



Bailout or Bankruptcy? A Libertarian Perspective on the Financial Crisis

Citation

Miron, Jeffrey A. 2009. Bailout or bankruptcy? A libertarian perspective on the financial crisis. *Cato Journal* 29(1).

Published Version

<http://www.cato.org/pubs/journal/cj29n1/cj29n1-1.pdf>

Permanent link

<http://nrs.harvard.edu/urn-3:HUL.InstRepos:4319665>

Terms of Use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Other Posted Material, as set forth at <http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#LAA>

Share Your Story

The Harvard community has made this article openly available. Please share how this access benefits you. [Submit a story](#).

[Accessibility](#)

Bailout or Bankruptcy?
A Libertarian Perspective on the Financial Crisis

Jeffrey A. Miron

Senior Lecturer, Department of Economics, Harvard University

January, 2009

I. Introduction

At the end of September, 2007, the U.S. economy had experienced twenty-four consecutive quarters of positive GDP growth, at an average annual rate 2.73 percent. The S&P500 Index stood at roughly 1500, having rebounded over 600 points from its low point in 2003. Unemployment was below 5%, and inflation was low and stable.

Roughly 12 months later, in September, 2008, U.S. Treasury Secretary Henry Paulson announced a major new intervention in the U.S. economy. Under the bailout plan, as explained at the time, the Treasury proposed holding reverse auctions in which it would buy the troubled assets of domestic financial institutions.¹ Further, as the plan developed, Treasury proposed using taxpayer funds to purchase equity positions in the country's largest banks. These policies aimed to stabilize financial markets, avoid bank failures, and prevent a credit freeze.²

In the weeks and months after Paulson announced the bailout, enormous changes occurred in the U.S. (and world) economies. Stock prices fell sharply, housing prices continued the decline they had begun in late 2006, and the real economy contracted markedly. The House of Representatives initially voted down the bailout bill, but Congress approved an expanded version less than a week later. The Federal Reserve and other central banks pursued a range of rescue efforts, including interest rate cuts, expansions of deposit insurance, and the purchase of equity positions in banks.

In this paper I provide a preliminary assessment of the causes of the financial crisis and of the most dramatic aspect of the government's response, the Treasury bailout of Wall Street banks. My overall conclusion is that, instead of bailing out banks, U.S. policy should have allowed the standard

¹ I use the terms financial institution and bank interchangeably to include both banks and investment banks. The distinction became irrelevant on September 22, 2008, when the last major investment banks (Goldman Sachs and Morgan Stanley) became traditional banking institutions.

² See Testimony by Secretary Henry M. Paulson, Jr., before the Senate Banking Committee on Turmoil in US Credit Markets: Recent Actions regarding Government Sponsored Entities, Investment Banks and other Financial Institutions, September 23, 2008.

process of bankruptcy to operate.³ This would not have avoided all costs of the crisis, but it would plausibly have moderated those costs relative to bailout. Even more, the bankruptcy approach would have reduced rather than enhanced the likelihood of future crises. Going forward, U.S. policy should abandon the goal of expanded homeownership. Redistribution, if desirable, should take the form of cash transfers rather than interventions in the mortgage market. Even more, the U.S. should stop to bailing out private risk-taking to avoid creating moral hazards.

The paper proceeds as follows. In Section II I characterize the behavior of the U.S. economy over the past several years. In Section III I consider which government policies, private actions, and outside events were responsible for the crisis. In Section IV I examine the bailout plan that the U.S. Treasury adopted in response to the crisis.

II. What Happened?

I begin by examining the recent behavior of the U.S. economy. This sets the stage for interpretation of both the financial crisis and the bailout.

Figure 1 shows the level of real GDP over the past five years.⁴ GDP increased consistently and strongly until the end of 2006, and then again during the middle of 2007. GDP fell in the final quarter of 2007, rose modestly during the first half of 2008, and then declined again in the third quarter of 2008. Thus, GDP grew on average over the first three quarters of 2008, but at a rate considerably below the post-war average (1.05% versus 3.27% at an annual rate).

Figures 2-4 present data on industrial production, real retail sales, and employment. For industrial production, growth was robust for several years but flattened in the second half of 2007 and turned negative by the second quarter of 2008. A similar pattern holds for retail sales, except that the flattening occurred in the final quarter of 2007 and negative growth began in December, 2007.

³ To simplify the discussion, I use the term bankruptcy to indicate any official re-organization or liquidation procedure, meaning both those under the bankruptcy code and those conducted by regulatory bodies such as the FDIC. The former applies to non-banks, the latter to banks.

⁴ Data sources are provided in the notes after Figure 9.

For employment, the flattening also occurred in the final quarter of 2007 and negative growth began in December, 2007.

The overall picture is thus consistent across indicators. A significant slowdown in the U.S. economy began in the final quarter of 2007 and accelerated during early 2008. This is consistent with the determination by the National Bureau of Economic Research's Business Cycle Dating Committee that a recession began in December, 2007.⁵

Figure 5 shows the Case-Shiller Housing Price Index, adjusted for inflation, for the period 1987-2008. Housing prices increased enormously over 1997-2005, especially in 2004 and 2005. The increase was large, roughly 80-90 percent in real terms. From the end of 2005, housing prices declined slowly through early 2007 and then at an accelerating pace from that point. Despite these declines, housing still appeared to be overvalued in late 2008 and needed to fall another 20-30 percent to reach the pre-2001 level.

Figure 6 shows the U.S. homeownership rate for the past four decades. After fluctuating in the 63-66% range for about three decades, homeownership began increasing in the mid 1990s and climbed to unprecedented values in the subsequent decade. Beginning in 2005 the rate stabilized and declined slightly, but in 2008 it was still well above the level observed for most of the sample.

Figure 7 displays residential investment in the U.S. over the past several decades. Housing construction fluctuated substantially but displayed an overall upward trend through the early 1990s. From that point the trend accelerated and continued for over a decade before beginning a marked decline starting in early 2006. Even after the substantial decline, however, housing investment in late 2008 was about where one would have predicted based on the trend line through the mid-1990s.

For 10-12 years, therefore, the U.S. economy invested in housing at a rate above that suggested by historical trends. This boom coincided with a substantial increase in homeownership. These facts suggest that the U.S. overinvested in housing during this period. Housing prices rose

⁵ See <http://www.nber.org/cycles/dec2008.html>.

substantially over the same period. The fact that housing quantity and price increased together suggests that higher demand for housing was a major determinant of the housing boom.

Figure 8 shows the real value of the S&P500 stock price index over the past 150 years. This value soared during the 1990s to a level above that implied by historical rates of return, and growth after 9/11 and the 2001 recession was robust. Even after the large declines in the fall of 2008, therefore, the market was not obviously below a reasonable estimate of its long-term trend. Standard predictors of stock prices, such as the price-earnings ratio, tell the same story.⁶

Figure 9 shows the effective federal funds rate, a standard measure of the stance of monetary policy. The low rate from the early 2000s through much of 2004 was plausibly one factor in the housing and stock market booms. Inflation was low and stable during this period, averaging 2-3% for the most part, so the real interest rate was negative. This implies that the demand for stocks and housing should have expanded, driving up their prices. The substantial increase in interest rates from mid-2004 through mid-2006 is plausibly one factor that slowed the economy starting in 2007.⁷

To summarize, the U.S. economy had overinvested in housing as of early 2006, and housing and stock prices were high relative to historical norms. Thus, the economy was misaligned, and a major adjustment—such as a recession—was plausibly necessary to correct the misallocation. The subsequent declines in housing and stock prices (along with the increase in oil prices) reduced the economy's real wealth, providing one impetus for a slowdown. Monetary policy stimulated during much of the boom and contracted in advance of the slowdown.⁸

III. What Caused the Economic Events of the Past Five Years?

⁶ For further examination of this issue, see Cochrane (2008) or Hamilton (2008).

⁷ An additional cause of low real interest rates may have been a surge in the demand for U.S. assets (a savings glut) caused by global financial imbalances. See Caballero, Fahri, and Gourinchas (2008).

⁸ See Mulligan and Threinen (2008) for a more detailed analysis of the role of wealth effects in the propagation of the financial crisis.

I next discuss the causes of the financial crisis. Policymakers, pundits, and academics have blamed the crisis on various factors, such as excessive risk-taking by the private sector, inadequate or inappropriate regulation, deficient rating agencies, and so on. My assessment is that all these factors played a role, but the crucial, underlying problem was misguided federal policies.⁹

The first misguided policy was the attempt to increase homeownership, a goal the federal government has pursued for decades. A (partial) list of policies designed to increase homeownership includes the Federal Housing Administration, the Federal Home Loan Banks, Fannie Mae, Freddie Mac, the Community Reinvestment Act, the deductibility of mortgage interest, the homestead exclusion in the personal bankruptcy code, the tax-favored treatment of capital gains on housing, the HOPE for Homeowners Act, and, most recently, the Emergency Economic Stabilization Act (the bailout bill).

Government efforts to increase homeownership are problematic. Private markets have adequate incentive to build and sell houses, just as individuals and families have adequate incentive to purchase them. Thus government intervention to expand homeownership has no justification from an efficiency perspective and is instead an indirect method of redistributing income. If government redistributes by intervening in the mortgage market, however, it creates the potential for large distortions of private behavior.

The U.S. government's pro-housing policies did not have noticeable negative effects for decades. The reason is likely that the interventions mainly substituted for activities the private sector would have undertaken anyway, such as providing a secondary market in mortgages.

Over time, however, these mild interventions began to focus on increased homeownership for low-income households. In the 1990s, the Department of Housing and Urban Development ramped up pressure on lenders to support affordable housing. In 2003, accounting scandals at Fannie and Freddie allowed key members of Congress to pressure these institutions into substantial risky

⁹ For alternative views about the causes of the crisis, see Baily, Litan, and Johnson (2008) or Hall and Woodward (2008).

mortgage lending.¹⁰ By 2003-2004, therefore, federal policies were generating strong incentives to extend mortgages to borrowers with poor credit characteristics. Financial institutions responded and created huge quantities of assets based on risky mortgage debt.

This expansion of risky credit was especially problematic because of the second misguided federal policy, the long-standing practice of bailing out failures from private risk-taking. As documented by Laeven and Valencia (2008), bailouts have occurred often and widely, especially in the banking sector. In the context of the recent financial crisis, a crucial example is the now infamous “Greenspan put,” the Fed’s practice under Greenspan of lowering interest rates in response to financial disruptions in the hope that expanded liquidity would prevent or moderate a crash in asset prices. In the early 2000s, in particular, the Fed appeared to have made a conscious decision not to burst the housing bubble and instead “fix things” if a crash occurred.

The banking sector’s history of receiving bailouts meant that financial markets could reasonably have expected the government to cushion any losses from a crash in risky mortgage debt.¹¹ Since government was also exerting pressure to expand this debt, and since it was profitable to do so, the financial sector had every reason to play along.¹² It was inevitable, however, that at some point a crash would ensue. As explained in Gorton (2007), the expansion of mortgage credit made sense only so long as housing prices kept increasing, but this could not last forever. Once housing prices began to decline, the market had no option but to suffer the unwinding of the positions built on untenable assumptions about housing prices.

¹⁰ See Roberts (2008), Leibowitz (2008), Wallison and Calomiris (2008), White (2008), and Pinto (2008).

¹¹ Gerardi, Lehnert, Sherlund, and Willen (2008) find that analysts in the mortgage market realized that a fall in housing prices would mean a drastic fall in the value of mortgage assets, but assigned only a low probability to this outcome. One interpretation is that the analysts (and their employers) trusted the Greenspan put to keep prices from falling.

¹² A mandate that banks issue risky debt might not generate significant problems if the risk is appropriately priced (Stock 2008). When government mandates that banks issue debt they would not have provided on their own, however, a market clearing price might not exist. An implicit government guarantee of this debt, moreover, virtually insures the risk will be underpriced.

This interpretation of the financial crisis therefore puts primary blame on federal policy rather than on Wall Street greed, inadequate regulation, failures of rating agencies, or securitization. These other forces played important roles, but it is implausible that any or all would have produced anything like the recent financial crisis had it not been for the two misguided federal policies.¹³ Wall Street greed, for example, certainly contributed to the situation if, by greed, one means profit-seeking behavior. Many on Wall Street knew or suspected that their risk exposure was not sustainable, but their positions were profitable at the time. Further, markets work well when private actors respond to profit opportunities, unless these reflect perverse incentives created by government. The way to avoid future crises, therefore, is for governments to abandon policies that generate such incentives.

IV. Was the Treasury Bailout Good Policy?

Given this assessment of what caused the financial crisis, I next assess the Treasury bailout. This intervention was an attempt to improve bank balance sheets and thereby spur bank lending. The offered justification was that, as of early September, 2008, major banks were facing imminent failure because their mortgage-backed assets had declined rapidly in value.

No one disputes that several banks were in danger of failing, but this does not justify a bailout. Failure is an essential aspect of capitalism. It provides information about good and bad investments, and it releases resources from bad projects to more productive ones. As noted above, housing prices and housing construction were too high as of the end of 2005. This implied both a deterioration in bank balance sheets and retrenchment in the banking sector, so some amount of failure was both inevitable and appropriate.

Thus an economic case for the bailout needed to show that failure by some banks would harm the economy *beyond* what was unavoidable due to the fall in housing prices. The usual argument is

¹³ See Kashyap, Rajan and Stein (2008) for a discussion of the regulatory issues and Lucchetti and Ng (2007) for a discussion of the role of ratings agencies.

that failure by one bank forces other banks to fail, generating a credit freeze. This outcome is possible, but this does not mean bailout was the right policy.

To see why, note first that allowing banks to fail does not mean the government plays no role. Federal deposit insurance would prevent losses by insured depositors, thus limiting the incentive for bank runs. Federal courts and regulatory agencies (such as the FDIC) would supervise bankruptcy proceedings for failed institutions.¹⁴ Under bankruptcy, moreover, the activities of failing banks do not necessarily disappear. Some continue during bankruptcy, and some resume after sale of a failed institution or its assets to a healthier bank. In other cases, merger in advance of failure avoids bankruptcy entirely. Private shareholders and bondholders take the losses required to make these mergers and sales attractive to the acquiring parties. Taxpayer funds go only to insured depositors.¹⁵

Consider, therefore, how bailout compares to bankruptcy from three perspectives: the impact on the distribution of wealth, the impact on economic efficiency, and the impact on the length and depth of the financial crisis.

From a distributional perspective, bailout is unambiguously perverse; it transfers resources from the general taxpayer to well-off economic actors who profited from risky investments. This is not a criticism of risk-taking; that is appropriate so long as those benefitting in good times bear the costs in bad times. This is exactly what occurs under the bankruptcy approach.

From an economic efficiency perspective, bailout is again problematic. Mere consideration of a bailout distracts attention from the fact that government was the single most important cause of the crisis. Relatedly, bailout creates a moral hazard, thereby generating excessive risk-taking in the future. Bailouts often adopt goals that are not economically sensible, such as propping up housing prices, limiting mortgage defaults, or preventing the failure of insolvent institutions. More broadly, a

¹⁴ As above, I use the term bankruptcy as a short hand for any official re-organization or liquidation procedure, meaning those under the bankruptcy code and those conducted by regulatory bodies such as the FDIC.

¹⁵ See Fama (2009) and Zingales (2008) for more detailed discussion of these issues.

bailout encourages perverse actions by institutions that are eligible for the money, such as acquiring toxic assets that the Treasury might buy or taking huge risks with Treasury capital injections.

The Treasury bailout of 2008 also initiated a government ownership stake in the financial sector. This means that, going forward, political forces are likely to influence decision-making in the extension of credit and the allocation of capital. Government, for example, might push banks to aid borrowers with poor credit histories, to subsidize politically connected industries, or to lend in the districts of powerful legislators. Government pressure is difficult for banks to resist, since government can threaten to withdraw its ownership stake or promise further injections whenever it wants to modify bank behavior. Further, bailing out banks sets a precedent for bailing out other industries. Thus the long-run implications of bailout are unambiguously bad.

Bailout is superior to bankruptcy, therefore, only if allowing bank failures would cause or exacerbate a credit crunch. Neither theory nor evidence, however, makes a compelling case for such an effect. As a theoretical matter, failure by a bank means that it cannot extend credit, but this means a profit opportunity exists for someone else. As an empirical matter, it is difficult to establish whether panics cause credit freezes or underlying adverse shocks to the economy cause both reduced lending and panics. Ben Bernanke's famous paper on the Great Depression (Bernanke 1983) suffers exactly this problem; it shows that bank failures and output losses are correlated, but it does not pin down the direction of causation.

This is not to deny that credit freezes occur and cause harm, nor to assert that credit markets would have been healthy under the bankruptcy approach. Rather, the claim is that overinvestment in housing and the excessive level of housing prices that existed in the U.S. meant that an unwinding was necessary to make the economy healthy. This restructuring implied reduced residential investment, declines in housing prices, plus shrinkage and consolidation of the banking sector. All of this would plausibly have generated a recession, even without any credit freeze, and the recession—along with increased awareness of the risks of mortgage lending—would have caused

lending to contract, again without a credit crunch. Thus it is not obvious how much of the credit freeze was due to bank failures versus negative shocks to the underlying fundamentals.

In fact, the bailout might have exacerbated the credit crunch. The announcement that Treasury was considering a bailout likely scared markets by suggesting the economy was worse than markets recognized.¹⁶ Likewise, the announcement may have encouraged a credit freeze because bankers did not want to realize their losses or sell their institutions to acquiring firms if government was going to get them off the hook. The bailout introduced uncertainty because no one knew what the bailout meant: how much, what form, for whom, for how long, with what restrictions, and so on.¹⁷ The bailout also did little to make bank balance sheets transparent, yet the market's inability to determine who was solvent was plausibly a key reason for the freeze. Plus, banks can respond to capital injections by paying bonuses to executives and dividends to shareholders, or by hoarding cash; nothing guarantees they will lend out capital injections.¹⁸

Thus the bailout had huge potential for counterproductive impacts and at best an uncertain prospect of alleviating the credit crunch or ameliorating the recession. This means that allowing further failures would have been a price worth paying. In particular, the process of failure and bankruptcy would have countered the financial sector's temptation to "bank" on government largesse, so the bankruptcy approach would have created better incentives going forward for private behavior toward risk.

V. Lessons for the Future

In my assessment, the financial crisis yields two main lessons. The first is that redistribution to low-income households should be direct and on budget, not indirect and off-budget, as in

¹⁶ Macey (2008) raises many of these issues.

¹⁷ Higgs (1997) provides suggestive evidence that uncertainty created by policymakers contributed to the length of the Great Depression.

¹⁸ See Bordo and Schwartz (1998, 2000) for evidence on both the tendency for bailouts to exacerbate moral hazard and the ability of bailouts to improve economic performance.

subsidized mortgage credit. The second lesson is that the moral hazards from bailing out private risk taking are substantial, even when these do not always appear immediately.

Adjusting policy to incorporate the first lesson is relatively easy: it requires elimination of specific, pre-existing policies such as Fannie Mae, Freddie Mac, the Federal Housing Administration, and so on. This might be hard politically, but at least the target is well-defined.

Adjusting policy to avoid the creation of moral hazard is harder. A few specific programs, such as the Pension Benefit Guarantee Corporation, are ripe for elimination from this perspective, but policy makers have many ways to bail out private risk-taking. Even elimination of agencies like the FDIC and the Federal Reserve—setting aside whether this makes sense overall—would not prevent a determined Treasury from bailing out banks. Thus the only real constraint on such flawed government policy is increased recognition of its long-term costs.

References

- Baily, Martin Neil, Robert E. Litan, and Matthew S. Johnson (2008), "The Origins of the Financial Crisis," Brookings Institution, Fixing Finance Series Paper 3.
- Bordo, Michael D. and Anna J. Schwartz (1998), "Under What Circumstances, Past and Present, Have International Rescues of Countries in Financial Distress Been Successful?," NBER WP No. 6824.
- Bordo, Michael D. and Anna J. Schwartz (2000), "Measuring Real Economic Effects of Bailouts: Historical Perspectives on how countries in Financial Distress Have Fared With and Without Bailouts," NBER WP No. 7701.
- Caballero, Ricardo J., Emmanuel Farhi, and Pierre-Olivier Gourinchas (2008), "Financial Crash, Commodity Prices and Global Imbalances," NBER WP No. 14521.
- Cochrane, John H. (2008), "What Do We Know About the Stock Market?," manuscript, University of Chicago Booth School of Business.
- Dooley, Michael P. (1994), "A Retrospective on the Debt Crisis," NBER Working Paper No. 4963.
- Fama, Eugene F. (2009), "Government Equity Capital for Financial Firms," <http://www.dimensional.com/famafrench/2009/01/government-equity-capital-for-financial-firms.html>.
- Gerardi, Krisopher, Andreas Lehnert, Sherlund, Shane M., and Paul Willen (2008), "Making Sense of the Subprime Crisis," *Brookings Papers on Economic Activity*, Fall.
- Gorton, Gary (2008), "The Panic of 2007," manuscript, Yale School of Management.
- Hall, Robert E. and Susan E. Woodward (2008), "The Financial Crisis and the Recession," http://woodwardhall.files.wordpress.com/2009/01/the_financial_crisis_and_the_recession.pdf.
- Hamilton, James D. (2008), "Investment Advice for a Wild Market," Econbrowser Blog, http://www.econbrowser.com/archives/2008/11/investment_adv.html.
- Higgs, Robert (1997), "Regime Uncertainty: Why the Great Depression Lasted So Long and Why Prosperity Resumed After the War," *The Independent Review*, **I**(4), 561-590.
- Kashyap, Anil K., Raghuram G. Rajan, and Jeremy C. Stein (2008), "Rethinking Capital Regulation," manuscript, University of Chicago Graduate School Business.
- Laeven, Luc and Fabian Valencia (2008), "Systemic Banking Crises: A New Database," IMF Working Paper WP/08/224.
- Leibowitz, Stan J. (2008), "Anatomy of a Train Wreck: Causes of the Mortgage Meltdown," Independent Institute Policy Report, October 3.
- Lucchetti, Aaron and Serena Ng (2007), "How Ratings Firms' Call Fueled the Subprime Mess," *Wall Street Journal*, August 15.

- Macey, Jonathan (2008), "The Government is Contributing to the Panic," *Wall Street Journal*, October 11-12.
- Mian, Atif, Amir Sufi, and Francesco Trebbi (2008), "The Political Economy of the U.S. Mortgage Default, Crisis," NBER Working Paper No. 14468.
- Mulligan, Casey and Luke Threinen (2008), "Market Responses to the Panic of 2008," NBER Working Paper No. 14446.
- Pinto, Edward J. (2008), "Statement of Edward J. Pinto Before the Committee on Oversight and Government Reform, United States House of Representatives," December 9.
- Roberts, Russell (2008), "How Government Stoked the Mania," *Wall Street Journal*, October 3.
- Shiller, Robert J. (2000), *Irrational Exuberance*, Princeton: Princeton University Press.
- Stock, James (2008), "Letter to the Editor," *Wall Street Journal*, October 8.
- Veronesi, Pietro and Luigi Zingales (2008), "Paulson's Gift," manuscript, University of Chicago Graduate School of Business.
- Wallison, Peter J. and Charles W. Calomiris (2008), "The Last Trillion-Dollar Commitment: The Destruction of Fannie Mae and Freddie Mac," American Enterprise Institute, September.
- White, Lawrence H. (2008), "How Did We Get into This Financial Mess?," Cato Institute Briefing Paper No. 110.

Figure 1: Real GDP

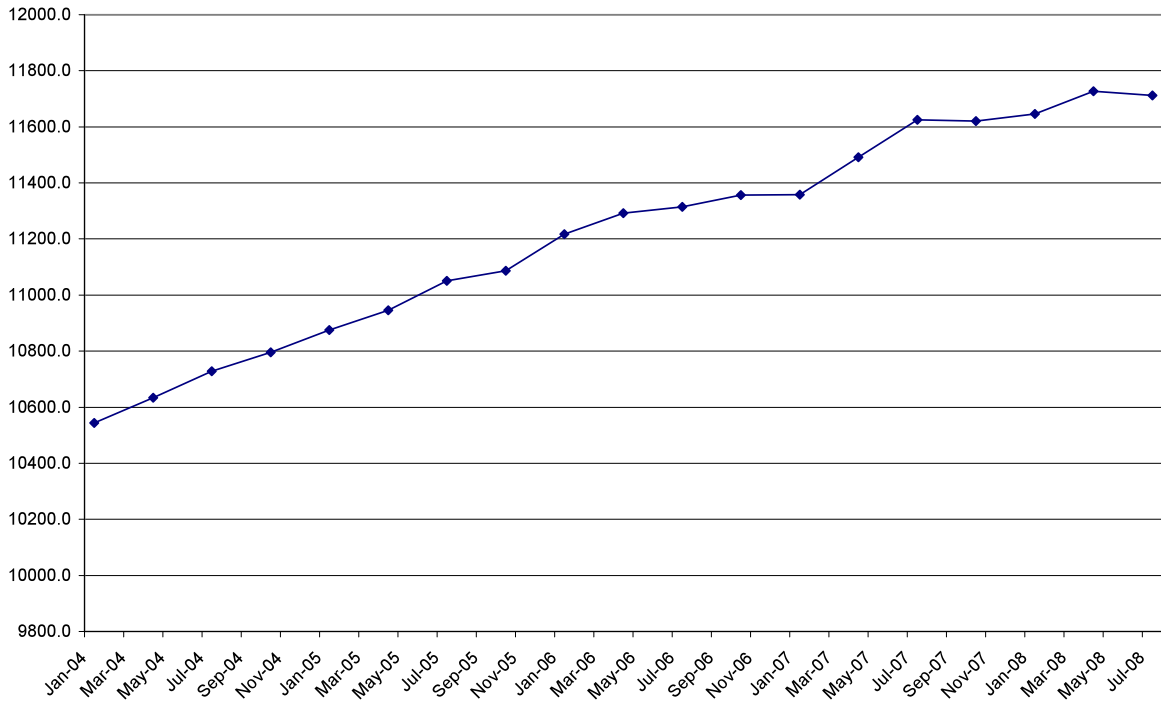


Figure 2: Index of Industrial Production

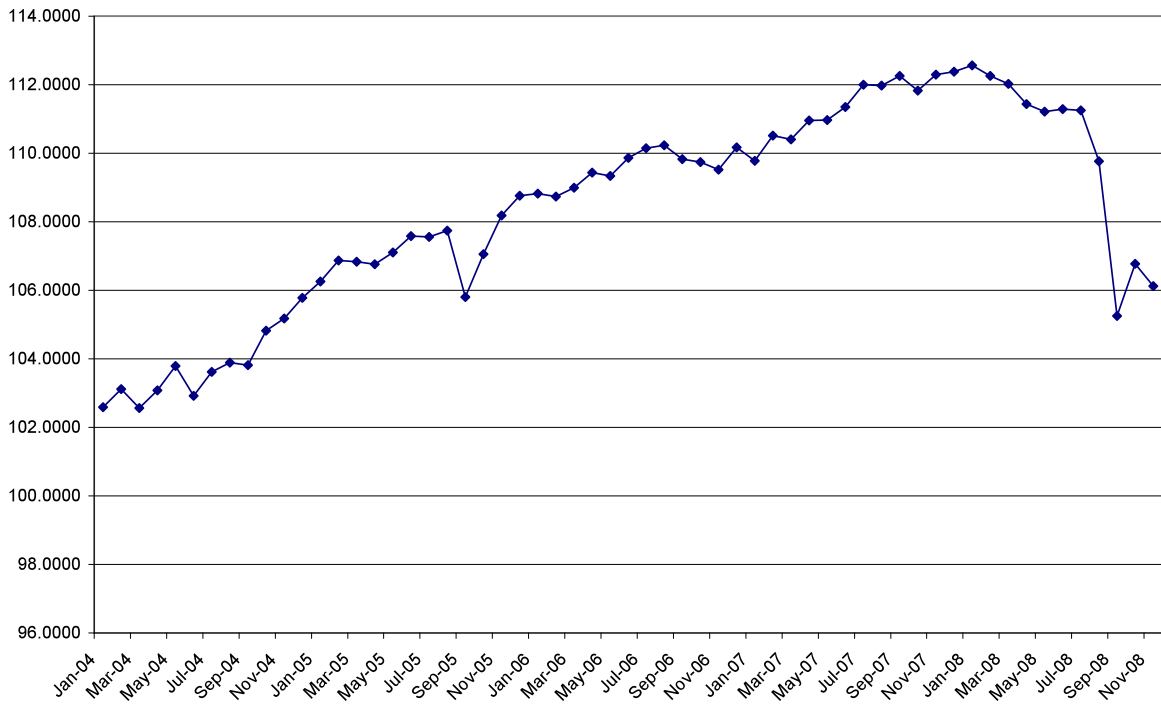


Figure 3: Real Retail Sales

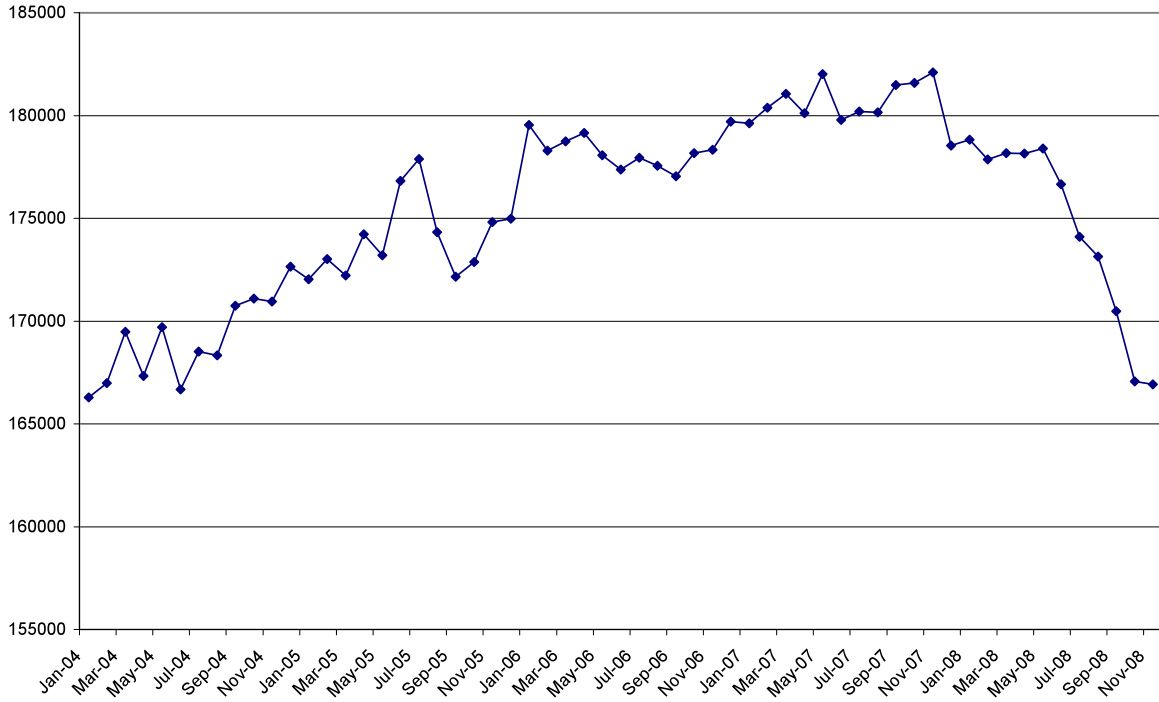


Figure 4: Employment

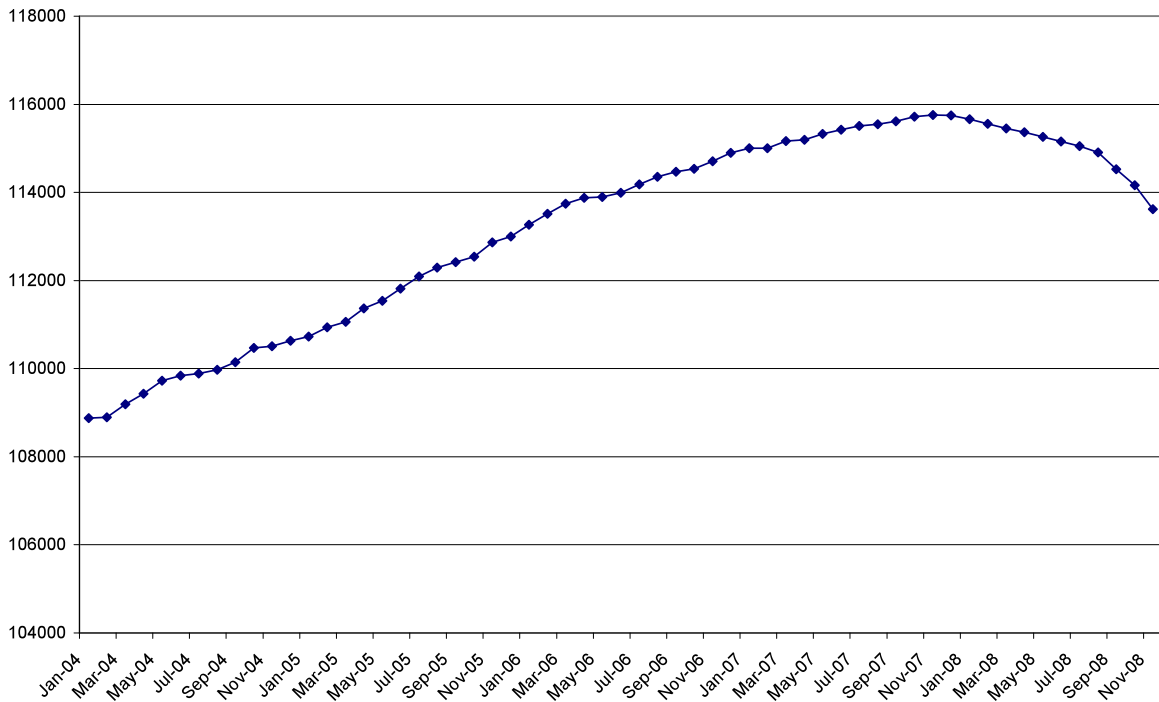


Figure 5: Housing Prices (Case-Shiller)

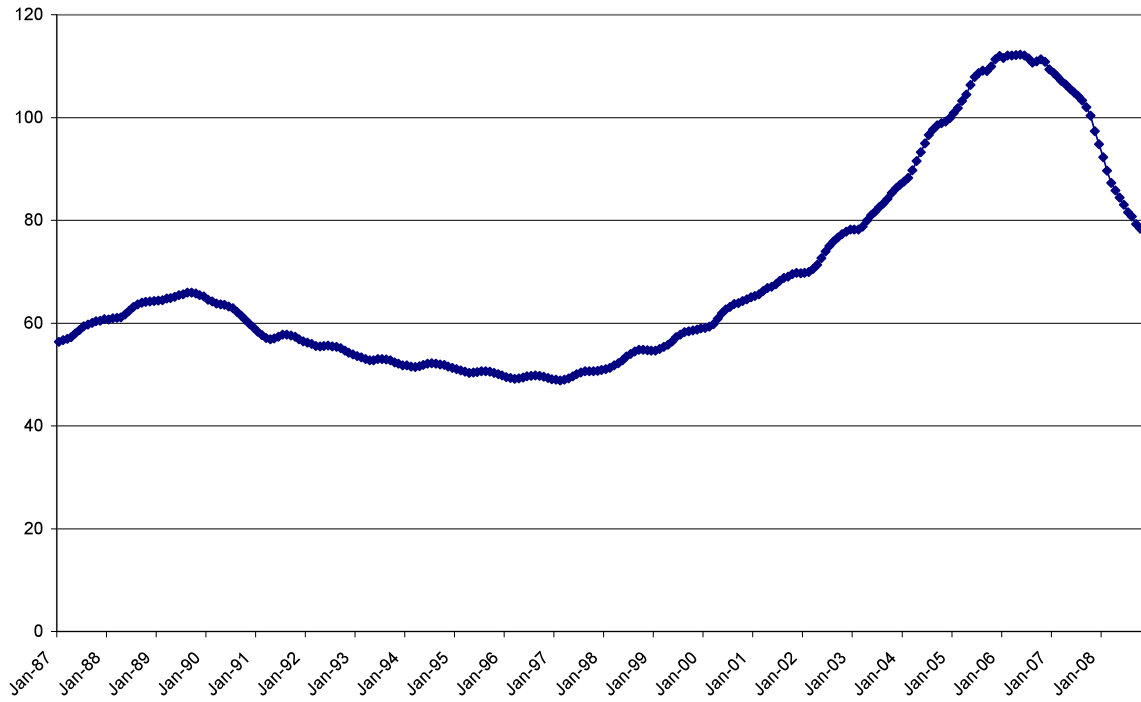


Figure 6: Homeownership Rate

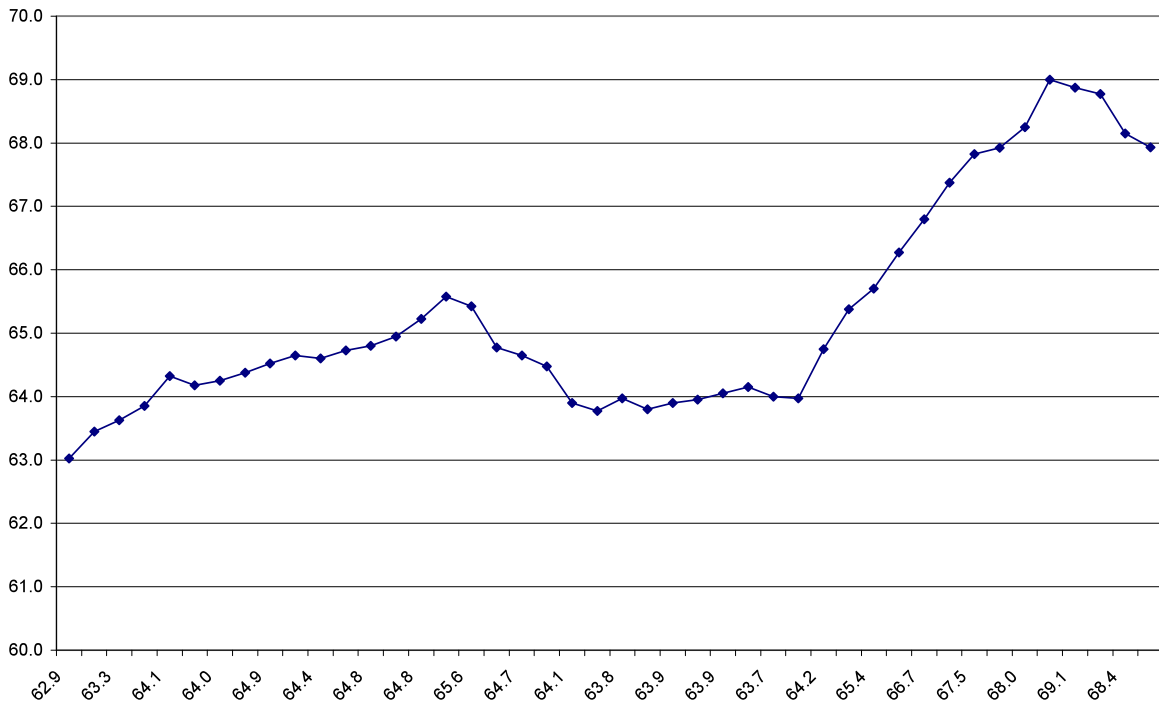


Figure 7: Real Housing Investment

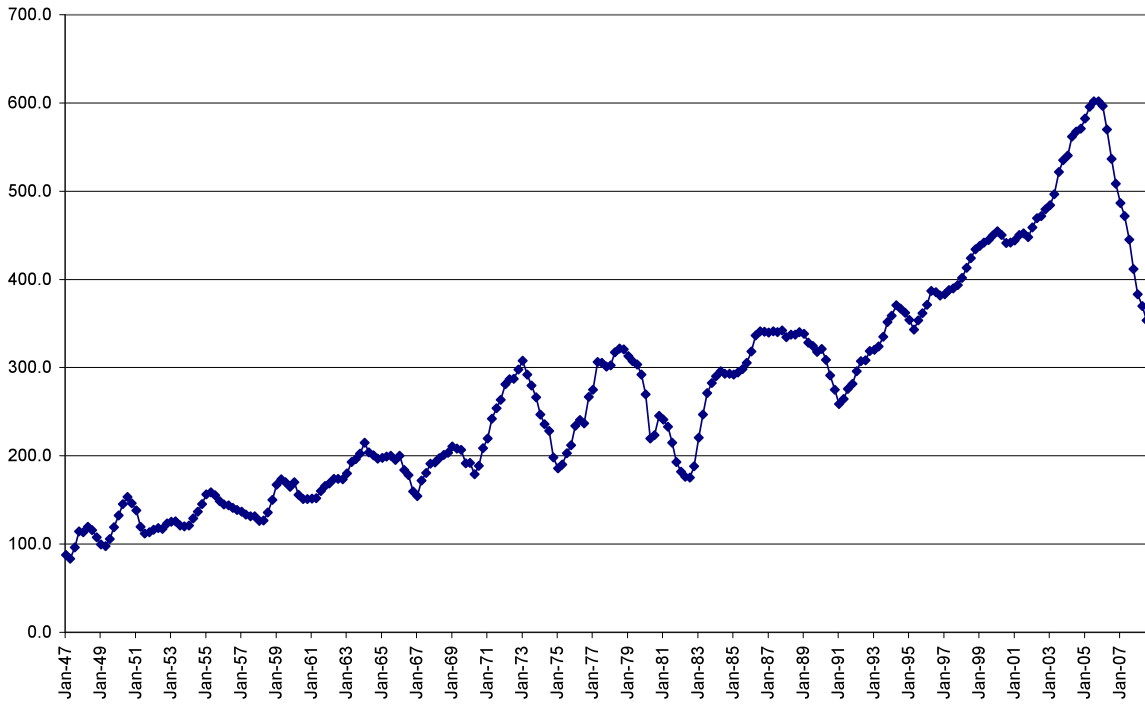


Figure 8: Real Stock Prices

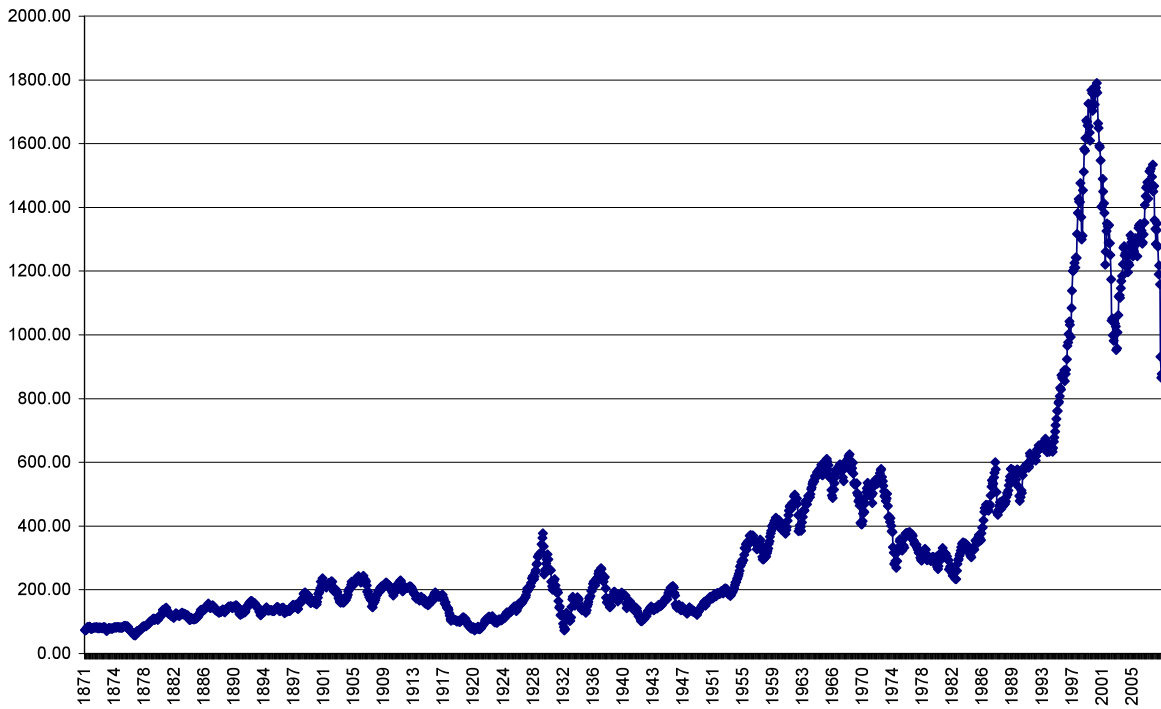
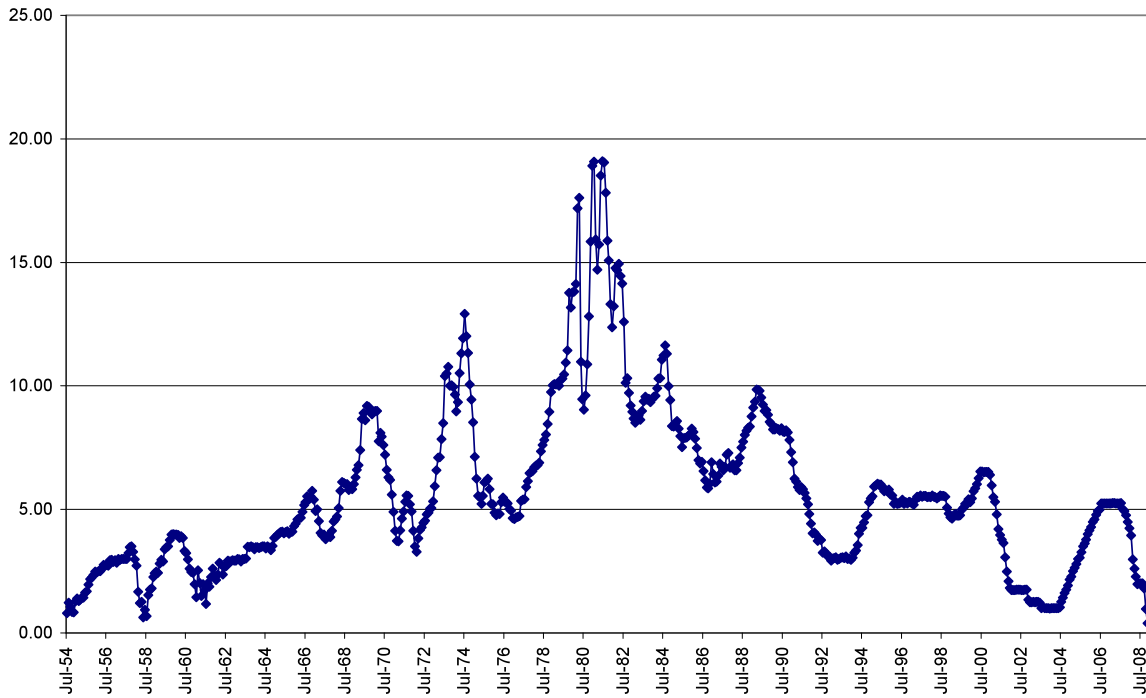


Figure 9: Effective Federal Funds Rate



Notes on Data Sources:

1. The data on GDP (GDPC1), industrial production (INDPRO), real retail sales (RRSFS), employment (USPRIV), residential investment (PRFIC1), the CPI (CPIAUCSL), and the federal funds rate (FEDFUNDS) are from the St. Louis Federal Reserve data bank, <http://research.stlouisfed.org/fred2/>.
2. The Case-Shiller housing price data are from Standard and Poor's, http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices_csmahp/0,0,0,0,0,0,0,0,1,1,0,0,0,0,0.html.
3. The data on homeownership are from the U.S. Census, <http://www.census.gov/hhes/www/housing/hvs/historic/index.html>.
4. The data on stock prices are from Shiller (2000), updated at <http://www.irrationalexuberance.com/>.