and then virtually disappeared for the subsequent four decades, only rising again in the 1980s with the slow erosion of the law’s provisions.³⁴⁶ Accordingly, Glass Steagall’s passage is widely seen as a watershed moment in financial regulation. Several decades from now, will the 2010 passage of Dodd-Frank be seen the same way?

As described above, both scholarly and public opinions are mixed on the potential represented by Dodd-Frank. While some criticize the law for creating too much regulatory red tape for Wall Street, a more common critique is that it does not go far enough to alter Wall Street’s casino-like behavior (e.g. no regulation of credit default swaps for most firms, no measure to prevent banks from acquiring too-big-to-fail status, etc.).³⁴⁷ With the largest banks spending over \$150 million each year since Dodd-Frank’s passage to lobby for their version of the law’s final rules,³⁴⁸ some analysts doubt that Dodd-Frank will ultimately prove as binding or influential as Glass-Steagall.

If Dodd-Frank is unlikely to usher in vast reductions in the moral hazard, conflicts of interest, and opacity seen on Wall Street, it remains an open question whether more effectual policymaking might emerge from the fallout of the financial crisis. It is possible that Dodd-Frank exhausted the

³⁴¹ Alan S. Blinder, “Teaching Macro Principles *after* the Financial Crisis,” Center for Economic Policy Studies of Princeton University, CEPS Working Paper No. 207, April 2010, 1.

³⁴² *Ibid.*, 4-6.

³⁴³ Cohen, “Ivory Tower.”

³⁴⁴ *Ibid.*

³⁴⁵ “Glass-Steagall Act (1933),” *The New York Times*, accessed November 23, 2012,

http://topics.nytimes.com/topics/reference/timestopics/subjects/g/glass_steagall_act_1933/index.html.

³⁴⁶ While causality cannot be assumed from this history, the correlation strongly suggests that Glass-Steagall regulations played a significant role in keeping bank failures in check. Moss, “Bank Failures.”

³⁴⁷ “Bloomberg National Poll,” Selzer & Company.

³⁴⁸ Jennifer Liberto, “Wall Street Pays Big to Influence Washington,” *CNN Money*, January 31, 2012.

political capital provided by the crisis and required for financial regulation, making it unlikely that further regulatory attempts will survive Congress. It is also plausible that Dodd-Frank is just an initial salvo, and that subsequent reforms will someday fill Dodd-Frank's gaps with more robust measures to redirect Wall Street's incentives.

The 2012 federal elections may have made the latter scenario more feasible. In the headline-grabbing race for Massachusetts' Senate seat, Elizabeth Warren, an outspoken Wall Street critic and champion of financial reform, upset incumbent Scott Brown to claim victory. The architect and initial head of the Dodd-Frank-created Consumer Financial Protection Bureau, Warren has frequently lambasted attempts to water down the financial reform law, while pushing for deep and binding rules to curb the power of the largest financial firms. Just two days before her election, she reiterated her support for the creation of a modern version of Glass-Steagall.³⁴⁹ With Warren now in the Senate, and possibly en route to the chamber's powerful Banking Committee,³⁵⁰ financial reform advocates have expressed hope that the crisis-endowed opportunity to rein in Wall Street did not end with Dodd-Frank.

Will activists succeed in their push to change the unequal political and economic structures that laid the groundwork for the crisis?

For three recessionary and foreclosure-filled years following the government's unprecedented bailout of Wall Street firms like AIG, no nationwide, popular movement emerged to contest the government's handling of the crisis. But public acquiescence ended with the birth of the Occupy movement in September 2011. What began as a tent occupation of a small park near Wall Street ballooned in just one month into occupations in over 1,000 U.S. cities.³⁵¹ Soon thereafter, the national movement was grabbing headlines of most major news outlets while spreading to most major cities in the world. While the movement's messages and goals were as complex and diverse as the causes and consequences of the crisis, a chorus of concern about historically high inequality emerged as a unifying cause. Under the rally cry of "We are the 99%," occupiers denounced the disparity that was not only apparent in the wake of the crisis, but, as mentioned, likely contributed to it. The movement also drew increased attention to regulatory capture, blaming financial deregulation on an unholy alliance between Wall Street and Washington.³⁵²

Occupy was quickly successful in injecting both issues into the public debate, as opinion polls showed increasing support for the movement. From September 2011 to October 2011, mentions of the word "inequality" in mainstream media more than doubled, while mentions of "greed" quadrupled.³⁵³ During October's swelling Occupy popularity, policymakers across the political spectrum felt compelled to address rising disparity. Even Republican House Majority Leader Eric Cantor announced, just ten days after saying he was "increasingly concerned about the growing mobs occupying Wall Street,"³⁵⁴ that he would give an unprecedented speech on the problem of income inequality.³⁵⁵

³⁴⁹ Bonnie Kavoussi, "Elizabeth Warren Suggests Breaking Up the Banks by Reinstating Glass-Steagall," *The Huffington Post*, November 5, 2012.

³⁵⁰ Sarah Lynch, "Wall Street Gadfly Warren Stands Good Chance of Senate Banking Seat," *Reuters*, November 8, 2012.

³⁵¹ Craig Johnson, "Occupy Wall Street Ignites in Other Cities: 'We Want Justice,'" *CNN*, October 10, 2011.

³⁵² "About," Occupy Wall Street, accessed November 23, 2012, <http://occupywallst.org/about/>.

³⁵³ Katrina vanden Heuvel, "The Occupy Effect," *The Nation*, January 26, 2012.

³⁵⁴ Chris Isidore, "Obama, Cantor Spar over Occupy Wall Street," *CNN Money*, October 7, 2011.

³⁵⁵ The speech was later cancelled after the hosting university decided to open the event to the public. Jake Sherman, "Eric Cantor to Address the Rich-Poor Gap in Speech at University of Pennsylvania," *Politico*, October 17, 2011.

Yet by mid-2012, nearly all public occupations had been dispelled or disbanded, media headlines had moved on, and income inequality and Wall Street lobbying continued to climb to new highs. Was the movement a failure if it failed to upend the structural disparities that fostered the crisis? Some commentators say so, arguing that Occupy was not a movement at all, but a fleeting moment of collective ire.³⁵⁶ Others close to the movement itself argue that Occupy is more properly considered a first iteration of a longer movement to counter the conglomeration of wealth and influence in the U.S.

One year after Occupy headlines began to dwindle, offshoots of the movement are actively tackling the fallout of the inequality crisis, including a Rolling Jubilee campaign to pay off the large debt burdens of randomly-chosen individuals, and Occupy Our Homes, a collection of local groups that stand with underwater homebuyers to fight foreclosure.³⁵⁷ In addition, Occupy's class-conscious focus may have influenced the 2012 elections, fueling, for example, the crippling backlash to Mitt Romney's comment that dismissed 47% of the country as believing "that they are victims."³⁵⁸ Still, the mass protests to spotlight historic disparity have not returned. Some Occupy proponents,³⁵⁹ and even a few opponents,³⁶⁰ suggest, however, that the current calm could be a lull between waves of mobilization. Given that Occupy exploded with little warning from a single encampment to a nationwide movement, it seems unwise to preclude this possibility.

Will our society as a whole find a way to channel the vast resources of finance toward the vast needs of the real economy?

As discussed above, the fallout of the crisis has brought rising interest in several proposals for redirecting the immense lending capacity of Wall Street toward the unmet needs of Main Street: dependable jobs, renewable energy, revitalized schools, affordable health care, etc. One of the proposals has enjoyed rising support not just in public opinion, but in public policy: the prioritization of small banks, which disproportionately lend to job-creating small businesses.

In 2010, the Obama Administration launched the Small Business Lending Fund to channel \$30 billion in public loans to community banks with less than \$10 billion in assets. The program offered favorable interest rates to recipient banks that boost their small business lending.³⁶¹ As the program drew to a close in 2011, the Treasury Department reported that the \$4 billion doled out to 281 small banks yielded an additional \$3.5 billion in lending to small businesses.³⁶² Despite this claimed success, the remaining \$26 billion allotted to the program (87% of the funds) was returned to the Treasury rather than being loaned to small banks, a fact that many of the community banks have blamed on an excessively restrictive and slow process.³⁶³ The Obama Administration's foray into public support of community banks, while well-intentioned, did not produce a model for the renaissance of small banking.

³⁵⁶ Andy Ostroy, "The Failure of Occupy Wall Street," *The Huffington Post*, May 31, 2012.

³⁵⁷ Stephanie Whiteside, "Four Occupy Offshoots Making a Difference," *Current*, November 15, 2012.

³⁵⁸ "Full Transcript of the Mitt Romney Secret Video," *Mother Jones*, September 19, 2012.

³⁵⁹ C. H. Acheron and Mike King, "The Future of Occupy Oakland," *Counterpunch*, June 29, 2012.

³⁶⁰ Lee Stranahan, "How Occupy Wall Street Won Tuesday's Election," *Breitbart*, November 10, 2012.

³⁶¹ "Overview of the Small Business Lending Fund," Small Business Lending Fund, U.S. Department of Treasury, last modified June 8, 2011, 1.

³⁶² "Use of Funds Report," Small Business Lending Fund, U.S. Department of Treasury, fourth quarter 2011, 1.

³⁶³ Annie Lowrey, "Take Our Free Money, Please!," *Slate*, October 11, 2011.

What's more, even if all \$30 billion had been distributed, this lending capacity pales in comparison to that held by the large banks. The full \$30 billion dollars intended for community banks constitutes 1% of the assets of JP Morgan Chase, the country's largest bank. In fact, 45 financial firms in the U.S. all individually have assets larger than the entire amount slated for the Small Business Lending Fund.³⁶⁴ Such comparisons serve as a reminder that the dominant share of financial resources is still held by large banks that disproportionately avoid small business lending while investing billions in Wall Street-invented derivatives like credit default swaps. To truly redirect the resources of finance toward the real economy, proposals would need to include a means of accessing the vast funds controlled by the big banks.

The financial transaction tax outlined above is one such proposal. As mentioned, a diverse and expanding group of economists has stated support for such a tax, and a growing list of countries has already implemented one. In 2011, Congressman Peter DeFazio and Senator Tom Harkin brought the idea to the U.S. Congress, introducing a bill to impose a tiny financial transaction tax on Wall Street that would raise over \$350 billion in its first nine years.³⁶⁵ But most in Congress opted not to cosponsor the bill,³⁶⁶ and the Obama Administration has remained unsupportive.³⁶⁷ Though congressional passage seems remote at this point, the increasing chorus of supporters in the U.S. suggests that a Wall Street speculation tax may be possible in the long term.

While an enforceable nationwide policy to place the financial sector at the service of the real sector may not be imminent, the post-crisis period has brought further steps toward this goal. Credit union membership continues to swell, as does interest in North Dakota's exceptional public bank, spurring 20 states to study the feasibility of replicating the job-creating model. Meanwhile, conferences with names like "Rethinking Finance"³⁶⁸ and "Strategies for a New Economy"³⁶⁹ have been proliferating, drawing in hundreds of economists, activists, academics, businesspeople, and community leaders to envision and debate bold new ideas for harnessing finance's real economy potential. Given time to incubate, such new ideas could one day pass from conference halls to congressional halls.

Overall, responses thus far to the crisis have not been as comprehensive, enduring, or widespread as the crisis itself. But the post-crisis era remains relatively young and systemic rethinking takes time. Will our society seize this rare opportunity to shift economic paradigms? It is still too early to say.

³⁶⁴ "Top 50," NIC. .

³⁶⁵ Kate Cyrul and Jen Gilbreath, "Joint Tax Committee Finds Harkin, DeFazio Wall Street Trading and Speculators Tax Generates More than \$350 Billion," Office of Congressman Peter DeFazio press memo, November 7, 2011.

³⁶⁶ "H.R. 3313: Wall Street Trading and Speculators Tax Act," Govtrack.us, accessed November 23, 2012, <http://www.govtrack.us/congress/bills/112/hr3313#>.

³⁶⁷ Suzy Khimm, "Why Does the White House Oppose the 'Robin Hood' Tax?," Wonkblog, *The Washington Post*, November 8, 2011.

³⁶⁸ "Rethinking Finance: Perspectives on the Crisis," Russel Sage Foundation, accessed November 23, 2012, <http://www.russellsage.org/rethinking-finance>.

³⁶⁹ "About the Banking and Financing Theme," New Economics Institute, accessed November 23, 2012, <http://neweconomicsinstitute.org/conference/bf>.

Ben Beachy is a Visiting Research Fellow at the Global Development and Environment Institute at Tufts University. He holds a Master in Public Policy from Harvard University's Kennedy School of Government, where his thesis on alternatives to GDP, co-authored with Justin Zorn, led to draft legislation in Congress. He currently works as the Research Director for Public Citizen's Global Trade Watch. Inquiries can be directed to ben.beachy@post.harvard.edu.

References

- “1 Million Properties with Foreclosure Filings in First Half of 2012.” RealtyTrac, July 10, 2012. <http://www.realtytrac.com/content/foreclosure-market-report/midyear-2012-us-foreclosure-market-report-7291>.
- “2011 Year-End Foreclosure Report: Foreclosures on the Retreat.” RealtyTrac, January 9, 2012. <http://www.realtytrac.com/content/foreclosure-market-report/2011-year-end-foreclosure-market-report-6984>.
- “5300 Call Report Quarterly Summary Reports.” National Credit Union Administration, updated through June 2012. <http://www.ncua.gov/DataApps/Pages/CRSum.aspx>.
- Acemoglu, Daron. “The Crisis of 2008: Lessons for and from Economics.” *Critical Review: A Journal of Politics and Society* 21:2-3 (2009): 185-194. <http://www.tandfonline.com/doi/full/10.1080/08913810902933788>.
- Acharya, Viral V., et al. “On the Financial Regulation of Insurance Companies.” NYU Stern School of Business, August 2009. <http://web-docs.stern.nyu.edu/salomon/docs/whitepaper.pdf>.
- Acheron, C. H. and Mike King. “The Future of Occupy Oakland.” *Counterpunch*, June 29, 2012. <http://www.counterpunch.org/2012/06/29/the-future-of-occupy-oakland/>.
- Ackerman, Sara. “Over 4 Million Move their Accounts from Wall Street Banks in 2010.” *The Huffington Post*, March 25, 2011. http://www.huffingtonpost.com/sara-ackerman/over-4-million-move-their_b_840536.html.
- “Addendum—A Year or More: The High Cost of Long-Term Unemployment.” The Pew Charitable Trusts, May 2012. http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Fiscal_Analysis/Addendum_Long-Term_Unemployment_May2012.pdf.
- Adler, Lynn. “U.S. 2009 Foreclosures Shatter Record Despite Aid.” *Reuters*, January 14, 2010. <http://www.reuters.com/article/2010/01/14/us-usa-housing-foreclosures-idUSTRE60D0LZ20100114>.
- Alden, William. “Shiller: Dodd-Frank Does Not Solve Too Big to Fail.” *The Huffington Post*, October 26, 2010. http://www.huffingtonpost.com/2010/10/26/robert-shiller-dodd-frank-too-big-to-fail_n_774302.html.
- Andrews, Edmund L. “Greenspan Concedes Error on Regulation.” *The New York Times*, October 23, 2008. <http://www.nytimes.com/2008/10/24/business/economy/24panel.html>.
- Ashcraft, Adam B. and Til Schuermann. “Understanding the Securitization of Subprime Mortgage Credit.” Federal Reserve Bank of New York, Staff Report no. 318, March 2008. http://www.newyorkfed.org/research/staff_reports/sr318.pdf.
- Baker, Dean, Robert Pollin, Travis McArthur, and Matt Sherman. “The Potential Revenue from Financial Transaction Taxes.” Center for Economic and Policy Research and Political Economy Research Institute, December 2009. http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_201-250/WP212.pdf.
- Baker, Dean. “The Housing Bubble and the Financial Crisis.” *Real World Economics Review* 46 (May 20, 2008): 73-81. <http://paecon.net/PAERReview/issue46/Baker46.pdf>.
- Baker, Dean. *The End of Loser Liberalism: Making Markets Progressive*. Washington, D.C.: Center for Economic and Policy Research, 2011. <http://www.deanbaker.net/images/stories/documents/End-of-Loser-Liberalism.pdf>.
- Bank of North Dakota. “BND FAQs.” Accessed November 23, 2012. http://banknd.nd.gov/about_BND/pdfs/faqs.pdf.

- “Bank of North Dakota.” Institute for Local Self-Reliance, May 5, 2011. <http://www.ilsr.org/rule/bank-of-north-dakota-2/>.
- Barberis, Nicholas. “Psychology and the Financial Crisis of 2007-2008.” Yale School of Management, August 2011. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1742463.
- Barofsky, Neil M. “Where the Bailout Went Wrong.” *The New York Times*, March 29, 2011. <http://www.nytimes.com/2011/03/30/opinion/30barofsky.html>.
- Barth, James R., R. Dan Brumbaugh Jr., and James A. Wilcox. “Policy Watch: The Repeal of Glass-Steagall and the Advent of Broad Banking.” *The Journal of Economic Perspectives* 14:2 (Spring 2000): 191-204. <http://www.jstor.org/discover/10.2307/2647102?uid=3739584&uid=2129&uid=2&uid=70&uid=4&uid=3739256&sid=21101418710251>.
- Bebchuk, Lucian A. and Jesse M. Fried. “Pay Without Performance: Overview of the Issues.” *Journal of Applied Corporate Finance* 17:4 (Fall 2005): 8-22. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=761970##.
- Bebchuk, Lucian A., Alma Cohen, and Holger Spamann. “The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008.” Harvard Law School, Discussion Paper No. 657, February 2010. http://www4.gsb.columbia.edu/rt/null?&exclusive=filemgr.download&file_id=734266&rtcontentdisposition=filename%3DThe_Wage_Failure_Executive_Compensation_at_Bear_Sterns_and_Lehman_2000_2008.pdf.
- Bergevin, Philippe, Pierre Duguay, and Paul Jenkins. “When Nightmares Become Real: Modelling Linkages between the Financial Sector and the Real Economy in the Aftermath of the Financial Crisis.” C.D. Howe Institute. *Commentary*, No. 332, August 2011. http://cdhowe.org/pdf/commentary_332.pdf.
- Bernanke, Ben. “Testimony before the Joint Economic Committee.” Board of Governors of the Federal Reserve System, March 28, 2007. <http://www.federalreserve.gov/newsevents/testimony/bernanke20070328a.htm>.
- Bezemer, Dirk J. “‘No One Saw This Coming’: Understanding Financial Crisis Through Accounting Models.” Groningen University, MPRA Paper No. 15982, June 16, 2009. http://mpra.ub.uni-muenchen.de/15892/1/MPRA_paper_15892.pdf.
- Bicchetti, David and Nicolas Maystre. “The Synchronized and Long-lasting Structural Change on Commodity Markets: Evidence from High Frequency Data.” March 20, 2012. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2046584.
- Blinder, Alan S. “Teaching Macro Principles *after* the Financial Crisis.” Center for Economic Policy Studies of Princeton University, CEPS Working Paper No. 207, April 2010. <http://www.princeton.edu/ceps/workingpapers/207blinder.pdf>.
- Blomquist, Daren. “Short Sale Tsunami Possible in 2012.” RealtyTrac, May 22, 2012. <http://www.realtytrac.com/content/news-and-opinion/short-sale-tsunami-possible-in-2012--short-sale-homes---realtytrac-7205>.
- “Bloomberg National Poll.” Selzer & Company, July 9-12, 2010. <http://www.senseoncents.com/wp-content/uploads/2010/07/Bloomberg-National-Poll.pdf>.
- Bricker, Jesse, et al. “Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances.” *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, June 2012. <http://www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf>.
- Brooks, Rick and Ruth Simon. “Subprime Debacle Traps Even Very Credit-Worthy.” *The Wall Street Journal*, December 3, 2007. <http://online.wsj.com/article/SB119662974358911035.html>.

- Broome, Lissa Lamkin and Jerry W. Markham. "The Gramm-Leach-Bliley Act: An Overview." University of North Carolina School of Law, 2001.
http://www.syntrex.com/pdfdocs/glb_paper.pdf.
- "Budget of the U.S. Government, Fiscal Year 2013." Office of Management and Budget, February 13, 2012. <http://www.gpo.gov/fdsys/pkg/BUDGET-2013-BUD/pdf/BUDGET-2013-BUD.pdf>.
- "Business Cycle Dating Committee." National Bureau of Economic Research, September 20, 2010.
<http://www.nber.org/cycles/sept2010.html>.
- Callan, Erin. "Lehman Brothers: Leverage Analysis." Presentation, April 7, 2008.
<http://jenner.com/lehman/docs/debtors/LBEX-DOCID%201401225.pdf>.
- Cho, David. "Banks 'Too Big to Fail' Have Grown Even Bigger." *The Washington Post*, August 28, 2009. <http://www.washingtonpost.com/wp-dyn/content/article/2009/08/27/AR2009082704193.html>.
- Christen, Markus and Ruskin M. Morgan. "Keeping Up with the Joneses: Analyzing the Effect of Income Inequality on Consumer Borrowing." *Quantitative Marketing and Economics* 3 (2005): 145-173. <http://www.springerlink.com/content/t2n4713151455086/>.
- CNN Money*. "The 10 Largest U.S. Bankruptcies." Last modified November 1, 2009.
http://money.cnn.com/galleries/2009/fortune/0905/gallery.largest_bankruptcies.fortune/index.html.
- Coffee, Jr., John C. "Systemic Risk after Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies beyond Oversight." *Columbia Law Review* 111:795 (2011).
http://www.columbialawreview.org/wp-content/uploads/2012/07/111-4_Coffee_J.pdf
- Cohan, William D. "Does Congress Want another Economic Meltdown?" *Bloomberg View*, June 10, 2012. <http://www.bloomberg.com/news/2012-06-10/does-congress-want-another-economic-meltdown-.html>.
- Cohen, Patricia. "Ivory Tower Unswayed by Crashing Economy." *The New York Times*, March 4, 2009. <http://www.nytimes.com/2009/03/05/books/05deba.html?pagewanted=all>.
- Colander, David, et al. "The Financial Crisis and the Systemic Failure of the Economics Profession." *Critical Review: A Journal of Politics and Society* 21:2-3 (2009): 249-267.
http://kritiskepolitter.dk/Artikler/Behov_for_ny_ekonomisk_paradigme/THE%20FINANCIAL%20CRISIS%20AND%20THE%20SYSTEMIC%20FAILURE%20OF%20THE%20ECONOMIC%20PROFESSION.pdf.
- "Comparison of Average Savings and Loan Rates at Credit Unions (CUs) and Banks." National Credit Union Administration, March 2012.
<http://www.ncua.gov/DataApps/Documents/CUBNK201203.pdf>.
- "Construction: NAICS 23." Bureau of Labor Statistics, updated November 20, 2012.
<http://www.bls.gov/iag/tgs/iag23.htm>.
- Credit Union National Association. "Basic Information about Credit Unions." Accessed November 23, 2012. <http://www.cuna.org/press/basicinfo.html>.
- Crotty, James. "Structural Causes of the Global Financial Crisis: A Critical Assessment of the 'New Financial Architecture.'" *Cambridge Journal of Economics* 33 (2009): 563-580.
<http://cje.oxfordjournals.org/content/33/4/563.full.pdf+html>.
- Cyrul, Kate and Jen Gilbreath. "Joint Tax Committee Finds Harkin, DeFazio Wall Street Trading and Speculators Tax Generates More than \$350 Billion." Office of Congressman Peter DeFazio, November 7, 2011.
http://defazio.house.gov/index.php?option=com_content&task=view&id=736&Itemid=70.

- Davidson, Adam. "How AIG Fell Apart." *Reuters*, September 18, 2008. <http://www.reuters.com/article/2008/09/18/us-how-aig-fell-apart-idUSMAR85972720080918>.
- De Haan, Jakob and Tigran Poghosyan. "Bank Size, Market Concentration, and Bank Earnings Volatility in the US." *Journal of International Financial Markets, Institutions & Money* 22 (2012): 35-54. <http://www.sciencedirect.com/science/article/pii/S1042443111000436>.
- De Schutter, Olivier. "Food Commodities Speculation and Food Price Crises." Briefing Note 2, September 2010. http://www2.ohchr.org/english/issues/food/docs/Briefing_Note_02_September_2010_EN.pdf.
- Demsetz, Rebecca S. and Philip E. Strahan. "Diversification, Size, and Risk at Bank Holding Companies." *Journal of Money, Credit and Banking* 29:3 (August 1997): 200-313. <http://jmcb.osu.edu/volume-29-1997>.
- Demyanyk, Yuliya and Otto Van Hemert. "Understanding the Subprime Mortgage Crisis." *The Review of Financial Studies* 24:6 (2011): 1848-1880. <http://rfs.oxfordjournals.org/content/24/6/1848.full.pdf+html>.
- DeNavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith. "Income, Poverty, and Health Insurance Coverage in the United States: 2010." U.S. Census Bureau, September 2011. <http://www.census.gov/prod/2011pubs/p60-239.pdf>.
- Deutsch, Claudia H. "An Early Advocate of Stock Options Debunks Himself." *The New York Times*, April 3, 2005. http://www.nytimes.com/2005/04/03/business/yourmoney/03guru.html?_r=0.
- Devos, Erik, Srinivasan Krishnamurthy, and Rajesh Narayanan. "The Competitive Consequences of Size in Banking: Evidence from Megabank Mergers." December 2010. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1571617.
- Dobuzinskis, Alex. "Factbox: Countrywide's Subprime Lending." *Reuters*, October 15, 2010. <http://www.reuters.com/article/2010/10/16/sec-mozilo-lending-idUSN1521940020101016>.
- "Dodd and Countrywide." *The Wall Street Journal*, October 10, 2008. <http://online.wsj.com/article/SB122360116724221681.html>.
- "Dodd-Frank Progress Report." Davis Polk, July 18, 2012. http://www.davispolk.com/files/Publication/15a76992-d82a-4d15-a2db-fcde9effc3d0/Presentation/PublicationAttachment/b82f9d23-0edc-49eb-af02-ff97ff34bd56/071812_Dodd.Frank.Progress.Report.pdf
- Dodd-Frank Wall Street Reform and Consumer Protection Act*. Public Law 111-203, U.S. Statutes at Large 124 (2010). <http://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>.
- Dorning, Mike. "Obama Adopts Behavioral Economics." *Bloomberg Businessweek*, June 24, 2010. http://www.businessweek.com/magazine/content/10_27/b4185019573214.htm.
- Duchin, Ran and Denis Soysura. "Safer Ratios, Riskier Portfolios: Banks' Response to Government Aid." Ross School of Business, Working Paper No. 1165, January 2012. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1925710.
- "Efficiency and Beyond." *The Economist*, July 16, 2009. <http://www.economist.com/node/14030296>.
- Eichler, Alexander. "Dodd-Frank Won't Stop 'Too Big to Fail' Banks, Public Poll Says." *The Huffington Post*, April 6, 2012. http://www.huffingtonpost.com/2012/04/06/dodd-frank-too-big-to-fail_n_1408393.html.
- "Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from October 2011 through December 2011." Congressional Budget Office, February 2012. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/02-22-ARRA.pdf>.

- “Evolution of the ‘Job Gap’ and Possible Scenarios for Growth.” The Hamilton Project at the Brookings Institution, July 6, 2012.
http://www.hamiltonproject.org/multimedia/charts/evolution_of_the_job_gap_and_possible_scenarios_for_growth/.
- Fabiana Penas, Maria and Haluk Unal. “Gains in Bank Mergers: Evidence from the Bond Markets.” *Journal of Financial Economics*, May 21, 2003.
<http://ideas.repec.org/a/eee/jfinec/v74y2004i1p149-179.html>.
- “Failures and Assistance Transactions: Table BF01.” Federal Deposit Insurance Corporation, 2012.
<http://www2.fdic.gov/hsob/SelectRpt.asp?EntryTyp=30>.
- Federal Reserve Bank of San Francisco. “About the Fed.” Last modified 2011.
<http://www.frbsf.org/publications/federalreserve/monetary/tools.html>.
- “Finance and Insurance: NAICS 52.” Bureau of Labor Statistics, updated November 20, 2012.
<http://www.bls.gov/iag/tgs/iag52.htm>.
- Financial Crisis Inquiry Commission. *The Financial Crisis Inquiry Report*. Washington D.C.: U.S. Government Printing Office, 2011. http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf.
- “Financial Transaction Tax: Making the Financial Sector Pay Its Fair Share.” European Commission, September 28, 2011. http://ec.europa.eu/commission_2010-2014/semeta/headlines/news/2011/09/201109282_en.htm.
- “Flow of Funds Accounts of the United States.” Board of Governors of the Federal Reserve System, September 20, 2012. <http://www.federalreserve.gov/releases/z1/current/z1.pdf>.
- “Foreclosure Activity Increases 81 Percent in 2008.” RealtyTrac, January 15, 2009.
<http://www.realtytrac.com/content/press-releases/foreclosure-activity-increases-81-percent-in-2008-4551>.
- Fox, Justin. “The Comeback Keynes.” *Time*, October 23, 2008.
<http://www.time.com/time/magazine/article/0,9171,1853302,00.html>.
- Friedman, Jed and Norbert Schady. “How Many More Infants Are Likely to Die in Africa as a Result of the Global Financial Crisis?” The World Bank, Policy Research Working Paper 5023, August 2009. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/08/20/000158349_20090820140450/Rendered/PDF/WPS5023.pdf.
- “Full Transcript of the Mitt Romney Secret Video.” *Mother Jones*, September 19, 2012.
<http://www.motherjones.com/politics/2012/09/full-transcript-mitt-romney-secret-video#47percent>.
- “GDP.” World dataBank, World Bank, updated 2011. <http://databank.worldbank.org/ddp/home.do>.
- General Agreement on Trade in Services*. World Trade Organization.
http://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm
- Gourinchas, Pierre-Olivier and Maurice Obstfeld. “Stories of the Twentieth Century for the Twenty-First.” National Bureau of Economic Research, Working Paper 17252, July 2011.
<http://ideas.repec.org/p/nbr/nberwo/17252.html>.
- Govtrack.us. “H.R. 3313: Wall Street Trading and Speculators Tax Act.” Accessed November 23, 2012. <http://www.govtrack.us/congress/bills/112/hr3313#>.
- Greenspan, Alan. “International Financial Risk Management.” The Federal Reserve Board, November 19, 2002. <http://www.federalreserve.gov/boarddocs/speeches/2002/20021119/default.htm>.

- Greenspan, Alan. "The Challenge of Central Banking in a Democratic Society." The Federal Reserve Board, December 5, 1996.
<http://www.federalreserve.gov/BOARDDOCS/SPEECHES/19961205.htm>.
- Greenstone, Michael and Adam Looney. "The Long-term Effects of the Great Recession for America's Youth." The Brookings Institution, September 3, 2010.
<http://www.brookings.edu/blogs/jobs/posts/2010/09/03-jobs-greenstone-looney>.
- Gruenstein Bocian, Debbie, Wei Li, and Keith S. Ernst. "Foreclosures by Race and Ethnicity: The Demographics of a Crisis." Center for Responsible Lending, June 18, 2010.
<http://www.responsiblelending.org/mortgage-lending/research-analysis/foreclosures-by-race-executive-summary.pdf>.
- Hallock, Kevin F. "Reciprocally Interlocking Boards of Directors and Executive Compensation." *Journal of Financial and Quantitative Analysis* 32:3 (1997): 331-344.
<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=4193428>.
- Headd, Brian. "An Analysis of Small Business and Jobs." Small Business Administration, March 2010.
<http://archive.sba.gov/advo/research/rs359tot.pdf>.
- Hellwig, Martin F. "Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis." *De Economist* 157:2 (2009): 129-207.
<http://www.springerlink.com/content/y145j20095435g79/fulltext.pdf>.
- Hensarling, Jeb. "Dodd-Frank's Unhappy Anniversary." *The Wall Street Journal*, July 25, 2012.
<http://online.wsj.com/article/SB10000872396390443437504577547320318621132.html>.
- Hillman, David and Christina Ashford. "Financial Transaction Tax: Myth-Busting." Stamp Out Poverty, March 2012. <http://www.stampoutpoverty.org/download.php?id=445>.
- "Historical Changes of the Target Federal Funds and Discount Rates: 1971 to Present." Federal Reserve Bank of New York, updated February 2010.
<http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html/>.
- "Historical Data: New Residential Construction." U.S. Census Bureau, updated through 2011.
http://www.census.gov/construction/nrc/historical_data/.
- Historical Statistics of the United States: Colonial Times to 1970*. U.S. Department of Commerce. Washington, D.C.: Government Printing Office, 1975.
http://fraser.stlouisfed.org/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf.
- "Housing-Boom Players." *The Wall Street Journal*, May 20, 2009.
http://s.wsj.net/public/resources/documents/info-GlobalCDOLeagueTables_100709.html.
- "Hundreds of Thousands of Consumers, Billions of \$\$ Move to Credit Unions." Credit Union National Association, November 3, 2011. [http://www.cuna.org/public/press/press-release/issues/hundreds-thousands-of-consumers-billions-of-\\$\\$-move-credit-unions](http://www.cuna.org/public/press/press-release/issues/hundreds-thousands-of-consumers-billions-of-$$-move-credit-unions).
- Hurd, Michael D. and Susann Rohwedder. "Effects of the Financial Crisis and Great Recession on American Households." National Bureau of Economic Research, Working Paper 16407, September 2010. <http://www.nber.org/papers/w16407>.
- Igan, Deniz and Prachi Mishra. "Making Friends." *Finance and Development* 48:2 (June 2011).
<http://www.imf.org/external/pubs/ft/fandd/2011/06/igan.htm>.
- Igan, Deniz, Prachi Mishra, and Thierry Tresselt. "A Fistful of Dollars: Lobbying and the Financial Crisis." IMF Working Paper 09/287, December 2009.
<http://www.imf.org/external/pubs/ft/wp/2009/wp09287.pdf>.
- Ioffe, Karina. "Nearly Year after Occupy, Community Banks, Credit Unions Report Steady Growth." *Healdsburg Patch*, July 16, 2012. <http://healdsburg.patch.com/articles/nearly-year-after-occupy-community-banks-credit-unions-report-steady-growth-c5068524>.

- Isidore, Chris. "Obama, Cantor Spar over Occupy Wall Street." *CNN Money*, October 7, 2011. http://money.cnn.com/2011/10/07/news/economy/occupy_wall_street/index.htm.
- Jensen, Michael C. "How Stock Options Reward Managers for Destroying Value and What to Do about It." Harvard NOM Research Paper No. 04-27, April 17, 2001. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=480401.
- Jensen, Michael C. and Kevin J. Murphy. "CEO Incentives—It's Not How Much You Pay, But How." *Harvard Business Review*: 3 (May-June 1990). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=146148.
- Johnson, Craig. "Occupy Wall Street Ignites in Other Cities: 'We Want Justice.'" *CNN*, October 10, 2011. <http://news.blogs.cnn.com/2011/10/10/occupy-wall-street-ignites-other-cities-we-want-justice/>.
- Judd, Jason and Heather McGhee. "Banking on America: How Main Street Partnership Banks Can Improve Local Economies." Demos, April 2011. http://www.demos.org/sites/default/files/publications/Demos_NationalBankPaper.pdf.
- Kane, Edward J. "Incentives for Banking Megamergers: What Motives Might Regulators Infer from Event-Study Evidence?" January 25, 2000. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=221708.
- Kavoussi, Bonnie. "Elizabeth Warren Suggests Breaking Up the Banks by Reinstating Glass-Steagall." *The Huffington Post*, November 5, 2012. http://www.huffingtonpost.com/2012/11/05/elizabeth-warren-break-up-banks_n_2075898.html.
- Kearns, Jeff. "Fed Says U.S. Wealth Fell 38.8% in 2007-2010 on Housing." *Bloomberg*, June 12, 2012. <http://www.bloomberg.com/news/2012-06-11/fed-says-family-wealth-plunged-38-8-in-2007-2010-on-home-values.html>.
- Kendrick, John W. *Productivity Trends in the United States*. Princeton: Princeton University Press, 1961. <http://www.nber.org/books/kend61-1>.
- Keynes, John Maynard. *The General Theory of Employment, Interest, and Money*. Cambridge, UK: Macmillan Cambridge University Press, 1936. <http://cas.umkc.edu/economics/people/facultyPages/kregel/courses/econ645/Winter2011/GeneralTheory.pdf>.
- Khimm, Suzy. "Why Does the White House Oppose the 'Robin Hood' Tax?" Wonkblog, *The Washington Post*, November 8, 2011. http://www.washingtonpost.com/blogs/ezra-klein/post/why-does-the-white-house-oppose-the-robin-hood-tax/2011/11/08/gIQAUpK2M_blog.html.
- Kiel, Paul. "AIG's Spiral Downward: A Timeline." ProPublica, November 14, 2008. <http://www.propublica.org/article/article-aigs-downward-spiral-1114>.
- Kochhar, Rakesh, Richard Fry, and Paul Taylor. "Wealth Gaps Rise to Record Highs between Whites Blacks, Hispanics." Pew Social & Demographic Trends, July 26, 2011. <http://www.pewsocialtrends.org/2011/07/26/wealth-gaps-rise-to-record-highs-between-whites-blacks-hispanics/6/#chapter-5-which-assets-are-most-important>.
- Kroszner, Randall S. and Philip E. Strahan. "What Drives Deregulation? Economics and Politics of the Relaxation of Bank Branching Restriction." National Bureau of Economic Research, Working Paper 6637, July 1998. <http://www.nber.org/papers/w6637>.
- "Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Noninstitutional Population 16 Years and Over by Sex, 1971 to Date." Bureau of Labor Statistics, updated March 1, 2012. <http://www.bls.gov/cps/cpsaat02.htm>.

- “Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Noninstitutional Population, 1941 to Date.” Bureau of Labor Statistics, updated March 1, 2012. <http://www.bls.gov/cps/cpsaat01.htm>.
- “Labor Force Statistics from the Current Population Survey: Employment Status of the Civilian Population by Race, Sex, and Age.” Bureau of Labor Statistics, updated through October 2012. <http://www.bls.gov/webapps/legacy/cpsatab2.htm>.
- “Labor Force Statistics from the Current Population Survey: Employment Status of the Hispanic or Latino Population by Sex and Age.” Bureau of Labor Statistics, updated through October 2012. <http://www.bls.gov/webapps/legacy/cpsatab3.htm>.
- “Labor Force Statistics from the Current Population Survey—Series ID: LNS14000000.” Bureau of Labor Statistics, updated November 21, 2012. <http://data.bls.gov/timeseries/LNS14000000>
- “Labor Force Statistics from the Current Population Survey—Series ID: LNS13327709.” Bureau of Labor Statistics, updated November 22, 2012. <http://www.bls.gov/webapps/legacy/cpsatab15.htm>.
- Lake, Celinda, David Mermin, and Jeff Klingler. “Two Year Anniversary of the Wall Street Reform Law, Survey Findings on Behalf of AARP, Americans for Financial Reform, the Center for Responsible Lending and the National Council of La Raza.” Lake Research Partners, July 18, 2012. <http://ourfinancialsecurity.org/blogs/wp-content/ourfinancialsecurity.org/uploads/2012/07/AFR-AARP-CRL-NCLR-Lake-Research-Dodd-Frank-Anniversary-Poll-MEMO-7-18-122.pdf>.
- Lansing, Kevin J. “Gauging the Impact of the Great Recession.” Federal Reserve Bank of San Francisco, July 11, 2011. <https://www.frbsf.org/publications/economics/letter/2011/el2011-21.html>.
- Larcker, David F., et al. “Back Door Links between Directors and Executive Compensation.” February 22, 2005. <http://knowledge.wharton.upenn.edu/papers/1291.pdf>.
- Lereah, David. *Why the Real Estate Boom Will Not Bust - And How You Can Profit from It: How to Build Wealth in Today's Expanding Real Estate Market*. New York: Crown Business, 2006. <http://www.amazon.com/Real-Estate-Boom-Will-Bust/dp/0385514352>.
- Lewkow, Victor I. “Compensation Committees and Adviser Independence under Dodd-Frank.” The Harvard Law School Forum on Corporate Governance and Financial Regulation, July 16, 2012. <http://blogs.law.harvard.edu/corpgov/2012/07/16/compensation-committees-and-adviser-independence-under-dodd-frank/>.
- Liberto, Jennifer. “Wall Street Pays Big to Influence Washington.” *CNN Money*, January 31, 2012. http://money.cnn.com/2012/01/31/news/economy/wall_street_influence/index.htm.
- Lipton, Eric and Stephen Labaton. “Deregulator Looks Back, Unswayed.” *The New York Times*, November 16, 2008. <http://www.nytimes.com/2008/11/17/business/economy/17gramm.html?pagewanted=all>.
- “Local Area Unemployment Statistics: Statewide.” Bureau of Labor Statistics, updated November 23, 2012. <http://www.bls.gov/lau/#data>.
- Lowrey, Annie. “Take Our Free Money, Please!” *Slate*, October 11, 2011. http://www.slate.com/articles/business/small_business/2011/10/why_obama_s_30_billion_small_business_loan_program_has_flopped.html.
- Lucas, Robert. “In Defence of the Dismal Science.” *The Economist*, August 6, 2009. <http://www.economist.com/node/14165405>.

- Lynch, Sarah. "Wall Street Gadfly Warren Stands Good Chance of Senate Banking Seat." *Reuters*, November 8, 2012. <http://www.reuters.com/article/2012/11/09/us-usa-senate-warren-banking-idUSBRE8A804R20121109>.
- Marquand, Zachary B. "Ability to Repay: Mortgage Lending Standards after Dodd Frank." *North Carolina Banking Institute* 15 (2011): 291-311. <http://www.law.unc.edu/documents/journals/articles/933.pdf>.
- "Manufacturing: NAICS 31-33." Bureau of Labor Statistics, updated November 20, 2012. <http://www.bls.gov/iag/tgs/iag31-33.htm>.
- Martin, Mitchell. "Citicorp and Travelers Plan to Merge in Record \$70 Billion Deal: A New No. 1: Financial Giants Unite." *New York Times*, April 7, 1998. <http://www.nytimes.com/1998/04/07/news/07iht-citi.t.html>.
- "Median and Average Sales Prices of New Homes Sold in United States: Annual Data." U.S. Census Bureau, updated through 2010. <http://www.census.gov/const/uspriceann.pdf>.
- Mian, Atif and Amir Sufi. "The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis." Princeton University and University of Chicago, December 12, 2008. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1072304.
- Mitchell, Stacy. "Why Small Banks Make More Small Business Lending Loans." Institute for Local Self-Reliance, February 10, 2010. <http://www.ilsr.org/banks-and-small-business-lending/>.
- Morgenson, Gretchen. "Barriers to Change, From Wall St. and Geneva." *The New York Times*, March 17, 2012. <http://www.nytimes.com/2012/03/18/business/wto-and-barriers-to-financial-change.html>.
- "Mortgage Originations by Product: 2001-2007." *The 2008 Mortgage Market Statistical Annual*. Inside Mortgage Finance, 2008. <http://www.insidemortgagefinance.com/catalog/newsletters/1000008201-1.html>.
- Moss, David A. "Bank Failures, Regulation, and Inequality in the United States." August 2010. http://www.tobinproject.org/sites/tobinproject.org/files/assets/BankFailures_ChartwithComments_Moss.pdf.
- Murphy, Austin. "An Analysis of the Financial Crisis of 2008: Causes and Solutions." Oakland University, November 4, 2008. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1295344.
- "National Foreclosures Increase in Every Quarter of 2005." RealtyTrac, January 23, 2006. <http://www.realtytrac.com/content/press-releases/national-foreclosures-increase-in-every-quarter-of-2005-752>.
- "National Income and Product Accounts Tables: Table 1.1.5. Gross Domestic Product." Bureau of Economic Analysis, updated October 26, 2012. <http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1>.
- New Economics Institute. "About the Banking and Financing Theme." Accessed November 23, 2012. <http://neweconomicsinstitute.org/conference/bf>.
- Nocera, Joe. "An Inconvenient Truth." *The New York Times*, December 19, 2011. <http://www.nytimes.com/2011/12/20/opinion/nocera-an-inconvenient-truth.html>.
- Occupy Wall Street. "About." Accessed November 23, 2012. <http://occupywallst.org/about/>.
- Oliff, Phil, Chris Mai, and Vincent Palacios. "States Continue to Feel Recession's Impact." Center on Budget and Policy Priorities, June 27, 2012. <http://www.cbpp.org/cms/index.cfm?fa=view&id=711>.
- Ostroy, Andy. "The Failure of Occupy Wall Street." *The Huffington Post*, May 31, 2012. http://www.huffingtonpost.com/andy-ostroy/the-failure-of-occupy-wall_b_1558787.html.

- “Overview of the Small Business Lending Fund.” Small Business Lending Fund, U.S. Department of Treasury, last modified June 8, 2011. <http://www.treasury.gov/resource-center/sb-programs/Documents/SBLF-CDLF%20Fact%20Sheet.pdf>.
- “PACA Facts Data: Federally Insured Credit Unions.” National Credit Union Administration, June 2012. <http://www.ncua.gov/DataApps/Documents/CRS2012-06.pdf>.
- Perri, Fabrizio and Joe Steinberg. “Inequality and Redistribution during the Great Recession.” Federal Reserve Bank of Minneapolis, February 2012. http://www.minneapolisfed.org/pubs/eppapers/12-1/epp_12-1_inequality.pdf.
- Piketty, Thomas and Emmanuel Saez. “Income Inequality in the United States, 1913-1998.” *Quarterly Journal of Economics* 118:1 (2003), data updated March 2012. <http://elsa.berkeley.edu/~saez/>.
- “Poll Results: Do Regulators Really Have the Power to Let Banks Fail?” *American Banker*, April 5, 2012. http://www.americanbanker.com/issues/177_67/poll-results-bernanke-dodd-frank-regulators-too-big-to-fail-1048201-1.html.
- “Preliminary Staff Report: Government Sponsored Enterprises and the Financial Crises.” Financial Crisis Inquiry Commission, April 7, 2010. http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0409-GSEs.pdf.
- “Preliminary Staff Report: Governmental Rescues of ‘Too-Big-to-Fail’ Financial Institutions.” Financial Crisis Inquiry Commission, August 31, 2010. http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0831-Governmental-Rescues.pdf.
- “Preliminary Staff Report: Securitization and the Mortgage Crisis.” Financial Crisis Inquiry Commission, April 7, 2010. http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0407-Preliminary_Staff_Report_-_Securitization_and_the_Mortgage_Crisis.pdf.
- “Press Release.” Board of Governors of the Federal Reserve System, November 2, 2007. <http://www.federalreserve.gov/newsevents/press/bcreg/20071102a.htm>.
- Protest, Ben. “Regulators to Ease a Rule on Derivatives Dealers.” *The New York Times*, April 17, 2012. <http://dealbook.nytimes.com/2012/04/17/regulators-to-ease-a-rule-on-derivatives-dealers/>.
- Public Banking Institute. “State Activity, Resource and Contact Info.” Accessed November 23, 2012. <http://publicbankinginstitute.org/state-info>.
- “Quarterly Banking Profile: Ratios by Asset Size Group.” Federal Deposit Insurance Corporation, updated for 2012, first quarter. <http://www2.fdic.gov/qbp/>.
- “Quarterly Report on Household Debt and Credit.” Federal Reserve Bank of New York, August 2012. <http://www.newyorkfed.org/newsevents/news/research/2012/an120829.html>.
- Rajan, Raghuram. “Fault Lines: How Hidden Fractures Still Threaten the World Economy.” Speech, Brookings Institution, June 21, 2010. http://www.brookings.edu/~media/events/2010/6/21%20fault%20lines/20100621_fault_lines.
- Ramsay, John. “Testimony Concerning Oversight of the Credit Rating Agencies Post-Dodd-Frank.” U.S. Securities and Exchange Commission, July 27, 2011. <http://www.sec.gov/news/testimony/2011/ts072711jr.htm>.
- “Record 2.9 Million U.S. Properties Receive Foreclosure Filings in 2010 Despite 30-Month Low in December.” RealtyTrac, January 12, 2011. <http://www.realtytrac.com/content/press-releases/record-29-million-us-properties-receive-foreclosure-filings-in-2010-despite-30-month-low-in-december-6309>.
- Rivlin, Gary. “Wells Fargo, JPMorgan, Goldman Sachs Fight Consumer-Protection Law.” *The Daily Beast*, January 30, 2012. <http://www.thedailybeast.com/articles/2012/01/30/wells-fargo-jp-morgan-goldman-sachs-fight-consumer-protection-law.html>.

- Rose, Andrew K. and Mark M. Spiegel. “Cross-Country Causes and Consequences of the 2008 Crisis: Early Warning.” National Bureau of Economic Research, Working Paper 15357, September 2009. <http://www.nber.org/papers/w15357>.
- Russel Sage Foundation. “Rethinking Finance: Perspectives on the Crisis.” Accessed November 23, 2012. <http://www.russellsage.org/rethinking-finance>.
- Satow, Julie. “Ex-SEC Official Blames Agency for Blow-Up of Broker-Dealers.” *The New York Sun*, September 18, 2008. <http://www.nysun.com/business/ex-sec-official-blames-agency-for-blow-up/86130/>.
- Schechter, Anna, Brian Ross, and Justin Rood. “The Executive Who Brought Down AIG.” *ABC World News*, March 30, 2009. <http://abcnews.go.com/Blotter/story?id=7210007&page=1#.T-9WExdYvZc>.
- Schenk, Mike. “Commercial Banks and Credit Unions: Facts, Fallacies, and Recent Trends.” Credit Union National Association, third quarter 2011. http://www.cuna.org/download/combanks_cus.pdf.
- Schulmeister, Stephan. “A General Financial Transaction Tax: A Short Cut of the Pros, the Cons and a Proposal.” Austria Institute of Economic Research, WIFO Working Paper No. 344, 2009. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1714336.
- Schwarz, Steven L. “Systemic Risk.” *The Georgetown Law Journal* 97:193 (2008). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1008326.
- “Selected Interest Rates (Daily) – H.15: Historical Data.” Board of Governors of the Federal Reserve System, updated through October 2012. <http://www.federalreserve.gov/releases/h15/data.htm>
- “Senior Loan Officer Opinion Survey on Bank Lending Practices Chart Data: Figure 1—Measures of Supply and Demand for C&I Loans.” The Federal Reserve Board, updated April 26, 2012. <http://www.federalreserve.gov/boarddocs/snloansurvey/201205/chartdata.htm>.
- Sent, Esther-Mirjam. “Behavioral Economics: How Psychology Made Its (Limited) Way Back into Economics.” *History of Political Economy* 36:4 (2004): 735-760. <http://hope.dukejournals.org/content/36/4/735.citation>.
- Shefrin, Hersh and Meir Statman. “Behavioral Finance in the Financial Crisis: Market Efficiency, Minsky, and Keynes.” Santa Clara University, November 2011. <http://www.russellsage.org/sites/all/files/Rethinking-Finance/Shefrin%20Statman%2001272012.pdf>.
- Sherman, Jake. “Eric Cantor to Address the Rich-Poor Gap in Speech at University of Pennsylvania.” *Politico*, October 17, 2011. <http://www.politico.com/news/stories/1011/66173.html>.
- Sherman, Matthew. “A Short History of Financial Deregulation in the United States.” Center for Economic and Policy Research, July 2009. <http://www.cepr.net/documents/publications/dereg-timeline-2009-07.pdf>.
- Shiller, Robert J. “Data for Figure 2.1 in Robert J. Shiller, *Irrational Exuberance* 2nd Edition, Princeton University Press, 2009, as updated by author.” Updated through second quarter of 2012. <http://www.econ.yale.edu/~shiller/data/Fig2-1.xls>
- Shiller, Robert J. “Stock Market Data Used in ‘Irrational Exuberance’ Princeton University Press, 2005.” Updated June 2012. <http://www.econ.yale.edu/~shiller/data.htm>.
- Spaventa, Luigi. “A (Mild) Defence of TARP.” In *The First Global Financial Crisis of the 21st Century: Part II: June—December, 2008*, edited by Andrew Felton and Carmen M Reinhart, 195-198. London: Centre for Economic Policy Research, 2009. http://mpa.ub.uni-muenchen.de/13604/2/MPRA_paper_13604.pdf.

- “Statements of Support for a Financial Transaction Tax (FTT).” Center for Economic and Policy Research, updated June 2012. <http://www.cepr.net/documents/ftt-support.pdf>.
- “States and Selected Areas: Employment Status of the Civilian Noninstitutional Population, January 1976 to Date, Seasonally Adjusted.” Bureau of Labor Statistics, updated through October 2012. <http://www.bls.gov/lau/ststdsadata.txt>
- Stiglitz, Joseph E. “Taming Finance in an Age of Austerity.” *Project Syndicate*, July 8, 2010. <http://www.project-syndicate.org/commentary/taming-finance-in-an-age-of-austerity>.
- Strahan, Philip E. “The Real Effects of U.S. Banking Deregulation.” *Federal Reserve Bank of St. Louis Review* 85:4 (July/August 2003): 111-128. <http://research.stlouisfed.org/publications/review/03/07/Strahan.pdf>.
- Stranahan, Lee. “How Occupy Wall Street Won Tuesday’s Election.” *Breitbart*, November 10, 2012. <http://www.breitbart.com/Big-Government/2012/11/09/Election-Result-Occupy-Won>.
- “Study & Recommendations Regarding Concentration Limits on Large Financial Companies.” Financial Stability Oversight Council, January 2011. <http://www.treasury.gov/initiatives/Documents/Study%20on%20Concentration%20Limits%20on%20Large%20Firms%2001-17-11.pdf/>
- “Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Enacted into Law on July 21, 2010.” Davis Polk, July 21, 2010. http://www.davispolk.com/files/Publication/7084f9fe-6580-413b-b870-b7c025ed2ecf/Presentation/PublicationAttachment/1d4495c7-0be0-4e9a-ba77-f786fb90464a/070910_Financial_Reform_Summary.pdf.
- Summers, Lawrence. “Treasury Deputy Secretary Lawrence H. Summers Testimony Before Senate Committee on Agriculture, Nutrition, and Forestry on the CFTC Concept Release.” U.S. Department of the Treasury, July 30, 1998. <http://www.treasury.gov/press-center/press-releases/Pages/rr2616.aspx>.
- Swagel, Phillip. “The Cost of the Financial Crisis: The Impact of the September 2008 Economic Collapse.” Pew Financial Reform Project, Briefing Paper #18, 2009. http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Economic_Mobility/Cost-of-the-Crisis-final.pdf.
- “Table 2.1. Personal Income and Its Disposition.” Bureau of Economic Analysis, updated May 31, 2012. <http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1>.
- “Table 2.3.3 Real Personal Consumption Expenditures by Major Type of Product, Quantity Indexes.” Bureau of Economic Analysis, updated June 28, 2012. <http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1>.
- Taylor, John B. “The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong.” National Bureau of Economic Research, Working Paper 14631, January 2009. <http://www.nber.org/papers/w14631>.
- Thaler, Richard and Cass Sunstein. “Human Frailty Caused This Crisis.” *Financial Times*, November 11, 2008. <http://www.ft.com/intl/cms/s/0/ac2839ac-b015-11dd-a795-0000779fd18c.html>.
- “The Dodd-Frank Act: Too Big Not to Fail.” *The Economist*, February 18, 2012. <http://www.economist.com/node/21547784>.
- “The Financial Crisis and the Role of Federal Regulators.” Committee on Oversight and Government Reform (transcript), U.S. House of Representatives, October 23, 2008. <http://democrats.oversight.house.gov/images/stories/documents/20081024163819.pdf>.

- “The Financial Crisis Response in Charts.” U.S. Department of the Treasury, April 2012.
<http://www.treasury.gov/resource-center/data-chart-center/Pages/Financial-Crisis-Response-In-Charts.aspx>.
- “The Global Social Crisis: Report on the World Social Situation 2011.” United Nations Department of Economic and Social Affairs, 2011.
<http://social.un.org/index/LinkClick.aspx?fileticket=v0LQqd2FT3k%3d&tabid=1561>.
- The New York Times*. “American International Group Inc.” Last modified November 2, 2012.
http://topics.nytimes.com/top/news/business/companies/american_international_group/index.html.
- The New York Times*. “Glass-Steagall Act (1933)” Accessed November 23, 2012.
http://topics.nytimes.com/topics/reference/timestopics/subjects/g/glass_steagall_act_1933/index.html.
- The Robin Hood Tax. “The Big Idea.” Accessed November 23, 2012.
<http://www.robinhoodtax.org/how-it-works>.
- Tobin, James. “A Proposal for International Monetary Reform.” *Eastern Economic Journal* 4:3/4 (July-October, 1978): 153-159. <http://ideas.repec.org/p/cwl/cwldpp/506.html>.
- “Top 10% Authors, as of October 2012.” IDEAS, RePEc, updated October, 2012.
<http://ideas.repec.org/top/top.person.all.html>.
- “Top 50 Holding Companies.” National Information Center, updated September 30, 2012.
<http://www.ffiec.gov/nicpubweb/nicweb/Top50Form.aspx>.
- Tucker, Todd. “How to Reform WTO and FTA Rules to Confront Too-Big-to-Fail Banks.” Public Citizen, May 10, 2011. <http://www.citizen.org/documents/memo-gats-conflict-with-bank-size-limits-may-10-2011.pdf>
- Turner, Anna. “Jobs Crisis Fact Sheet.” Economic Policy Institute, March 8, 2010.
http://www.epi.org/publication/jobs_crisis_fact_sheet/.
- “US Mortgage-Related Issuance and Outstanding.” Securities Industry and Financial Markets Association, updated November 8, 2012. <http://www.sifma.org/research/statistics.aspx/>.
- U.S. Securities and Exchange Commission. “Derivatives.” Last modified July 11, 2012.
<http://www.sec.gov/spotlight/dodd-frank/derivatives.shtml>.
- Understanding on Commitments in Financial Services*. World Trade Organization.
http://www.wto.org/english/tratop_e/serv_e/21-fin_e.htm.
- “Use of Funds Report.” Small Business Lending Fund, U.S. Department of Treasury, fourth quarter 2011. [http://www.treasury.gov/resource-center/sb-programs/DocumentsSBLFTransactions/Use%20of%20Funds%204016\(3\)%20Report%20-%202001-09-12.pdf](http://www.treasury.gov/resource-center/sb-programs/DocumentsSBLFTransactions/Use%20of%20Funds%204016(3)%20Report%20-%202001-09-12.pdf).
- Van der Veen, A. Maurits. “The Dutch Tulip Mania: The Social Politics of a Financial Bubble.” University of Georgia, March 2009. <http://www.maurits.net/Research/TulipMania.pdf>.
- Vanden Heuvel, Katrina. “The Occupy Effect.” *The Nation*, January 26, 2012.
<http://www.thenation.com/blog/165883/occupy-effect>.
- Vickery, James. “The Dodd-Frank Act’s Potential Effects on the Credit Rating Industry.” Federal Reserve Bank of New York, February 15, 2012.
<http://libertystreeteconomics.newyorkfed.org/2012/02/the-dodd-frank-acts-potential-effects-on-the-credit-rating-industry.html>.
- “Victimizing the Borrowers: Predatory Lending’s Role in the Subprime Mortgage Crisis.” Knowledge@Wharton. The Wharton School of the University of Pennsylvania, February 20, 2008. <http://knowledge.wharton.upenn.edu/article.cfm?articleid=1901>.

- “Wall Street Legend Sandy Weill: Break Up the Big Banks.” *CNBC.com*, July 25, 2012.
http://www.cnbc.com/id/48315170/Wall_Street_Legend_Sandy_Weill_Break_Up_the_Big_Banks.
- Webel, Baird. “The Dodd-Frank Wall Street Reform and Consumer Protection Act: Issues and Summary.” Congressional Research Service, July 29, 2010.
<http://www.llsdc.org/attachments/files/232/CRS-R41350.pdf>.
- Wheelock, David and Paul W. Wilson. “Do Large Banks Have Lower Costs? New Estimates of Returns to Scale for U.S. Banks.” Federal Reserve Bank of St. Louis, Working Paper 2009-054E, May 2011. <http://research.stlouisfed.org/wp/2009/2009-054.pdf>.
- Whiteside, Stephanie. “Four Occupy Offshoots Making a Difference.” *Current*, November 15, 2012.
http://current.com/groups/news-blog/93963203_four-occupy-offshoots-making-a-difference.htm.
- Worstall, Tim. “The Stupidity of the Robin Hood Tax Reaches America.” *Forbes*, June 20, 2012.
<http://www.forbes.com/sites/timworstall/2012/06/20/the-stupidity-of-the-robin-hood-tax-reaches-america/>.

The Global Development And Environment Institute

GDAE is a research institute at Tufts University dedicated to promoting a better understanding of how societies can pursue their economic goals in an environmentally and socially sustainable manner. GDAE pursues its mission through original research, policy work, publication projects, curriculum development, conferences, and other activities. The “GDAE Working Papers” series presents substantive work-in-progress by GDAE-affiliated researchers.

We welcome your comments, either by email or directly to the author or to GDAE:
Tufts University, 44 Teele Ave, Medford, MA 02155; Tel: 617-627-3530; Fax: 617-627-2409
Email: gdae@tufts.edu; Website: <http://ase.tufts.edu/gdae>.

Recent Papers in this Series:

- 12-06 [A Financial Crisis Manual: Causes, Consequences, and Lessons of the Financial Crisis](#) (Ben Beachy, December 2012)
- 12-05 [Are Women Really More Risk-Averse than Men?](#) (Julie A. Nelson, September 2012)
- 12-04 [Is Dismissing the Precautionary Principle the Manly Thing to Do? Gender and the Economics of Climate Change](#) (Julie A. Nelson, September 2012)
- 12-03 [Achieving Mexico’s Maize Potential](#) (Antonio Turrent Fernández, Timothy A. Wise, and Elise Garvey, October 2012)
- 12-02 [The Cost to Developing Countries of U.S. Corn Ethanol Expansion](#) (Timothy A. Wise, October 2012)
- 12-01 [The Cost to Mexico of U.S. Corn Ethanol Expansion](#) (Timothy A. Wise, May 2012)
- 11-03 [Would Women Leaders Have Prevented the Global Financial Crisis? Implications for Teaching about Gender, Behavior, and Economics](#) (Julie A. Nelson, September 2012)
- 11-02 [Ethics and the Economist: What Climate Change Demands of Us](#) (J. A. Nelson, May 2011)
- 11-01 [Investment Treaty Arbitration and Developing Countries: A Re-Appraisal](#) (Kevin P. Gallagher and Elen Shrestha, May 2011)
- 10-06 [Does Profit-Seeking Rule Out Love? Evidence \(or Not\) from Economics and Law](#) (Julie A. Nelson, September 2010)
- 10-05 [The Macroeconomics of Development without Throughput Growth](#) (Jonathan Harris, September 2010)
- 10-04 [Buyer Power in U.S. Hog Markets: A Critical Review of the Literature](#) (Timothy A. Wise and Sarah E. Trist, August 2010)
- 10-03 [The Relational Economy: A Buddhist and Feminist Analysis](#) (Julie A. Nelson, May 2010)
- 10-02 [Care Ethics and Markets: A View from Feminist Economics](#) (Julie A. Nelson, May 2010)
- 10-01 [Climate-Resilient Industrial Development Paths: Design Principles and Alternative Models](#) (Lyuba Zarsky, February 2010)
- 09-08 [Agricultural Dumping Under NAFTA: Estimating the Costs of U.S. Agricultural Policies to Mexican Producers](#) (Timothy A. Wise, December 2009)
- 09-07 [Getting Past "Rational Man/Emotional Woman": How Far Have Research Programs in Happiness and Interpersonal Relations Progressed?](#) (Julie A. Nelson, June 2009)
- 09-06 [Between a Rock and a Soft Place: Ecological and Feminist Economics in Policy Debates](#) (Julie A. Nelson, June 2009)
- 09-05 [The Environmental Impacts of Soybean Expansion and Infrastructure Development in Brazil’s Amazon Basin](#) (Maria del Carmen Vera-Diaz, Robert K. Kaufmann, Daniel C. Nepstad, May 2009)

View the complete list of working papers on our website:
http://www.ase.tufts.edu/gdae/publications/working_papers/index.html