Financial Crisis : Through Various Perspectives

by

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SUBMITTED TO THE MIT SLOAN SCHOOL OF MANAGEMENT
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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ABSTRACT

The 2007 financial crisis can be viewed from various perspectives. First, it can be explained in a wider macroeconomic context, for example by looking at the housing bubble. Monetary policy can be explained according to the BB-NN and IS-LM models. Another way to view the crisis is from a banking perspective by analyzing the changes in the financial market and the deregulation of the banking industry. As the financial sector has grown enormously over the past years, the principle of "Too Big to Fail" should also be scrutinized. Wall Street's economic power was closely related to politics, and therefore it is very helpful to study the financial crisis from a political perspective. After looking at these perspectives, the regulation system should be considered in more detail, paying special attention to systemic risk. Apart from these perspectives, there is still another way to look at the financial crisis: as a Black Swan event. I will point out how the Black Swan event can provide a framework and meaning to interpret the financial crisis. Lastly, the problem of credit rating agencies will be addressed, as this is one of the main causes of the financial crisis. The goal of this thesis is to analyze the financial crisis from various perspectives, and find an appropriate solution to prevent the next financial crisis.

Thesis Supervisor: Simon H. Johnson
Title: Professor of Global Economics and Management

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First of all, I would like to express my deep appreciation to my thesis advisor, Simon Johnson. He has been extremely busy, especially in this semester, but he recommended very helpful books and materials. Most of all, his recently published book *13 Bankers* was very interesting and useful in writing this thesis. In fact, it was a great honor to have Simon Johnson as my thesis advisor. I could develop good rapport with him, and he always gives me thoughtful recommendations. By reading many works by Prof. Johnson, I felt his enthusiasm and professionalism. The mere fact that I am working with him is incredibly motivating for me. Because of him, I was more enthusiastic about my topic. Now I have the ability to do good research and formulate my thoughts logically, and I have extended the breadth and depth of my knowledge in economics.

I want to express sincere appreciation to Michael Cusumano who gave me excellent guidelines for writing the thesis. His advice made the writing of this thesis much easier. Moreover, he was always friendly, caring, and ready to help as a director of M.S. in Management Studies. Because of him, I have enjoyed my time at MIT a lot more.

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I also would like to express my deep gratitude to my company, Woori Bank. It gave me an invaluable opportunity as well as generous financial support. Especially, I am thankful to Jong Deuk Kim, my manager whom I respect a great deal and who wrote my

recommendation letter for MIT entrance, and to Hyun Suk Shin, Sang Hoon Ahn, and Seo Hyk Park. There are many people at Woori Bank who I would like to thank, including my co-workers. It is hard to express my feelings in words. Whenever I faced major difficulties at MIT, their mere existence and the beautiful memories that I have of them at the bank supported me tremendously.

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Chapter 1. Introduction

The 2007 financial crisis can be viewed from many perspectives. In this thesis, I want to analyze the causes of the crisis and suggest an appropriate way to prevent the next financial crisis. More specifically, there are two main reasons why I wanted to study the financial crisis in greater depth.

First, I am from South Korea, and in 1997, the Korean financial crisis took place. I was 15 years old, but I can remember how Korean society suffered from the crisis. The Korean financial crisis was in some respects similar to the U.S. crisis of 2007. One of the causes of the Korean financial crisis was the highly problematic banking system, which was also true for the U.S. For example, both Asia and the U.S. had weak regulation and supervision of the financial system. Both financial systems had become increasingly reliant on capital flows from sources other than domestic consumer savings, and firms relied on financing from these systems. Moral hazard became a problem in both systems as financial institutions' risk assessment was rather poor. Finally, "crony capitalism" played a role in both systems. In both cases, the financial system was highly leveraged, and when a negative shock occurred, the entire system rapidly became undone. The major difference is that in Asia, most of the above problems were concentrated in the banking system. In the U.S., these problems were located more in the "shadow banking system" as well as in some of the banks.

Second, while I was employed at Woori Bank (headquartered in Seoul) in 2007, the bank incurred substantial losses through collateralized debt obligations (CDOs) connected to Lehman Brothers. Ultimately, from 2004 to 2007, Woori Bank wrote down $1.25 billion in CDO and CDS investment losses. As a result, the senior manager of the Investment Department of the

bank had to resign, taking responsibility for all the losses. Among the big four banks in Korea, Woori Bank incurred the most losses through the financial crisis.

Studying the basic economic and political factors of the financial crisis of 2007 can create some pointers for the future. The crisis can be a chance for change. In this thesis, I will explain from six perspectives how the economic crisis developed. We can obtain important lessons from an analysis of these six perspectives, which are: Macroeconomic, Banking, Political, Regulation, Black Swan Event, and Credit Rating Agencies. Most importantly, I will analyze the fundamental economic and financial system in the United States.

Quoting a speech by Treasury Secretary Larry Summers, given at the 2000 conference of the American Economic Association,[1] "Bank runs or their international analogues are not driven by sunspots: their likelihood is driven and determined by the extent of fundamental weaknesses." One can see from his speech that financial crises are the result of fundamental policy weaknesses. Summers also said, "When well-capitalized and supervised banks, effective corporate governance and bankruptcy codes, and credible means of contract enforcement, along with other elements of a strong financial system, are present, significant amounts of will be sustainable. In their absence, every very small amounts of debt can be problematic."

In this thesis, the Macroeconomic and Banking perspectives will be close to the fundamental analysis while the Black Swan Event perspective will give us another angle for analysis. The Political, Regulation and Credit Rating Agencies perspectives could provide some lessons for creating a healthier economic climate.

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[1] Larry Summers, "International financial crises: Causes, prevention, and cures," *The American Economic Review Papers and Proceedings* 90 (2000): 1-16.

Chapter 2. Macroeconomic Perspective

2.1 Housing bubble and global credit boom

The U.S. economy was slow to recover from the 2001 recession. The weakness of the recovery led the Federal Reserve Board to continue cutting interest rates, pushing the federal funds rate down to 1.0 percent by the summer of 2003. Mortgage interest rates followed the federal funds rate on its downward trend: The average interest rate on 30-year fixed rate mortgages fell to 5.25 percent in the summer of 2003.

Moreover, Federal Reserve Board Chairman Alan Greenspan suggested that homebuyers were wasting money by taking out fixed rate mortgages instead of adjustable rate mortgages (ARMs). In reality, people could afford larger mortgages even with adjustable rates at the low rate of 2003.

These extraordinarily low interest rates accelerated the rise of house prices. From the fourth quarter of 2002 to the fourth quarter of 2006, real house prices rose by an additional 31.6 percent—an annual rate of 7.1 percent. This fueled even more construction, with housing starting to peak at 2,070,000 in 2005, more than 50 percent above the rate of the pre-bubble years. This rise in house prices also affected savings and consumption. Consumption boomed in this period, with the savings rate falling to less than 1.0 percent in 2005–2007.

As a consequence, the demand for housing increased, which led to a housing bubble. This happened because the supply of housing was relatively fixed in the short run. People expected the prices to continue rising, so they spent far more on houses than they would have spent elsewhere.

In fact, on average, nationwide the inflation-adjusted house prices were essentially

unchanged from 1953 to 1995.[2] Moreover, Robert Shiller showed that real house prices had been essentially unchanged for 100 years prior to 1995.[3] By 2002, house prices had risen by nearly 30 percent after adjusting for inflation. It is evident that there was a speculative bubble and not a fundamental reason for the rapid increase in prices. Another fact supporting this argument is that rent had risen by less than 10 percent.

Therefore, there was a supply-side effect as housing starts rose substantially from the mid-1990s to the late 1990s. By 2002, housing starts were almost 25 percent above the average rate of the three years immediately preceding the start of the bubble, i.e. 1993–1995.[4] This indicated an over-supply of rental housing with the vacancy rate rising by almost 9.0 percent in 2002, compared with the rate of 7.5 percent in the mid-1990s.

In the case of the U.S., the collapse of the stock bubble helped to feed the housing bubble, contrary to what occurred in Japan. People lost confidence in the stock market, which made them turn to investment in housing as a presumably safe alternative to the stock market.

Between 2002 and 2006, the issue of asset-backed securities (ABS) more than doubled to $840 billion, which was financed by domestic and foreign investors. Meanwhile, house prices continued to rise, which meant that home owners could have access to credit much more readily than before. Home mortgage lending rose by more than 50 percent during 2002–2005. Specifically, the share of Alt-A and subprime loans surged to a third of new mortgage originaitons in 2005, compared with less than 10 percent at the start of the decade. Moreover, government-sponsored mortgage enterprises rapidly expanded both prime mortgages and the

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[2] D. Baker, "The run-up in house prices: Is it real or is it another bubble?" Washington, D.C.: Center for Economic and Policy Research, 2002, http://www.cepr.net/index.php/publications/reports/the-run-up-in-home-prices-is-it-real-or-is-it-another-bubble/

[3] Robert Shiller, *Irrational Exuberance,* 2nd ed. (Princeton, NJ: Princeton University Press, 2006).

[4] http://www.census.gov/hhes/www/housing/hvs/qtr407/q407press.pdf.

purchase of nonprime mortgage-backed securities. As the housing bubble that was based on credit inflated, real estate prices were rising and savings from disposable income turned negative during 2005.

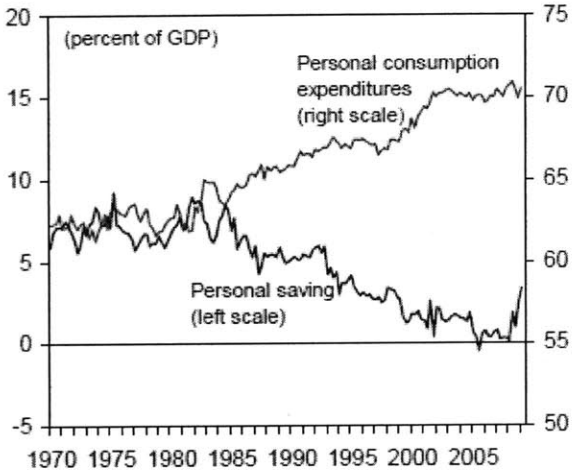


Figure 1

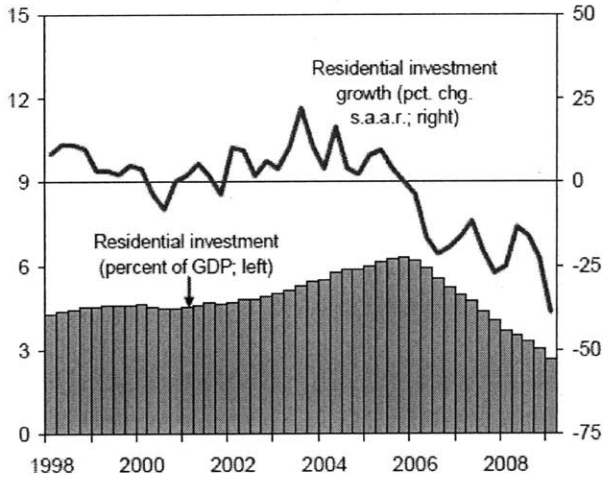


Figure 2

The consumption-oriented U.S. growth led to a decrease in personal savings. However, in 2006 and 2007, as the housing downturn gathered pace, default rates on subprime mortgages rose and then surged. Housing construction crashed, and residential investment comprised only a small share of the GDP.

According to the Case-Shiller composite (20-city) index, the U.S. house prices hit their peak in mid-2006; whereafter they fell by just over 30 percent. The inventory of unsold homes in the U.S. market is over 11 months of new supply, versus an average of six months during nomal periods.

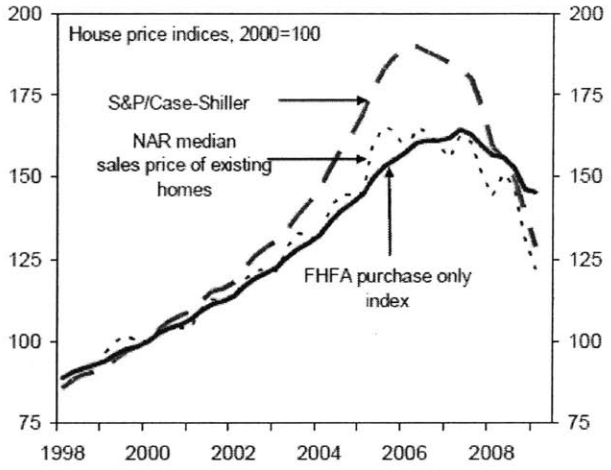


Figure 3

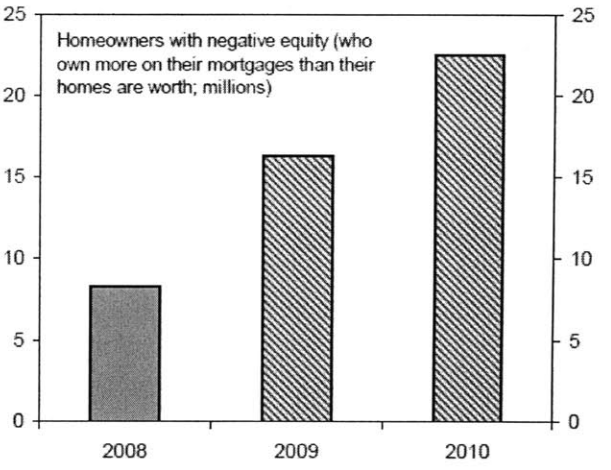


Figure 4

As illustrated in Figures 3 and 4, after the surge, house prices started falling in the past few years, which has increased the number of homeowners with negative equity.

It also boosted foreclosures and resulted in a tightening of mortgage lending standards.

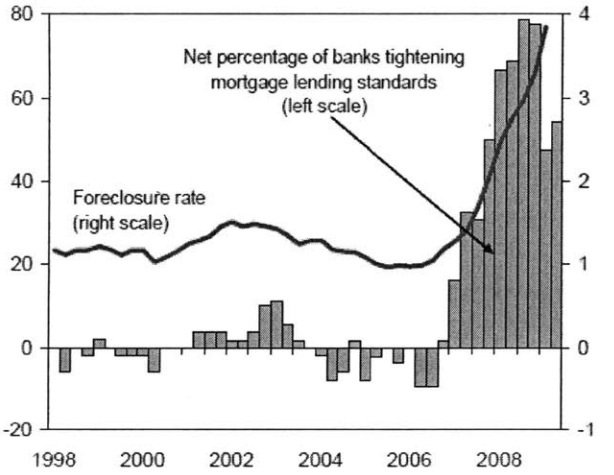


Figure 5

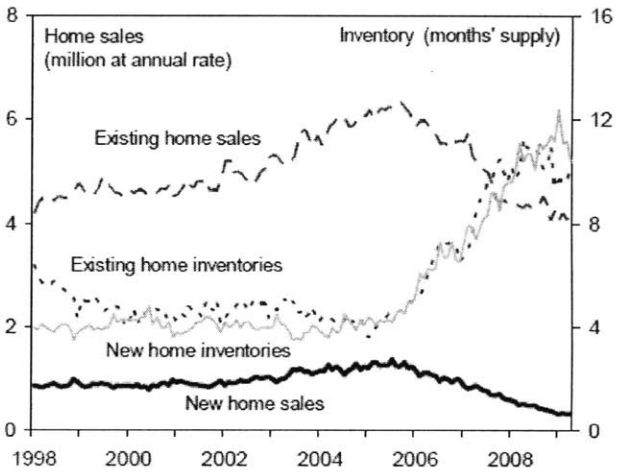


Figure 6

Consequently, it raised the inventory of vacant homes and lowered the sales of houses. These consequences caused household wealth to plummet after the housing boom.

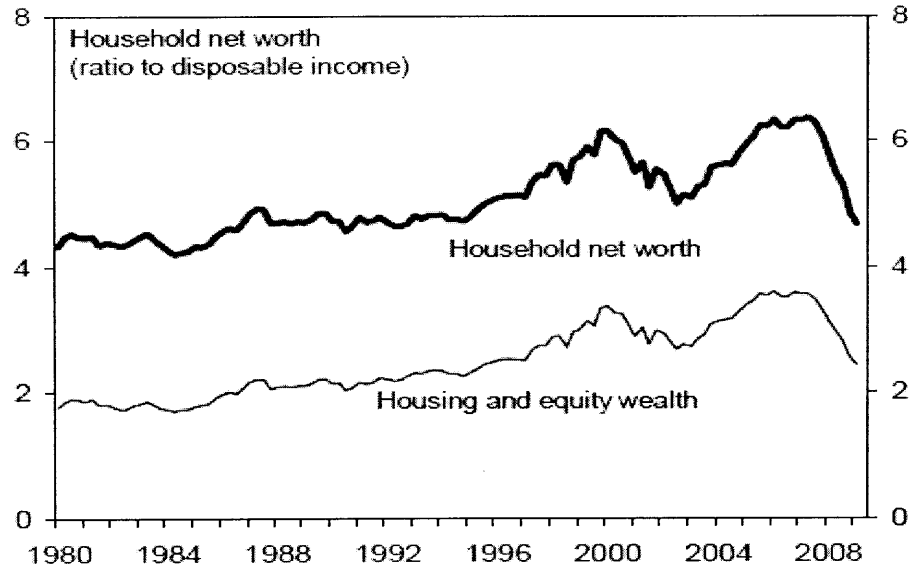


Figure 7

Source: Board of Governors of the Federal Reserve System; Bureau of Economic Analysis; Bureau of Labor Statistics; Haver Analytics; and Fund staff calculations.

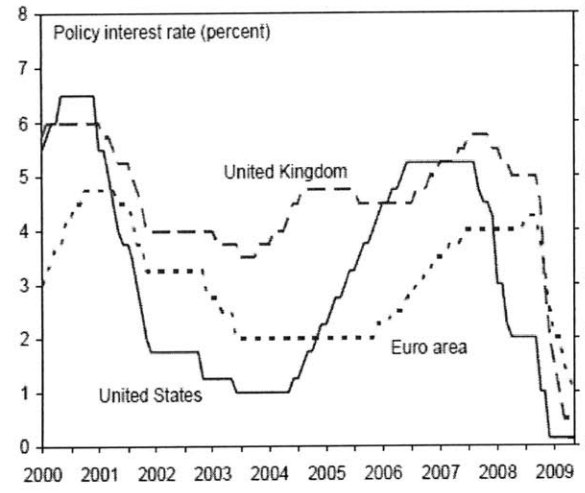
2.2 Monetary policy and macroeconomic performance

Unfortunately, central banks have historically been opposed to identifying and analyzing housing bubbles. These banks tend to think that they have only short-term interest rates as a policy instrument and that it has to be used for maintaining price stability. However, they cannot reliably identify housing bubbles, and interest rates are too blunt an instrument to affect asset prices without large collateral damage to the economy. When there is an asset bubble, a more relaxed monetary policy can usually revive the economy at a relatively low cost.[5]

The Federal Reserve cut its policy rate by 100 bps over the second half of 2007;

[5] Morris Goldstein, *Global Financial Surveillance and the Quest for Financial Stability*, Peterson Institute for International Economics (June 15, 2009).

nevertheless, the macrofinancial feedback loop intensified, and by the end of the year, the economy was in recession, and real GDP contracted sharply.



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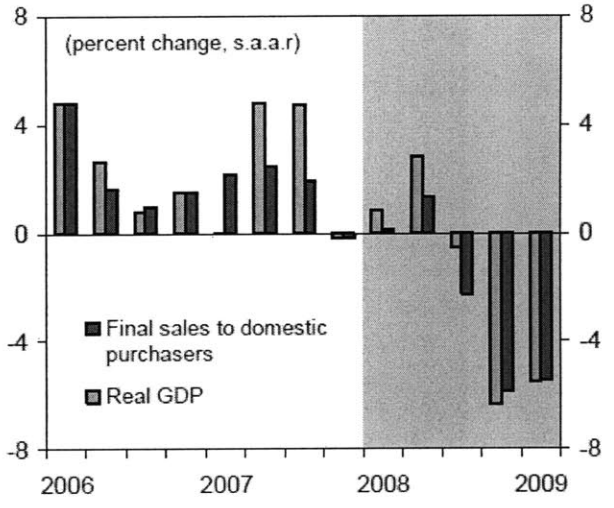


Figure 9

Unemployment rose steadily and the unemployment rate surged, with monthly job losses at 741,000 in January. As a result, investment also fell.

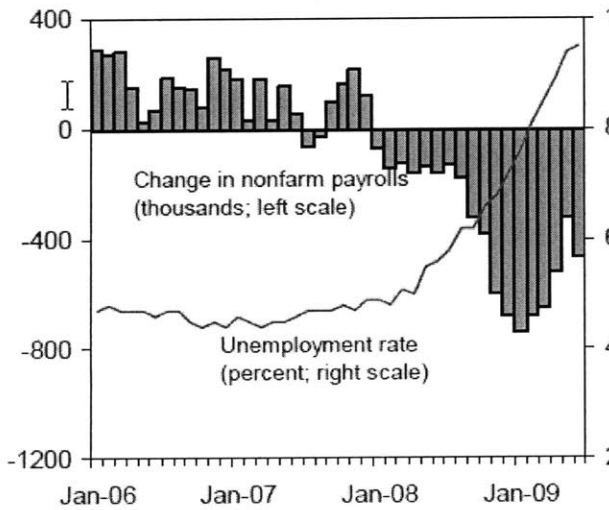


Figure 10

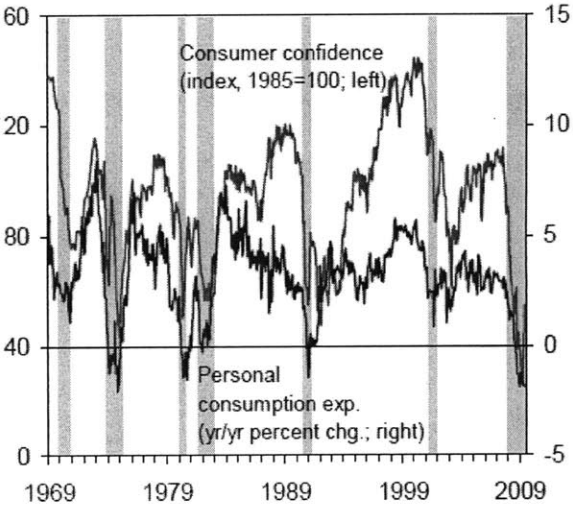


Figure 11

Moreover, consumer confidence held back consumption, which continued to register at very low levels. Following that, the record of imports collapsed.

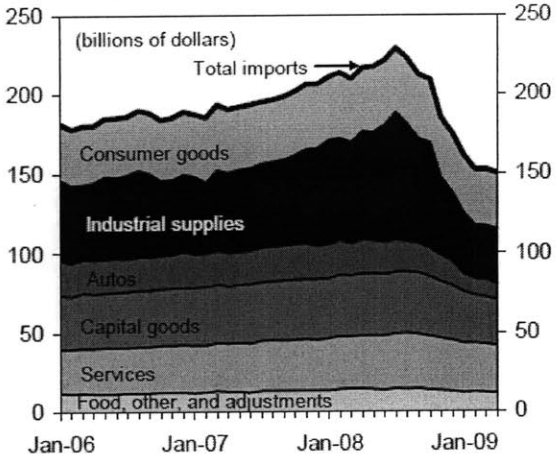


Figure 12

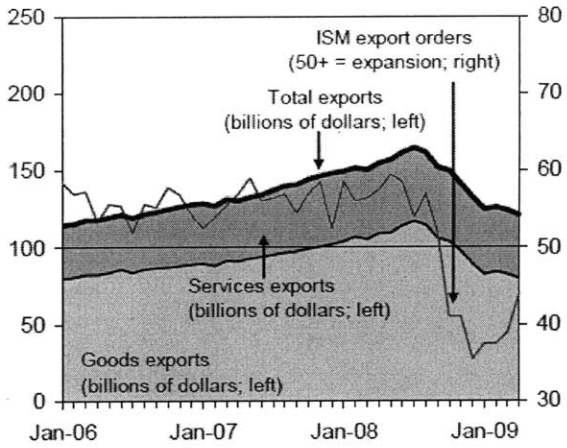


Figure 13

Although foreign demand for U.S. exports also dropped, the trade deficit was narrowed.

Figure 13: Source, Bureau of Economic Analysis: Bureau of Labor Statistics: U.S. Census Bureau; Institute for Supply Management; Haver Analytics; and Fund staff calculations.

2.3 Monetary policy: IS-LM model

Figure 14 shows the federal funds interest rate from 2000 to 2006.

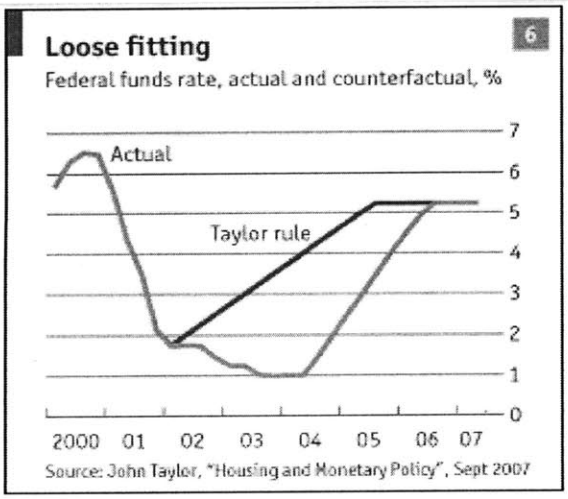


Figure 14
Source: *The Economist*, October 18, 2007.

The graph in Figure 14 describes how U.S. monetary policy was conducted earlier under Alan Greenspan, where the Taylor rule was not followed. It shows that the actual interest rate decisions fell well below what historical experience suggests should be the case. The line that shows the actual interest rate decisions of the Federal Reserve (Fed) falls to one percent in 2003, remains at that level until the start of 2004, and then starts rising steadily until 2006. The other line shows what the interest rate would have been if the Fed had followed the Taylor rule.

According to this empirical measure, it can be said that monetary policy was too easy during this period and was an unusually big deviation from the Taylor rule. As there has been no greater or more persistent deviation in the actual Fed policy since the Great Depression, this shows a clear evidence of monetary excesses during the period.

However, this arguably extreme monetary response could be considered appropriate according to macroeconomic theory. The Fed actually described this decision as a purposeful deviation caused by the fear of deflation that occurred in Japan in the 1990s.

It is useful to consider this policy against the IS-LM model. There was a sharp decrease in real personal consumption of 3.8% in the 3rd quarter of 2008 and of 4.3% in the 4thquarter of 2008, which led to a significant shift to the left of the IS curve in the IS-LM model. The short-run result was a substantial decrease in output, and if the target interest rate had been maintained, output would have declined further to Y", as shown in Figure 15.

Central banks helped to stimulate domestic demand by decreasing interest rates that caused a downward shift of the LM curve. This helped offset the shift of the IS curve to the left, thereby encouraging the maintenance of output levels at Y''' in the short run, as indicated in the figure.

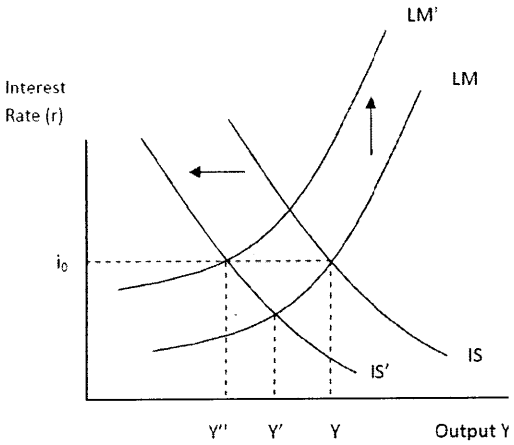


Figure 15

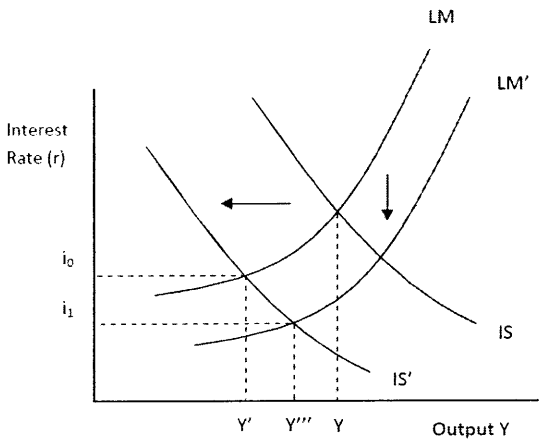


Figure 16

Following the IS-LM model, it can be said that the expansionary policy was appropriate because the decreasing interest rate could offset the upward pressure on real interest rates from an upward shift of the LM curve.

2.4 Large global imbalances

From a fundamental perspective, we can conclude that the financial crisis in the U.S. was caused by external imbalances and their foreign counterparts.[6] Global imbalances were manifested through a substantial increase in the current account deficit of the U.S., which was influenced by a substantial surplus in Asia, particularly in China, and in oil-exporting countries in the Middle East and Russia. Figure 17 compares the current account balance and budget balance of the U.S. and the Organization for Economic Co-operation and Development (OECD).

[6] Richard Portes, "Global imbalances," in Mathias Dewatripont, Xavier Freixas, and Richard Portes (Eds.), *Macroeconomic Stability and Financial Regulation: Key Issues for the G20* (London: Centre for Economic Policy Research, 2009).

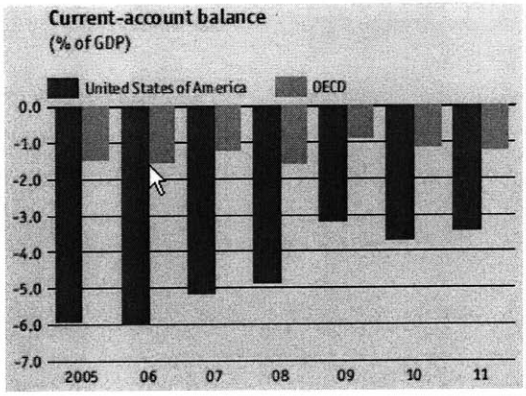


Figure 17

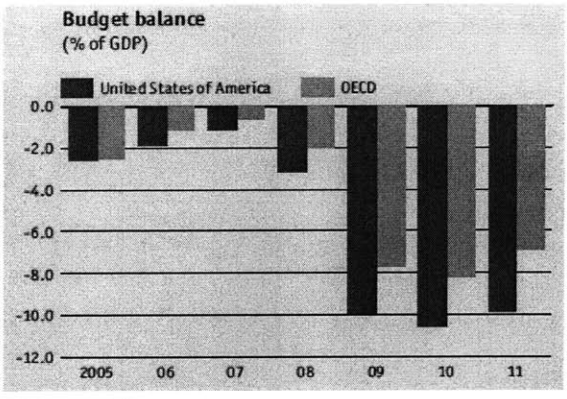


Figure 18

Source: Country Report (U.S.), *Economist Intelligence Unit*, December 2009.

The savings and investment imbalances created the so-called savings glut in developing countries and led to sizable net flows of capital from developing to advanced countries. The United States was the primary recipient of these flows. The sizable U.S. current account deficits, which exceeded 6 percent of GDP at their peak in 2006, required equivalent net capital inflows from the rest of the world.

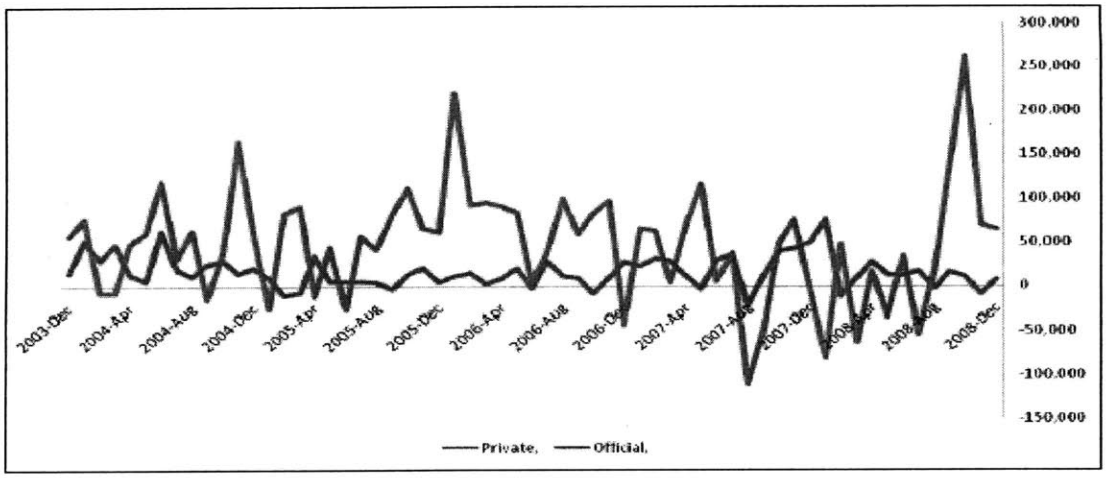


Figure 19: Sudden Inflow of Capital to U.S. Monthly Cross-Border Financial Flows
Source: UST TIC Data.

These imbalances in the current account are often seen as a result of the relative inflexibility of the currency regimes in China and some other emerging economies.

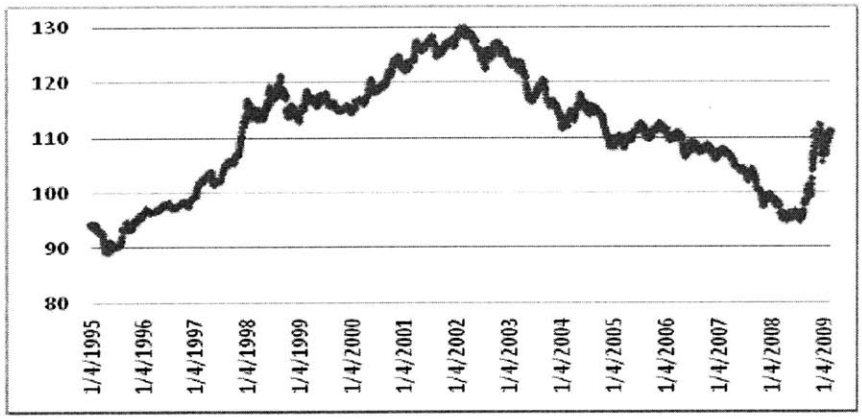


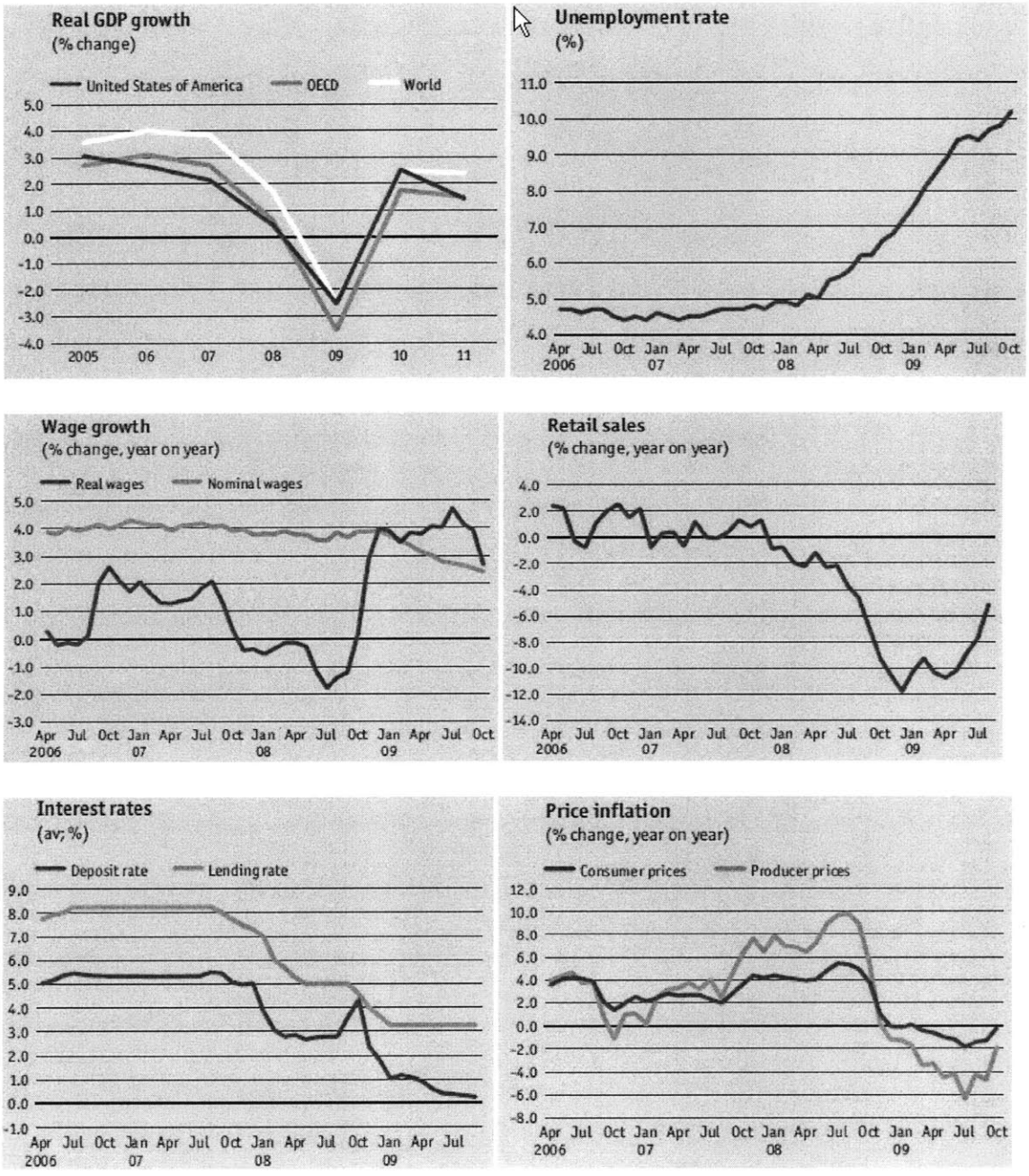
Figure 20: U.S. Exchange Rate: Broad Index

Source: Freelunch.com, U.S. Federal Reserve Board.

China's current account surplus, in particular, skyrocketed, and reserves rose to record levels. The competitive force from China also urged other East Asian countries to limit the appreciation of their currencies against the U.S. dollar, thereby boosting external surpluses and reserve accumulation in these countries. Oil-exporting countries' current account surpluses also rose because the increase in worldwide demand continued to push up oil prices. Consequently, developing countries' external surpluses flowed back to the United States through net capital flows. This financing helped fund a continuation of the consumption and housing boom, as well as a steady rise in asset prices.

The U.S. current account deficit of the past 25 years has resulted in a negative net international investment position (NIIP). In other words, the U.S. will need to make net investment income payments. The NII stream remains positive despite the negative $2.4 trillion NIIP as of 2007. The magnitude of the NIIP as a share of GDP and the magnitude of the NII stream as a shrare of GDP are often seen as relevant parameters when considering the

sustainability of the current account deficit.[7] Other than the current account balance, additional macroeconomic indicators are given in Figure 21.



[7] Bertaut, Kamin, and Thomas (2008) emphasize that NIIP is a technically more correct perspective.

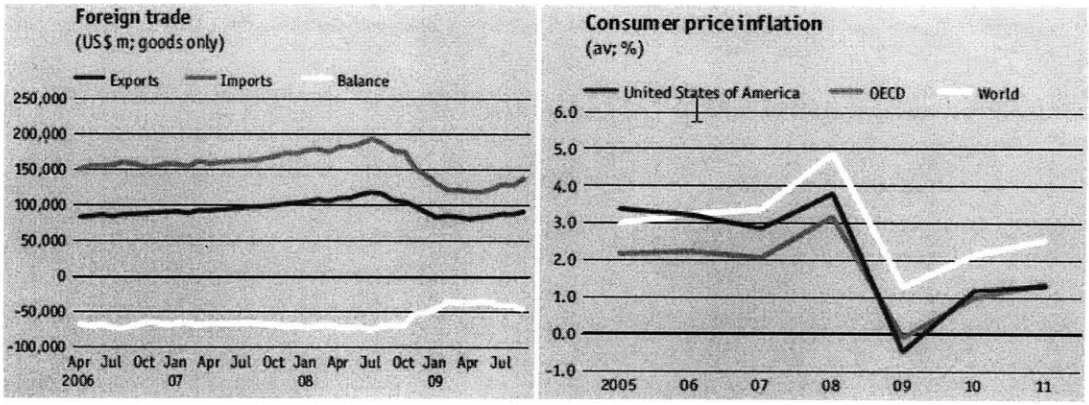


Figure 21

Source: Country Report (U.S.), *Economist Intelligence Unit*, December 2009

These macroeconomic indicators help to construct the BB-NN model of the imbalances and capital inflows, as illustrated in Figure 22.

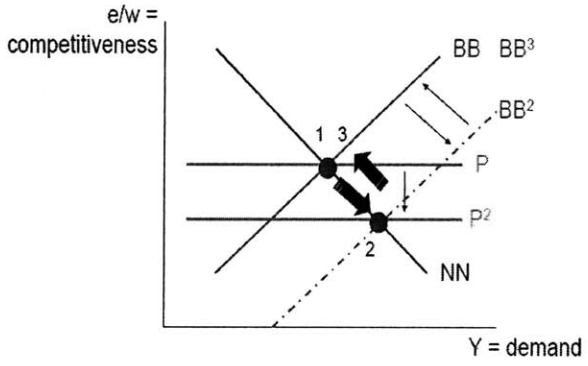


Figure 22: U.S. pre-2008

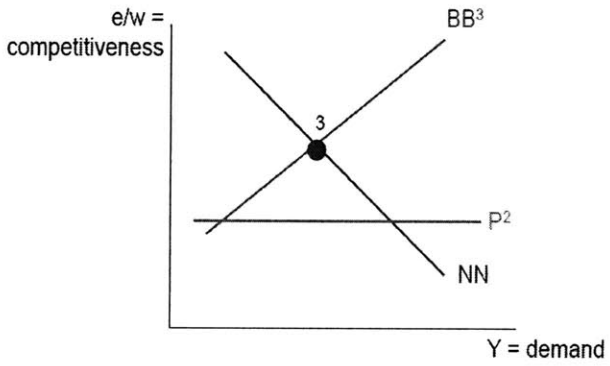


Figure 23: U.S. end 2008

First, after the financial crisis, the current account deficit was sharply reduced in the short run. William R. Cline calculated that the U.S. external imbalance would drop as low as 3.1 percent of GDP ($430 billion) in 2009, which would be its lowest level since 1998.[8]

[8] C. Fred Bergsten, *The Global Crisis and the International Economic Position of the United States,* Peterson Institute for International Economics (2009).

Second, the crisis sharply increased the budget deficit. Lower tax revenues and increased spending, including for fiscal stimulus and other rescue operations, raised the U.S. internal imbalance.

Third, the crisis created an unprecedented demand for safe dollar assets and particularly U.S. Treasury securities. The dollar strengthened by about 13 percent, on average, including about 20 percent against the euro. Yields on Treasury securities dropped sharply, even almost to zero on short-term maturities during some periods.

Chapter 3. Banking Perspective

3.1 Change in financial market

Before 1980, the world of finance was fairly simple. Commercial banks made loans, took deposits, and raised some of their funding in the money market.[9]

Investment banks helped large corporations to raise equity by managing stock offerings and helped them borrow money by managing bond offerings and distributing newly created securities to investors. This role was called "underwriting." The process entails that an underwriter brings a new security issue to the investing public in an offering. The underwriter will guarantee a certain price for a certain number of securities to the party that is issuing the security in exchange for a fee. In this way, the issuer is secure in the knowledge that a certain minimum will be raised from the issue, while the underwriter bears the risk of the issue. In effect, underwriters buy the paper, convert it and resell it at a higher price to investors. The lead manager is responsible for conducting due diligence of the issuer and helping to prepare the relevant Securities and Exchange Commission (SEC) filings.

In the 1960s, the roles regarding underwriting were clear: Morgan Stanley, Kuhn Loeb, Dillon Read, and First Boston were the leaders in managing deals and organizing syndicates which actually sold the deals. This process could be perceived as risky, since there was always a chance that the investment bank would have to sell off the securities at a loss.[10]

Investment bankers had strong relationships with the CEOs of the corporations involved. The investment banking team devoted a lot of time to the top executives because underwriting

[9] Many commercial banks clearly issued bonds and stocks as part of their capital structure, while most savings and loans then were mutuals.

[10] Yves Smith, *Econned: How Unenlightened Self Interest Undermined Democracy and Corrupted Capitalism* (New York: Palgrave Macmillan, 2010), 137.

seemed mysterious, there was serious money at stake, and the process was time-consuming.

Investment banks also carried out stock transactions for individuals or institutions that wanted to trade. The commissions on trades were fixed, so they were absolutely secure sources of income.

Finally, investment banks traded securities for their own benefit, or created markets in securities that did not trade on exchanges, for example municipal bonds. Credit was mainly provided to companies by commercial banks, and only very large companies raised money directly from investors in the bond market. The bond business was far smaller in terms of industry profits than stockbroking. Almost all buyers were large institutions that seldom traded such as pension funds, insurance companies, and bank trust departments.

- Traditional roles of financial institutions

Institution	*Traditional role*	*Prominent examples (1980)*
Commercial banks	• Take deposits • Give loans to individuals and businesses	• Citibank • Chase Manhattan • Bank of America
Investment banks (securities firms, broker-dealers)	• Raise money for corporations and government entities (underwrite stocks and bonds) • Trade securities or help others to trade (create markets and brokerage) • Help carry out or prevent corporate takeovers (mergers and acquisitions)	• Morgan Stanley • Goldman Sachs • First Boston (acquired by Credit Suisse) • Salomon Brothers (now part of Citigroup)
Institutional investors	• Manage money for individuals, corporations, endowments, foundations, and try to increase value in a secure manner • Subject to regulatory oversight	• Insurance companies • Pension funds • Mutual funds
Largely unregulated funds	• Manage money for individuals, corporations, endowments, foundations, and try to increase value quickly • Typically charge performance fees based on profits to investor, in addition to annual fees • Minimal oversight	• Very few hedge funds, small venture capital and LBO (later "private equity") funds grew rapidly later in the decade. Not yet seen as "institutional"

Table 1

Source: Smith 2010, 147 (see note 10).

The growth of the mutual funds industry in the 1960s was the first change that shifted power and profit. Stocktrading carried fixed commissions, and brokers were making profit from large trades. However, in 1968, volume discounts were introduced, and commissions were deregulated completely in 1975, which did not bode well for securities firms. The bull market of the 1960s ended suddenly when the NYSE composite index plunged by 37% from May 14, 1969 to May 25, 1970. According to the new rules, the volume of stock trades diminished at the same time that commissions started falling. Therefore, many firms failed, and the survivors tried to find new profit sources in a competitive industry.

Alongside these events, investment banks created merger and acquisitions departments in the 1970s. For example, in 1974, a Canadian mining company, International Nickel Company (Inco), started a wave of transactions with its hostile tender offer for Electric Storage Battery (ESB), the world's biggest battery maker. At the time, hostile deals were hardly novel, but the fact that Morgan Stanley, the leading investment bank, backed International Nickel was a new development.[11] As hostile takeovers grew popular, Morgan Stanley played a leading role in some of the biggest deals of the decade. On the other hand, Goldman Sachs specialized in takeover defenses in 1974, and it defended Electric Storage Battery against the hostile takeover bid. Morgan Stanley's clients were likely to be the biggest companies that tended to be the aggressors, while Goldman's clients were more likely to be the potential prey. This boosted Goldman's reputation as an investment advisor.

In the bond business, it became critical to be big. Due to the inflation of the 1970s, investors wanted to be able to trade quickly and in large volumes, with dealers who could provide information on where the market was headed. Therefore, clients preferred to deal with a

[11] Myron Kandel, "Cannibals at work," *The New York Times* (May 10, 1987), http://www.nytimes.

firm that could handle sizable orders and that they believed had a better view of the market. The term "bulge bracket" referred to the group of investment banks considered the largest and most profitable in the world. By 1975, the institutional equity leader Goldman Sachs, bond powerhouse Salomon Brothers, and retail kingpin Merill Lynch had joined this prized "bulge bracket" at the expense of the fading white-shoe firms Kuhn Loeb and Dillon Read.[12]

All securities firms felt the loss in safe revenue. An industry that was full of small players had changed radically from the 1960s to the 1980s and became increasingly concentrated. The main source of profit shifted away from low-risk stock commissions to a much higher risk activity, as brokerage commissions fell as a percentage of industry revenues from 53.8% in 1972 to 17.3% in 1991.[13]

At the same time, the role of commercial banks was also being eroded. Money market funds, created in the 1970s, competed for bank deposits. In addition, the lifting of restrictions on interstate banking meant local banks faced more competition from big regional players across a broad range of services. In the 1990s, U.S. commercial banks also had to contend with more aggressive competition from European banks that, unlike American banks, were participating in both investment and commercial banking. Many of them enjoyed low-cost funding, and their size was an advantage in some areas.[14]

Therefore, a new competitive dynamic emerged for both investment and commercial banks. Deregulation and changes in banks' competitive environment not only forced consolidation but also led to the pursuit of a greater scale of operations.

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[12] Ron Chernow, *The House of Morgan; An American Banking Dynasty and the Rise of Modern Finance* (New York: Grove Press, 1990; reprint ed., 2001), 625.

[13] John O. Matthews, *Struggle and Survival on Wall Street: The Economics of Competition among Securities Firms* (New York: Oxford University Press, 1994), 12.

[14] Smith 2010, 141.

By the 1980s, the critical capabilities were trading and institutional distribution. Under these circumstances, commercial banks were struggling to survive in their own highly competitive environment, and to preserve profits, they adopted new business models, taking on more risk and using less equity to compete with the new entrants to the best of their ability.[15] The biggest change was their expansion into activities that were largely unregulated. This was later described as the shadow banking system.

With the passing of the Glass-Steagall Act, the legislation separating commercial and investment banking which was revoked in 1999; banks had already undergone many regulatory changes, and commercial banks held large market shares in many capital market activities.

Through expansion, the transformation of the financial sector into new businesses changed the face of the financial industry. All banks, regardless of their origins, became involved in underwriting securities, manufacturing securities, trading securities, and trading derivatives.

The firms that were grounded in commercial banking, such as Citigroup, JPMorgan Chase, and Bank of America, also had wide-ranging branch operations taking hundreds of billions of dollars in deposits. Other firms, which originated from traditional investment banks and brokerages, such as Goldman Sachs, Morgan Stanley, and Merrill Lynch, funded their operations through the capital markets. They now needed to enter the riskier and more profitable world of finance. In 2004, Gary Stern and Ron Feldman, the president and senior vice president, respectively, of the Federal Reserve Bank of Minneapolis, found that "after becoming larger, banks 'spend' their diversification benefit by taking on additional risk. For example, larger banks hold assets in riskier categories, such as commercial and industrial loans, relative to smaller

[15] Michael Keeley, "Deposit insurance, risk, and market power in banking," *American Economic Review* 80, no. 5 (1990): 1183-1200.

banks."16 These banks' goal was to become big and to take on risk.

The main division in the industry was no longer between commercial and investment banks, and large financial companies could dominate the financial services industry.

3.2 Brief history of banks

- **Glass-Steagall Act**

From 1900 to 1929, banks in the U.S. artificially inflated the market by underwriting corporate stock. This culminated in a crash, when all banks in the United States closed for four days. More than 4,000 never reopened, which led to a run on the banks and the Great Depression. The Glass-Steagall Act was passed in direct response to the Great Depression and helped to stabilize and rebuild the nation's economy. It expanded the regulatory powers of the Federal Reserve, prohibited banks from trading in corporate securities, and created the Federal Deposit Insurance Corporation (FDIC).

➢ *Trends in deregulation*

- **1978, Marquette decision**

The U.S. Supreme Court allowed banks to export the usury laws of their home state to other states, which was the beginning of deregulation. Until the 1970s, banking was governed primarily by state laws, and banks could operate only in their home states. A Nebraska bank solicited customers from Minnesota, but charged them Nebraska's higher interest rate. Minnesota's Marquette Bank filed a lawsuit to stop this practice, and the case was referred to the

[16] Gary H. Stern and Ron J. Feldman, *Too Big to Fail: The Hazards of Bank Bailouts* (Washington: Brookings Institution Press, 2009), 64-65.

Supreme Court. In its "Marquette Decision," the Court ruled that banks could export interest rates to other states. This prompted banks to establish headquarters in states that would allow them to charge the highest interest rates, which substantially boosted the tax base of those states. To remain competitive, other states eliminated the usury rate ceiling. This effectively led to the deregulation of state interest laws, also known as the usury law.

- **1980, Depository Institutions Deregulation and Monetary Control Act**

This legislation increased deposit insurance from $40,000 to $100,000, authorized new authority for thrift institutions, and called for phasing out interest rate ceilings on deposit accounts. This resulted in the abolishment of state caps on interest rates that could be charged for primary mortgages. In addition, this legislation gave banks the incentive to approve mortgages for people with problematic credit histories.

- **1982, Garn-St. Germain Depository Institutions Act**

This Act deregulated thrifts almost entirely by allowing commercial lending and providing a new account to compete with money market mutual funds. This was a Reagan administration initiative that was passed with strong bi-partisan support.

- **1987, FSLIC insolvency**

As a result of mounting institutional failures, the Government Accountability Office (GAO) declared the deposit insurance fund of the savings and loan industry insolvent.

- **1989, Financial Institutions Reform and Recovery Act**

This Act abolished the Federal Home Loan Bank Board (FHLBB) and Federal Savings and Loan Insurance Corporation (FSLIC). Those duties were transferred to the Office of Thrift Supervision (OTS) and the Federal Deposit Insurance Corporation (FDIC), respectively. The plan also created the Resolution Trust Corporation for resolving failed thrifts.

- **1994, Riegle-Neal Interstate Banking and Branching Efficiency Act**

This Bill eliminated previous restrictions on interstate banking and bank branching. In other words, it allowed bank holding companies to acquire banks in any state and allowed banks to open branches in new states.

- **1996, Fed reinterprets Glass-Steagall**

The Federal Reserve reinterpreted the Glass-Steagall Act several times, eventually allowing bank holding companies to earn up to 25 percent of their revenues through investment banking.

- **1998, Citigroup-Travelers merger**

A commercial bank was merged with an insurance company that owned an investment bank to form the world's largest financial services company, Citigroup Inc.

- **1999, Gramm-Leach-Bliley Act**

With support from Fed Chairman Alan Greenspan, Treasury Secretary Rubin, and his successor Lawrence Summers, the Act repealed the Glass-Steagall Act in its entirety. This event is also referred to as the Financial Services Modernization Act of 1999. It broke down the walls

between banking, insurance, and investment. In other words, it demolished the remaining barriers separating commercial and investment banking and insurance.

- **2000, Commodity Futures Modernization Act**

This Act was passed with support from the Clinton Administration, including the backing from Treasury Secretary Lawrence Summers and bi-partisan support in Congress. The Act prevented the Commodity Futures Trading Commission from regulating many over-the-counter derivative contracts, including credit default swaps.

- **2004, Voluntary regulation**

The SEC proposed a system of voluntary regulation under the Consolidated Supervised Entities program, allowing investment banks to hold less capital in reserve and to increase their leverage.

➢ *Financial crisis*

- **2007, Subprime mortgage crisis**

Defaults on subprime loans sent shockwaves through the secondary mortgage market and the entire financial system.

- **December 2007, term auction facility**

The special liquidity facility of the Federal Reserve made loans available to depository institutions. Unlike lending through the discount window, there is no public disclosure on loans made through this facility.

- **March 2008, Bear Stearns collapse**

The investment bank was sold to JPMorgan Chase with the assistance from the Federal Reserve.

- **March 2008, Primary dealer facilities**

Special lending facilities opened the discount window to investment banks by accepting a broad range of asset-backed securities as collateral.

- **July 2008, Housing and Economic Recovery Act**

Subprime borrowers' guarantees on new mortgages were guaranteed and a new federal agency, the FHFA, was formed, which eventually placed Fannie Mae and Freddie Mac under conservatorship.

- **September 2008, Lehman Brothers collapse**

The investment bank filed for Chapter 11 bankruptcy.

- **October 2008, Emergency Economic Stabilization Act**

This Act authorized the Treasury to establish the Troubled Asset Relief Program to purchase distressed mortgage-backed securities and to inject capital into the nation's banking system. The deposit insurance was also increased from $100,000 to $250,000.

- **Late 2008, Money market liquidity facilities**

Federal Reserve facilities were created to facilitate the purchase of various money market instruments.

- **March 2009, Public-Private Investment Program**

Treasury Secretary Timothy Geithner introduced his plan to subsidize the purchase of toxic assets with government guarantees.

The laws described above confirm the "deregulation" trend that began in the 1970s. It meant that the federal government would no longer attempt to prevent large commercial banks from becoming full-service national financial supermarkets. Policymakers since Alan Greenspan have been choosing to rely on the "self-regulation" of financial markets—the concept that market forces are sufficient to prevent fraud and excessive risk-taking.

The unprecedented amounts of money flowing through the financial sector were increasingly concentrated in a handful of megabanks that formed the foundation of the new financial oligarchy.[17] This problem will be scrutinized in more depth in Chapter 4: Political Perspective.

3.3 Financial sector growth

The size and economic influence of America's financial sector have grown enormously over the past 30 years. In 2007–09, financial institutions became fewer but bigger. For example,

[17] Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (New York: Pantheon Books, 2010), 89.

JPMorgan Chase was the product of the mergers of Chemical Bank, Manufacturers Hanover, Chase Manhattan, JPMorgan, Bank One, and First Chicago, followed by the bargain-basement acquisitions of Bear Stearns and Washington Mutual in 2008.[18]

In addition, the financial sector itself grew rapidly. In 1978, all commercial banks together held $1.2 trillion in assets, which is equivalent to 53 percent of the U.S. GDP. By the end of 2007, the commercial banking sector had grown to $11.8 trillion in assets, or 84 percent of the U.S. GDP. Moreover, investment banks grew bigger than commercial banks: from $33 billion in assets, or 1.4 percent of the GDP, to $3.1 trillion in assets, or 22 percent of the GDP. Asset-backed securities such as collateralized debt obligations (CDOs), which barely existed in 1978, accounted for another $4.5 trillion in assets in 2007, or 32 percent of the GDP. The debt held by the financial sector grew from $2.9 trillion, or 125 percent of the GDP, in 1978 to over $36 trillion, or 259 percent of the GDP, in 2007.[19]

The financial sector expanded much more than households and nonfinancial companies. Most of the growth in the financial sector was due to the increasing "financialization" of the economy.[20] Financialization can be explained as the transformation of one dollar of lending to the real economy into many dollars of financial transactions. In 1978, the financial sector borrowed $13 in the credit markets for every $100 borrowed by the real economy; by 2007, that amount had grown to $51.[21] In other words, the amount of borrowing by financial institutions quadrupled for the same amount of borrowing by households and nonfinancial companies. These numbers do not include the derivatives position because the derivatives are not conventionally accounted for on bank balance sheets.

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[18] Johnson and Kwak 2010, 59.
[19] *Federal Reserve Flow of Funds*, Table L.1, L.109, L.126, and L.129.
[20] Johnson and Kwak 2010, 59.
[21] *Federal Reserve Flow of Funds,* supra note 13, Table L.1.

To further illustrate the trend, derivatives did not exist in 1978 but grew to over $33 trillion in market value, or more than twice the size of the U.S. GDP, by the end of 2008.[22] Between 1978 and 2007, the financial sector grew from 3.5 percent to 5.9 percent of the economy.

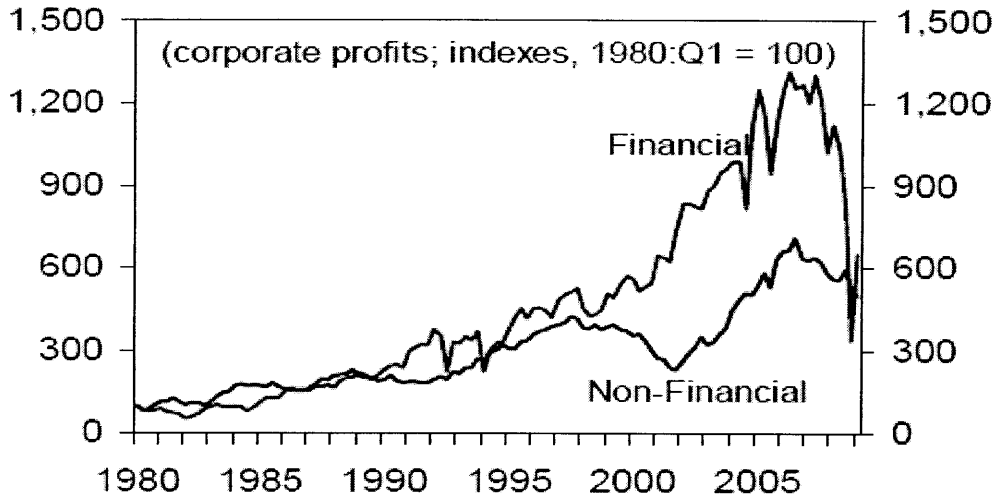

Figure 24: Real Corporate Profits, Financial vs Nonfinancial Sectors.

Sources: Bloomberg, LP; Board of Governors of the Federal Reserve System; Bureau of Economic Analysis; FDIC; Office of the Comptroller of the Currency; SNL Financial; Haver Analytics; and Fund staff calculations.

As can be seen from the graph in Figure 24, from the 1930s until around 1980, financial sector profits grew at roughly the same rate as profits in the nonfinancial sector. However, from 1980 until 2005, financial sector profits grew by 800 percent, adjusted for inflation. On the other hand, nonfinancial sector profits grew by only 250 percent. Financial sector profits plummeted at the peak of the financial crisis, but rebounded rapidly; by the third quarter of 2009, financial

[22] Bank for International Settlements, *Semiannual OTC Derivatives Statistics*, http://www.bis.org/statistics/derstats.htm.

sector profits were more than six times their levels of 1980, while nonfinancial sector profits were marginally more than double those of 1980.[23]

3.4 The growth of leverage and risk-taking

The combination of deregulation increased competition from securities firms and other nonbanks. To preserve their profits, they wanted to move into largely unregulated areas, or the so-called "shadow banking system". These changes increased the demand for the most speculative securitized products.

In traditional banking, there were rules for credit, such as reserve and minimum equity requirements. However, the ability of members of the system to discipline each other was the only barrier to extending credit. In the period when credit products evolved, business cycles were rather mild, market participants became more comfortable with innovations, and the hidden dangers grew.

There were three interrelated types of "innovations" that affected credit:

- Securitization and other off-balance-sheet vehicles.
- Repurchase and reverse repurchase agreements, otherwise known as repos.
- Largely unregulated insurance contracts on debt securities (credit default swaps, or CDS).

① Securitization

Securitization takes place when an originator, a bank or any other type of lender, sells its loans to a special purpose vehicle (SPV). An SPV can be specific to one originator or can hold

[23] Ibid. Table 6.16. Ibid. Table 1.14.
Johnson and Kwak 2010, 60.

assets from various sources. For example, some types of unsecured consumer loans can also be securitized.

Banks adopted this approach because securitization was less expensive than the traditional process of making loans and retaining them. When banks hold loans, the interest rate needs to be high enough to recoup the cost of equity and FDIC insurance, as well as allow for losses.[24]

From the mid-1990s, securitization grew rapidly. For example, the total amount of asset-backed securities minus mortgage paper sold in the United States in 1996 was $168 billion; it rose to $1.25 trillion in 2006, which was the year preceding the financial crisis.[25]According to Citigroup, banks from around the world sold $2 trillion in non-agency asset-backed securities, such as non-Ginnie, Fannie, and Freddie, that year. By contrast, global lending to corporations was roughly $1.5 trillion.[26] Banks also simply sold whole unsecuritized loans and for every $1.00 of lending in 2006, $0.25 was sold.[27]

> Moreover, information was lost through securitizations and the vending of loans. Sales and securitization of loans meant that banks had no reason to monitor borrowers once they had offloaded the loans they had made to them.[28]

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[24] These factors were driving securitization from the mid-1980s. When the author worked at McKinsey, the firm had some widely used charts that showed how significant the costs of FDIC insurance and bank capital for on-balance-sheet lending were relative to the cost of securitization. The fact that the rating agencies over time allowed higher effective leverage became important in the later phases of the growth of securitization.

[25] Gary Gorton, "Slapped in the face by the invisible hand: Banking and the panic of 2007." Paper prepared for the Federal Reserve Bank of Atlanta's 2009 Financial Markets Conference: Financial Innovation and Crisis (May 11-13, 2009), 25.

[26] Gillian Tett, "Finger of blame points to shadow banking's implosion," *Financial Times* (April 23, 2009), http://www.ft.com/cms/s/0/36b8e90c-3033-11de-88e3-00144feadbc0.html.

[27] Gorton 2009, 27.

[28] Gorton 2009, 26.

② Repos

Repos are another type of collateralized lending that played an important role in the credit crisis. Repo is short for "sale with agreement to repurchase." A repo is a contract in which the seller of securities agrees to buy them back at a specified time and price. Repos are typically overnight, so funds can be promptly redeemed if the repo lender decides not to renew the repo.

Repos, which have been in existence for some time, are another way to lend against an asset. However, even in the mid-1980s the repo market consisted solely of Treasury securities, which are safe and highly liquid. Repos started becoming dangerous because the demand for paper that could be sold as repos increased, and more risky paper became widely accepted as collateral for repos.

Some have argued that the parabolic increase in demand for repos was, to a large extent, due to borrowing by hedge funds.[29] Indeed, Alan Greenspan reportedly used repos as a proxy for the leverage used by hedge funds.[30]

Due to the strength of the demand, a shortage of collateral occurred as early as in 2001. The Bank for International Settlements warned that the scarcity was likely to result in "appreciable substitution into collateral having relatively higher issuer and liquidity risk."[31]

Dealers actually started to accept lower quality collateral for repos, and repos started growing much faster than the overall economy. While there are no official figures for the

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[29] Smith 2010, 240.
[30] Henry Maxey, "Cracking the credit market code," Ruffer LLP (April 2007), 18.
[31] "Collateral in Wholesale Financial Markets: Recent Trends, Risk Management and Market Dynamic," Report prepared by the Committee on the Global Financial System working Group on Collateral (2001), 2.

size of the market, repos by primary dealers, banks, and securities firms that can bid for Treasury securities at auctions rose from roughly $1.8 trillion in 1996 to $7 trillion in 2008.[32] Experts estimate that adding the repos from other financial firms would increase the total to $10 trillion, although that somewhat exaggerates the amount of credit extended through this mechanism as repos and reverse repos may be double counted.[33] The assets of traditional, regulated deposit-taking U.S. banks are also roughly $10 trillion, a part of which is also double counting.

This largely unregulated credit market was becoming almost as important a funding source as traditional banking.[34] By 2004, it had become the largest market in the world, surpassing bond, equity, and foreign exchange markets.[35]

③ CDS

CDS are the economic equivalent of credit insurance and are largely unregulated. The party issuing the insurance will pay the party buying the policy if a corporation specified in the CDS contract defaults on its debt or files for bankruptcy.

Similar to an insurance company receiving premiums for its policies, the party providing the guarantee collects regular payments. Credit default swaps made it possible to insure any pool of mortgage loans or mortgage-backed securities, thereby seemingly eliminating the risk of default.[36]

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[32] Smith 2010, 241.
[33] Gorton 2009, 29-30.
[34] Smith 2010, 241.
[35] Maxey 2007, 18.
[36] Johnson and Kwak 2010, 125.

CDS buyers are shorting the credit risk and profit when the borrower defaults. By contrast, the sellers of CDS want the borrower to do well. "CDS sellers" can be compared to bond holders in that they receive insurance premiums, just as bond holders receive interest payments.

The first difference, however, is that CDS allows investors to take levered bets on bond risks, as the collateral posting requirement is generally much lower than the cost of buying the security. As a result, the bond and credit default swaps markets have become linked by arbitrage. In fact, the CDS market often dictates the pricing of new bond issues, as it is more liquid than the bond market.

The second difference between CDS and bond holders is that the creation of CDS is not related to the real economy. For example, companies sell bonds if they need funding. By contrast, CDS creation is limited only by the need to find two parties to a transaction. Derivatives expert Satyajit Das noted, "On actively traded names CDS volumes are substantially greater than outstanding debt."[37] Credit default swaps were used to create "synthetic" CDOs when the demand for collateralized debt obligations began to surpass the supply. However, several institutions, such as AIG and monocline bond insurers MBIA and Ambac, eventually sold CDS at a rate that far outstripped their ability to honor their guarantees in the event of stress conditions developing. These insurers were hugely undercapitalized. As a result, if one insurer faced more claims than it could possibly pay out, other institutions that relied on the insurer would also be undercapitalized.

The third difference is that no rules existed regarding "insurable interest," and limiting the issuance of insurance policies became necessary. Only parties that had a

[37] Satyajit Das, "The Credit Default Swap ('CDS') market – Will it unravel?" Satyajit Das Blog (May 30, 2008).

legitimate reason to protect against loss, so-called "insurable interest," could obtain insurance policies.[38] Just as a holder of a fire insurance policy for a house would not incur severe losses if the house were torched, the owner of a CDS would be paid if the underlying bond defaulted. The "insurable interest" concept, which is fundamental in insurance regulation, was absent in the CDS arena.

3.5 Too big to fail

The concept of "too big to fail" (TBTF) in banking created three major problems for society as a whole. The first problem is that when TBTF institutions fail, they need to be bailed out by government and the taxpayer. The second problem is that TBTF institutions have a strong incentive to take excessive risk, as they know that the government will bail them out in an emergency. The third problem is that TBTF banks limit competition, which consequently has a negative effect on the economy. Investors are willing to lend money to megabanks at lower interest rates than to their smaller competitors because investors tend to think that megabanks have an implicit government guarantee. This is why large banks could pay 0.78 percentage points less for money than small banks in the wake of the financial crisis, which gives them a substantial competitive advantage.[39] Dean Baker and Travis McArthur calculated that this hidden subsidy was worth up to $34 billion for the 18 largest banks in 2009, accounting for roughly half of their profit.[40] This subsidy makes it harder for smaller banks to compete, deters new entrants,

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[38] V. Prashanth, "Necessity of insurable interest in insurance contracts," Corporate Law Cases, *All India Reporter*, Nagpur, India (August 1, 2008), http://ssrn.com/abstract=1302372

[39] Johnson and Kwak 2010, 205.

[40] Dean Baker and Travis McArthur, "The value of the 'too big to fail' big bank subsidy," Center for Economic and Policy Research Issue Brief (September 2009).

and further strengthens the long-term process of consolidation and concentration in the financial sector.

Chapter 4. Political Perspective

By March 2009, the Wall Street banks were more than just an ordinary interest group. In the previous three decades they had become not only one of the wealthiest industries in the history of the American economy but also one of the most powerful political forces in Washington. Financial sector money poured into the campaign war chests of congressional representatives.[41]

In fact, money has long played an important role in American electoral politics. Since the cost of campaigning has started to increase in the past few decades, money has been becoming ever more important. Between 1974 and 1990, the cost of campaigning for a seat in the House of Representatives grew from $56,500 to $410,000 for the average election winner. From 1990 to 2006, it tripled to $1,250,000, and it more than doubled even after accounting for inflation.[42]

The financial sector was the leading contributor to political campaigns in the past two decades. Campaign contributions from the financial sector, including finance, insurance, and real estate, grew much faster than overall contributions. They more than quadrupled from $61 million in 1990 to $260 million in 2006. After excluding insurance and real estate, the financial sector still contributed more than $150 million in 2006. On the other hand, the second-ranking industry group, health care, contributed only $100 million in 2006.

Over the same period, contributions from the securities and investment industry increased sixfold from $12 million to $72 million. The latter figure omits the millions of dollars

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[41] Johnson and Kwak 2010, 5.

[42] Figure for 1974: Robert G. Kaiser, *So Much Damn Money: The Triumph of Lobbying and the Corrosion of American Government* (New York: Alfred A. Knopf, 2009). Other statistics: OpenSecrets.org, *A project of the Center for Responsive Politics.*

in contributions from law firms that served the securities industry. In fact, from 1998 to 2008, the financial sector spent $1.7 billion on campaign contributions and $3.4 billion on lobbying expenses. The securities industry alone spent $500 million on campaign contributions and $600 million on lobbying.[43]

4.1 The Money Trust

After 1800, there were major advances in agricultural implements, canals, telecommunications, steam power, railroads, chemicals, and other industries. By the end of the 19th century, American companies were almost in the technology-intensive industries that were making it possible to produce more and better goods with fewer and cheaper inputs. During this period, finance played a constructive and supporting role by providing the crucial connection between savers, on the one hand, and people with productive investment opportunities, on the other hand.

These innovations that changed the economic landscape also changed the political landscape.[44] New successful companies and industries could rapidly gain political representation because there was greater social mobility in America compared with European societies. By the late 19th century, the Senate had become known as the "Millionaires' Club"; buying political support with cash was considered by many to be a reasonable extension of normal business practice.[45]

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[43] Essential Information and Consumer Education Foundation, *Sold Out: How Wall Street and Washington Betrayed America* (March 2009), http://www.wallstreetwatch.org.

[44] Johnson and Kwak 2010, 22.

[45] Hofstadter, *American Political Tradition,* supra note 20, Chapter 7; Matthew Josephson, *The Robber Barons* (San Diego: Harcourt Brace, 1934).

Railroad wealth was the most noticeable example of how the new money made its way into politics during the late 19th century. Railroad barons and their industrial allies acquired great political power, and they dominated the Senate. Two of their strongest allies were Senator Mark Hanna and Nelson Aldrich, important power brokers in the Republican Party, who controlled the White House for eight years, from 1867 to 1913. Moreover, they had a Senate majority for two years, from 1883 to 1913. Hanna managed William McKinley's successful 1896 presidential campaign and controlled the Republican Party machine even into the Theodore Roosevelt years. Aldrich was one of the most powerful men in the Senate and largely dictated its position on government regulation of industry and banking.[46]

Political representation in rising industrial interests is preferable to ossified social structures that restrict innovation and keep new people away from the machinations of power.[47] However, at the same time, the openness of the American political system has always made it possible for the business elite to use its political power to set up the economic playing field in their favor.[48]

Large corporates welcomed the 1896 election of McKinley as president, but they were not favorably disposed toward his second-term vice president and successor, Theodore Roosevelt, who adopted "trust-busting" as a signature policy and made improved supervision of large corporations a major theme of his 1901 State of the Union address.[49]

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[46] Kevin Phillips, *Wealth and Democracy: A Political History of the American Rich* (New York: Broadway Books, 2003), 239-40; Hosfstadter, *American Political Tradition,* supra note 20, Chapter 7; Nathaniel Wright Stephenson, *Nelson W. Aldrich,* supra note 38; Edmund Morris, *Theodore Rex* (New York: Random House, 2001).

[47] Daron Acemoglu and James A. Robinson, "Economic Backwardness in Political Perspective," *American Political Science Review* 100 (2006): 115-31.

[48] Johnson and Kwak 2010, 23.

[49] Roosevelt, "State of the Union Message," supra note 1.

Following the tradition of Jefferson and Jackson, Roosevelt opposed concentrated industrial power for political reasons; he believed that dominant private interests were bad for democracy and economic prosperity. He helped change the way that Americans thought about big business.

On the other hand, Nelson Aldrich argued in an influential 1909 speech that a central bank should act as a lender of last resort in a crisis.[50] This proposal by Aldrich was politically controversial as it was construed as a trick for taxpayers to finance banks and protect them from the consequences of their high-risk activities.

Despite Roosevelt's success against the trusts, and even with the support of one of its leading advocates, Louis Brandeis, who acted as an adviser to President Wilson, the movement to constrain the power of big banks failed. In a 1913 article entitled "Our financial oligarchy,"[51] Brandeis, a prominent lawyer and future Supreme Court justice, spoke strongly in favor of constraining banks. He accused the powerful investment banks of using customer deposits and other money that passed through their hands to take control of large companies and to promote the interests of those companies.

Brandeis said: "We believe that no methods of regulation ever have been or can be devised to remove the menace inherent in private monopoly and overweening commercial power."[52] He advocated that large concentrations of industrial or financial power should be broken up.

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[50] Aldrich, "The Works of the National Monetary Commission," supra note 38.
[51] Louis Brandeis, "Our financial oligarchy," *Harper's Weekly*, November 1913.
[52] Quoted in Urofsky, Louis Brandeis, supra note 66, 346.

4.2 Economic elites and political system

By the late 19th century, industrialization had created powerful economic elites that held political power at all levels. They had supporters who had substantial control in the Senate, the Republican Party, and the presidency.

The legislative failures of the Reagan administration in the 1980s showed that Wall Street had no influence in Washington at the time. Rather, academic finance provided the intellectual justification for financial non-regulation, and the Reagan Revolution provided a political ideology for a weak government. Of course, some academic theories and incipient deregulation helped finance industry, but the creativity and competitiveness of talented bankers also drove the revolution. Their innovations created new money, and it has fueled the wealth of the financial sector over the past three decades. Consequently, it also helped Wall Street become a dominant political force in Washington.

4.3 Campaign contributions

The largest commercial and investment banks were also the largest source of political campaign money. The companies in the banking sector that contributed the most money to campaigns in 1990 were Goldman Sachs, Salomon Brothers, Barnett Banks, Citibank, JPMorgan, and Morgan Stanley. In 2006, the biggest contributors were Goldman, Citigroup, Bank of America, UBS, JPMorgan Chase, and Morgan Stanley.[53]

Phil Gramm, who was appointed chair of the Senate Banking Committee in 1999, raised more than twice as much money from the securities industry than from any other industry. In

[53] Johnson and Kwak 2010, 91.

1998, Alfonse D'Amato, Chair of the Senate Banking Committee before Gramm, was the primary beneficiary of the securities industry. In 2007-2008, Christopher Dodd, Chair of the Senate Banking Committee, received $2.9 million from the securities industry. It was more than three times as much as any other senator who was not a major presidential candidate. The only senators who received more than Dodd were the much more visible presidential candidates Barack Obama, John McCain, and Hillary Clinton.

The security industry was also an important contribution source for Barney Frank, who was Chair of the House Financial Services Committee. Charles Schumer, who was a member of the House Financial Services Committee and later a member of the Senate Banking Committee, had been the securities industry's favorite member of Congress over the decades. Also, *The New Yorker* has aggressively championed Wall Street over the years.[54]

The 1990s was a period of growing financial sector contributions, and powerful members of Congress sponsored legislation on the financial sector's wish list. For example, Gramm added his name to the 1999 Gramm-Leach-Bliley Act, which largely superseded the Glass-Steagall separation of commercial and investment banking. Gramm was also the major force behind the Commodity Futures Modernization Act of 2000, which prohibited federal regulation of over-the-counter derivatives.[55] Schumer was a major proponent of the Gramm-Leach-Bliley Act, and in 2001, he and Gramm proposed legislation to halve the fees paid by financial institutions to the SEC.[56] This legislation was passed in the same year. Gramm left the Senate in 2002 to become a vice chair at UBS Warburg.

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[54] Eric Lipton and Raymond Hernandez, "A champion of Wall Street reaps benefits." *The New York Times* (December 13, 2008). http://222.nytimes.com/2008/12/14/business/14schumer.html.
[55] Johnson and Kwak 2010, 92.
[56] Lipton and Hernandez 2008.

4.4 Financial lobby

In the past twenty years, the financial services industry has become an extremely powerful lobby in Washington, with the ability to win votes in both Republican and Democratic Congresses. In April 2009, Senator Richard Durbin said, "The banks are still the most powerful lobby on Capitol Hill. And they frankly own the place."[57] Although this remark was made after the crisis, no one thought he was saying anything extraordinary.

In 2009, Michael Lewis said:

> It does feel a lot to me like the process has been queered by political influence and it's a very curious kind of political influence. Because it isn't maybe always as simple as bribery, campaign contributions, and that kind of thing. I think that we've had twenty-five years of the Goldman Sachses of the world ruling the world, and the people like Tim Geithner, when they leave office, the way they make their living... is to go to work for a financial institution for huge sums of money; that people have trouble getting their mind around a world where that's not the way the world works, and there is maybe a slight quickness to believe that the world can't function without Goldman Sachs.[58]

The political influence of Wall Street helped create the laissez-faire environment for the big banks to become bigger and more risk-taking by 2008. The political influence also meant that when the government did rescue the financial system, it did so on terms that were favorable to

[57] Ray Hanania, interview, Radio Chicagoland, April 27, 2009.
[58] Michael Lewis (lecture, Hudson Union Society, New York, NY, June 1, 2009), http://www.huffingtonpost.com/2009/06/18/michael-lewis-attcks-gol_n_217542.html.

the banks. The major banks were already entrenched in the heart of the political system, and the government decided it needed the banks at least as much as the banks needed government.[59]

Wall Street could have become even more powerful if the government had deregulated derivatives. However, in 1994, big losses were incurred as a direct result of derivatives in Orange County, Procter & Gamble, and Gibson Greetings. Therefore, Congress considered the regulation of derivatives which resulted in a major lobbying effort by the International Swaps and Derivatives Association (ISDA) against this proposal. Treasury Under-Secretary Frank Newman also urged Congress not to regulate derivatives.[60] Treasury Secretary Lloyd Bentsen said, "Derivatives are perfectly legitimate tools to manage risk. Derivatives are not a dirty word. We need to be careful about interfering in markets in too heavy-handed a way."[61] In addition, ISDA was supported by Alan Greenspan and the Clinton administration.

4.5 American oligarchy

The basic principle underlying an oligarchy is that economic power yields political power.[62] The Wall Street banks are a group that has political power because of its economic power, and these banks use that political power for their own benefit. In this sense, they are the new American oligarchy. High profits and bonuses in the financial sector flowed into the political scene through campaign contributions and lobbying. Moreover, in an era where free

[59] Johnson and Kwak 2010, 6.
[60] Frank Partnoy, *Infectious Greed: How Deceit and Risk Corrupted the Financial Markets* (New York: Henry Holt, 2004), 153-54.
[61] Cited in Tett, *Fool's Gold,* supra note 6, 39.
[62] Johnson and Kwak 2010, 74.

market capitalism reigned triumphant, those profits and bonuses also supported the credibility and influence of Wall Street.

4.6 Solution

The appropriate solution would be to break up financial institutions so that they are not "too big to fail." Banking executives have spent the past twenty years making their banks as big as possible, and, naturally, the CEOs of large banks are not amenable to the idea of seeing that broken down. In the *Washington Post*, Jamie Dimon wrote, "While the strategy of artificial limits may sound simple, it would undermine the goals of economic stability, job creation and consumer service that lawmakers are trying to promote."[63] In addition, in an interview, Lloyd Blankfein of Goldman Sachs said, "Most of the activities we do, and you can be confused if you read the pop press, serve a real purpose. It wouldn't be better for the world or financial system to change the firm's activities."[64]

However, there are some good reasons for breaking up big banks. First, if there are no financial institutions that are too big to fail, there will be no implicit subsidies favoring some banks and not others. That will mean that creditors and counterparties would ensure that banks do not take on too much risk, and banks will be less likely to engage in excessive risk-taking that could cause the next financial crisis. In addition, banks that do fail will not have to be rescued at the taxpayer's expense.[65]

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[63] Dimon, "No More 'Too Big to Fail,'" supra note 34.
[64] Quoted in Christine Harper, "Blackfein Defends Goldman Sachs Against Breakup," Bloomberg (November 10, 2009).
[65] Johnson and Kwak 2010, 211.

Second, despite the widespread assumption in New York and Washington that big banks provide societal benefits, there is no proof that these benefits exist, and neither does quantification of the magnitude of these alleged benefits.[66]

In recent years, too many financial firms have been rescued with taxpayers' money, and the firms that benefited have political power, which means they could engage in higher-risk business practices to make their profits. Moreover, the government provides deposit insurance and other safeguards to these firms.

To prevent the next financial crisis, the government should not provide such safeguards. However, this will create unfairness because banks can benefit from taxpayers' help even if they use the money for their own profit.

Similar to the "Volcker Rule" that President Obama proposed, banks should no longer be allowed to engage in activities that are unrelated to their customers. In addition, the U.S. government should prevent further consolidation in the banking industry.

A more specific solution would be limiting the size of banks by reverting to the Glass-Steagall Act. Under this Act, there was a size limit rule, according to which each bank could not hold more than 10 percent of total retail deposits in 1994, but this rule has been waived in 2009 for JPMorgan Chase, Bank of America, and Wells Fargo.[67]

Perhaps it would be prudent for the U.S. government to set a size limit, which could be a percentage of the U.S. economy such as GDP. In *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*, it is stated that the limit should be no more than 4 percent of GDP for all banks and 2 percent of GDP for investment banks. However, members of the Obama

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[66] Johnson and Kwak 2010, 213.

[67] David Cho, "Banks 'too big to fail' have grown even bigger: Behemoths born of the bailout reduce consumer choice, tempt corporate moral hazard," *The Washington Post* (August 28, 2009).

administration have said that it is impossible to "turn back the clock."[68] In the mid-1990s, large commercial banks such as Bank of America, Chase Manhattan, Citibank, and NationsBank had assets of about 3-4 percent of the U.S. GDP. Investment banks' assets were equivalent to 2 percent of the U.S. GDP.

If the government applies such a size limit rule, only six banks, listed below, will be affected:

- Bank of America: 16 percent of GDP
- JPMorgan Chase: 14 percent of GDP
- Citigroup: 13 percent of GDP
- Wells Fargo: 9 percent of GDP
- Goldman Sachs: 6 percent of GDP
- Morgan Stanley: 5 percent of GDP[69]

If Congress cannot break up the largest bank, the future will depend on these six banks.

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[68] Johnson and Kwak 2010, 216.

[69] "Company annual and quarterly reports: GDP data from Bureau of Economic Analysis," *National Income and Product Account* (September 2009, Table 1.1.5). http://www.bea.gov/national/nipaweb/Index.asp.

Chapter 5. Regulation Perspective

A crisis in the financial sector and its effects on the economy are worrisome. In fact, financial regulations are focused on limiting each institution's risk, but they are not adequately focused on systemic risk. As a result, while individual risks are properly regulated, the system itself remains fragile and vulnerable to large macroeconomic shocks. After the financial crisis, the financial sector was forced to measure systemic risk and to suggest new regulations for limiting such risk.

There are two challenges related to the regulation of systemic risk. First, systemic risk must be accurately measured. Second, each firm should be charged the correct price for its contribution to systemic risk based on sound economic theory. The framework of systemic risk regulation is analyzed in this section to find a way to respond to these two challenges.

5.1 Why systemic financial risk must be regulated

Systemic risk can be broadly thought of as the failure of a significant part of the financial sector. It is helpful to examine the failure of Bear Stearns and Lehman Brothers with respect to government's intervention.

On March 14, 2008, the government helped manage JPMorgan Chase's purchase of Bear Stearns by guaranteeing $29 billion in subprime-backed securities. Without this involvement, Bear Stearns would have had to declare bankruptcy. Although Bear Stearns was the smallest of the major investment banks, it had a high degree of interconnectedness with other parts of the financial system. The bank was a major counterparty risk for three reasons: First, it was an

important player in the repo market; second, it was the leading prime broker for hedge funds; and, third, it was a major counterparty in the CDS market.

On September 12, 2008, the government attempted to purchase Lehman Brothers (Lehman) through other financial institutions, but these attempts failed without any direct government support. Lehman went bankrupt and, as it contained considerable systemic risk, it led to a near collapse of the financial system.

Many people argue that the cause of the financial crisis was the failure of the government to intervene to prevent the bankruptcy of Lehman. It is not clear why the government allowed Lehman to fail. The government argues that Lehman could not be rescued because it did not have adequate collateral to post for accessing these facilities. Similar to Bear Stearns, Lehman was a major player in various parts of the capital market. Its bankruptcy opened up the possibility that similar firms could also go bankrupt, causing a potential run on their assets. This led to Merrill Lynch selling itself to Bank of America. Morgan Stanley and Goldman Sachs's five-year CDS protection rose from 250 bps (basis points) to 500 bps and from 200 bps to 350 bps, respectively, and their stock prices fell by 13.54 percent and 12.13 percent, respectively, from Friday, September 12, to Monday, September 15, 2008. Both these investment banks adopted the status of bank holding companies.

The government's response to Lehman's failure might be an indication of their intention to limit moral hazard. However, in the Lehman case, it became clear that the government would not let any other large financial institution fail. Therefore, moral hazard had been strengthened, not weakened. From the above two examples, it is evident that systemic risk should be regulated.

5.2 Externalities

Systemic risk can be considered a negative externality imposed on each financial firm. Externalities are when a firm holds large amounts of illiquid securities, concentrates its risk into particular ones, such as subprime-mortgage assets, or places high amounts of leverage on its books to drive up excess returns. Lastly, an example of an externality is a case when a firm has an incentive system to manage by risk/return tradeoff, and it does not take into account the result of the risk it imposes on other financial institutions.[70]

5.3 Implicit guarantees

In addition to externalities, implicit government guarantees also necessitate the regulation of systemic risk. Implicit guarantees create moral hazard in three ways:

1. "Too big to fail" creates a bias toward firms that are too large and excessively leveraged
2. "Too interconnected to fail" causes excessive counterparty risk
3. "Too many to fail" causes firms to take on too much systemic risk

The moral hazard and cost of bailouts are significant when considering regulation according to each firm's contribution to systemic risk. Yet, the problem of how to measure systemic risk remains. [71]

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[70] Viral V. Acharya and Matthew Richardson, *Restoring Financial Stability: How to Repair a Failed System* (Hoboken, NJ: John Wiley&Sons Inc., 2009), 286.

[71] Acharya and Richardson 2009, 288.

5.4 Measuring systemic risk

The common risk management tools, value at risk (VAR) and expected shortfall (ES), seek to measure the potential loss incurred by a firm in an extreme event. The aggregate loss can be broken down by using marginal VAR and marginal ES. By estimating each bank's marginal ES for an aggregate shock, we can obtain its contribution to aggregate risk.

To estimate this, each firm should collect historical data on losses experienced for several intervals. We can calculate the contribution of each firm to aggregate losses, which is a measure of the systemic risk posed by the firm. Moreover, this method can be used for forecasting future crises. Calculations should be performed on a daily basis for financial firms.

One specific result explains the contributions of each firm to systemic risk for the period 2006-2007. The contributions take into account the size of the firm and its extreme downside correlation with the overall market.[72] These calculations were made by Lester, Pedersen, and Philippon in 2008. They used equity market value to measure the risk of the worst 5 percent of decreases in market value of all publicly traded stocks. Based on these aggregate shock data, they estimated each financial firm's systemic risk as its average loss during a crisis. Thereafter, they ranked the companies by their marginal ES contribution, as indicated in Figure 25, where a positive correlation exists between the size of the firm and the expected shortfall of the market.

[72] Lester, Pedersen, and Philippon, Center for Research in Security Prices (CRSP)'s daily stock and index database for 2006 and 2007, where financial companies (banking, insurance, real estate, and trading) are identified as those listed on the New York Stock Exchange in the SIC code range of 6000 to 6999, (2008).

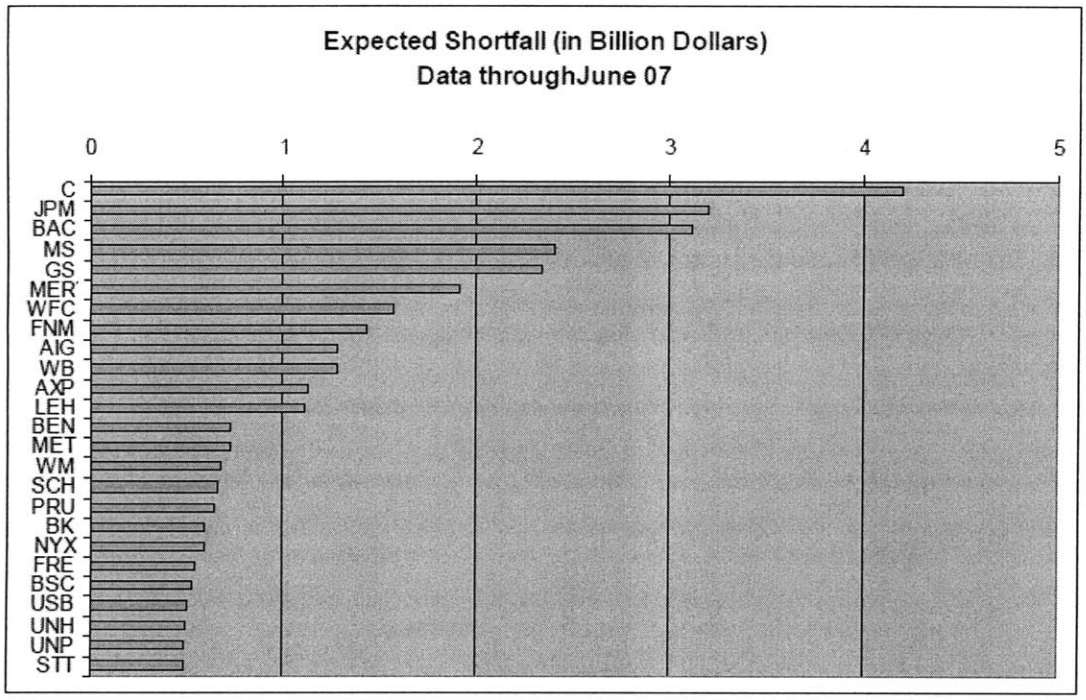

Figure 25: Expected Shortfall ($ in billions)
Source: Lester, Pedersen, and Philippon (2008)

5.5 Stress tests and scenario analysis

Measuring systemic risk with statistical methods has some limitations, which can be balanced with stress test and scenario analyses. Stress tests can be used to assess risk concentration and interconnected counterparty risks. This method can also be used by a regulator to estimate the consequences of the failure of a large institution. In addition, a scenario analysis can limit excessive risk-taking in good times. For example, if the volatility remains low for prolonged periods, statistical measures of risk go down. Therefore, risk-taking becomes procyclical, and this increases the possibility and severity of a financial crisis.

Chapter 6. Black Swan Event Perspective

In his book *The Black Swan,* Nassim Nicholas Taleb defines a "black swan" as follows:

> First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.

Taleb discusses the financial crisis as a black swan in his book. His view is that the financial crisis could lie outside the realm of regular expectations. Taleb further says, "Anything that relies on correlations is charlatanism."[73]

Risk regulation by VaR was discussed in the previous chapter. However, as Taleb points out, even when quantitative analysts try to determine extreme events in any market, they are still looking through the rearview mirror, and they have very few data points to work with. In fact, in some markets, one observation will account for 80%, even 90%, of the "weight" in the estimation of the magnitude of the tail risk.[74] If one or two unusual events occur, we do not know if they are once-every-seven-year storms or once-every-ten-thousand-year storms.

Taleb places the "fat tail" problem faced by banks in, what he calls, the fourth quadrant, where extreme events are hard to assess and the decision about how much to risk involves multiple tradeoffs. Taleb argues that it is dangerous to use statistics in fourth-quadrant situations as they cannot yield reliable results.[75]

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[73] Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*, 2nd ed. (New York: Random House, 2010).

[74] Nassim Nicholas Taleb, "The fourth quadrant: A map of the limits of statistics," *Edge* (September 15, 2009), http://www.edge.org/3rd_culture/taleb09/taleb09_index.html.

[75] Taleb 2010.

Taleb considers assessing the shortcomings of statistical models to define the odds of an extreme move within a single market. In fact, changes in the financial services industry have increased the wideness and intensity of "tail" events and the correlation among markets in stress events.

Distortions based on misguided faith in financial models played a central role in the crisis. The focus on the large-scale losses that resulted from the misapplication of seemingly advanced risk management and pricing technologies may obscure a far more basic fact than simply viewing so-called financial innovations with a great deal of skepticism. It is that the whole edifice of modern finance, even the mundane sort that retail investors use to manage their portfolios, is rotten.

The investment approaches from financial economics greatly understate the risk of markets. Benoit Mandelbrot discovered, and numerous analysts have since confirmed, that specific markets show much greater price swings than posited by standard theories.[76]

Although some quantitative analysts will argue that they have fixes for the fat tail shortcoming in the models, Taleb gathered price data for a large set of market and economic variables and found that one single outlier would largely dictate how "fat tail" adjustments were set.[77] However, how do we know if that one outlier will be similar to the next one that arises? For example, economists and lay people may be looking at the Great Depression to explain the present crisis. However, relying on a single case is frequently misleading.

The only way we can imagine a future that is similar to the past is by assuming that it

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[76] E.g. GARCH, which is Generalized Auto Regressive Conditional Heteroscedasticity. It is an econometric model that is used to forecast the volatility of the returns on stock prices. It uses past variances to estimate current variances, and hence troubles of "the past may not be a good proxy for the future" shortcomings endemic within financial economics.

[77] Nassim Nicholas Taleb, "The fourth quadrant: A map of the limits of statistics," Techonical Appendix, *Edge* (September 15, 2008), http://www.edge.org/3rd_culture/taleb08/taleb08_index.html.

will be an exact projection of it and, hence, predictable. This would assume that, just as we know with some precision when we were born, we would know with equal precision when we will die. The notion of a future mixed with chance, rather than being a deterministic extension of our perception of the past, is a mental operation that our mind cannot perform. Chance is too fuzzy for us to be a category in itself. There is an asymmetry between the past and the future, and it is too subtle for us to understand with ease.[78]

The consequence of this asymmetry is that, in people's minds, the relationship between the past and the future does not draw on the lessons from the relationship between the past and the past preceding it. There is a blind spot: When we think of tomorrow, we do not frame it in terms of what we thought about yesterday or the day before yesterday. When we think of tomorrow, we just project it as another yesterday. This introspective defect makes us fail to learn the difference between our past predictions and subsequent outcomes.

[78] Taleb 2010, 193.

Chapter 7. Credit Rating Agencies Perspective

7.1 CDO structure

In 2001-2003, subprime mortgage bonds seemed to be a solution to the yield-hungry investors.[79] Figure 26 is a simplified version of a typical ABS CDO structure.

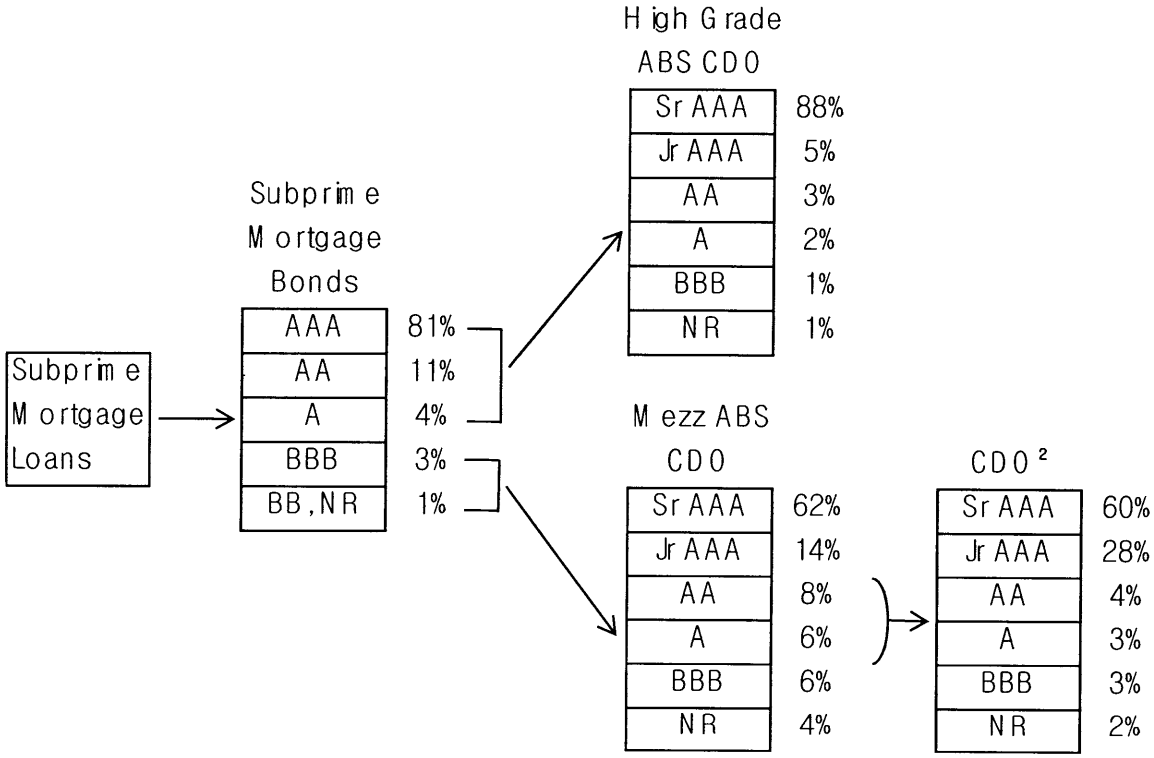

Figure 26: Typical ABS CDO structure

From left to right in the figure, subprime loans were first pooled together. The principal and interest payments were then allotted to various classes of securities; the "subprime mortgage bonds" were rated from AAA to the "BB/NR," with NR being "not rated" or the "equity" layer.

[79] Smith 2010, 247.

The key difference between these CDOs and other types of structured credit is that they were resecuritizations, made up largely of the unwanted parts of subprime bonds. The CDOs that took the better parts of the unpopular pieces, the junior AAA, AA, and A layers, were called "high-grade" CDOs. There is another type, the so-called "mezz" ABS CDOs, or simply "mezz" CDOs, which used the BBB or "mezzanine" layer from subprime bond issues.

The magic of structured credit took pools of loans and turned them into tranches with different credit ratings. As with other structured securities, the bulk of the value of the resulting CDO, meaning the total cash paid to purchase each of the various tranches, was by far mostly in the AAA-rated tranches, which typically accounted for 75% to 80% of the total proceeds.

The very worst tranche, the one that incurred the first losses, was the equity tranche, so called because it was not rated, which usually accounted for 4% to 7% of the value of the deal. Next were the mezzanine tranches, rated as a BBB, the lowest investment grade, and usually accounting for 10% of the deal's value.

Finally, the BBB tranches of these CDOs were securities that virtually no one wanted. Often, these unpopular tranches went into CDOs later. In other cases, these tranches were attractive to some exotic investors.

In these second-generation pools, the riskier cash flows from the original subprime bonds were again allocated to various tranches, many of which were then rated AAA. In other words, these CDOs took the worst risk exposures from weak mortgages and used financial technology to create new instruments, of which 75% to 90% were awarded an AAA rating.

By contrast, the similar-sounding collateralized loan obligations (CLOs) simply took a large pool of takeover loans and tranched the payments on them without resecuritization. Therefore, although CLOs were created from a riskier type of loan, the end result was, in most

cases, less fraught with risk than CDOs.

How could anyone at the time have convinced him- or herself that these CDOs, junior exposures to low credit quality instruments, could produce AAA-rated paper?

A key driver of the rapid growth of the CDO market was that demand for AAA securities exceeded supply.[80] The willingness in capital markets to hold large volumes of AAA-rated structured credit instruments, no matter how complex, was not the only reason for the so-called "infinite bid"[81] for this product in the later stages of the lending boom.

In June 2005, the International Swaps and Derivatives Association (ISDA), an industry association for over-the-counter derivatives dealers, allowed credit default swaps to be written on asset-backed instruments, thereby subprime mortgage bond tranches that went into CDSs. In 2006, Markit, a financial information services company, launched a credit default swaps index which referenced a basket of twenty subprime mortgage issues and provided different prices for each tranche. It thus provided another way to hedge, as dealers and investors could buy and sell protection on particular tranches of the index.

Of course, CDOs had often used insurance even before the ISDA amendment. However, insurers such as AIG and so-called monoclines such as MBIA and Ambac provided AAA ratings. They kept providing credit enhancement for the top tranches, but the new players that emerged could also provide protection for risky tranches. Moreover, they could enlarge the pool of possible suppliers of credit and lower the price of borrowing. This opened up the possibilities for hedge funds and the proprietary trading desks of investment banks, which were hedge fund-like units that speculated with a trading house's money. They could shorten mortgage bond

[80] Smith 2010, 245.
[81] Smith 2010, 253.

tranches and use CDSs to construct trades that mimicked being short and rated tranches of an ABS CDO, such as the super senior, or the BBB layer.

Alongside this, the demand for CDOs was insatiable in 2005 and 2006. Using the new market in lower tranche CDSs, packagers found a way to cope with the dearth of supply of raw CDO material. They created and sold impressive volumes of so-called synthetic collateralized debt obligations.

In the early years of the explosive growth of collateralized debt obligations, which were created heavily from residential mortgages, the end buyers of the AAA tranches of CDOs were typically pension funds and insurance companies that were hungry for AAA paper that offered higher-than-usual yields. Even with strong demand for the AAA tranches, the growth of the product had historically been constrained by the need to find someone to take on the "bad lower" layers. The CDO manager, who identified and vetted instruments that constituted the deal, was expected to take at least some of the equity tranche; hedge funds were the usual suspects to make up the balance.

However, in late 2005, those patterns started to change. Demand from historically cash AAA buyers started to soften, and CDOs looked set to become the victims of their own success.

7.2 Credit rating system

In 2003, the subprime mortgage credit default swap was a nonstandard insurance contract. Inside Morgan Stanley, the subprime mortgage lending boom created a who-put-

chocolate-in-my peanut-butter moment.[82] As a leader in this field, Morgan Stanley's financial intellectuals had been training the rating agencies.

Throughout the financial crisis period, there were various market problems. Mortgages were originated without sufficient documentation or with overly optimistic underwriting assumptions and then sold off in complex derivative securities that, certainly in retrospect, were rated too highly by credit rating agencies. Individuals and institutions took highly risky positions either through a lack of diversification or through excessive leverage ratios.

Due to these problems, the credit rating system warrants discussion. The behavior of credit rating agencies can be one of the reasons for the financial crisis. It can be said that the U.S. credit rating system is ineffective and has conflicts of interest.

The major credit rating agencies, Standard and Poor's, Moody's, and Fitch, played a crucial role in making decisions. As financial markets grew more complex, the role of the credit rating agency has become more important. In the subprime-related market, there are many structured financial products, for example, mortgage-backed securities (MBS), collateralized debt obligations (CDOs), and CDOs invested in other CDOs. Between 2002 and 2007, Wall Street issued many of those new financial products, which were too complex to understand. It was essential for these products to have a high rating because it could instill confidence in risk-averse investors. By 2006, Moody's business ratings of structured financial products accounted for 44 percent of its revenue, compared with 32 percent from its traditional corporate-bond rating business.[83] It was also reported that "roughly 60 percent of all global structured products were

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[82] Michael Lewis, *The Big Short: Inside the Doomsday Machine* (W.W. Norton & Company, 2010), 201.

[83] Joshua D. Coval, Jakib Jurek, and Erik Stafford, *Working Paper No. 09-060* (Harvard Business School) *The Economics of Structured Finance*, 4 (2008).

AAA rated, in contrast to less than 1 percent of corporate issues."[84] The leading credit rating agencies grew rich through rating mortgage-backed securities and CDOs. Total revenue for the three firms doubled from $3 billion in 2002 to more than $6 billion in 2007. For instance, Moody's profits quadrupled between 2000 and 2007.[85] In fact, Moody's had the highest profit margin of any company in the S&P 500 for five consecutive years. Financial firms also benefited greatly from having high credit ratings, which allowed them to borrow at low rates on the short-term markets to finance longer term and higher yielding investments, and to sell pledges of various groups. The irony is that the issuers paid and chose the rating agencies that gave the highest rating. In other words, the model of the dominant agencies is that securities issuers pay for credit ratings, which can create a conflict of interest. Moreover, no one was rating the rating agencies. For investors, the AAA-rated products that proved so lucrative for the rating agencies were downgraded in the financial crisis. The inaccuracy of structured credit ratings has led to an investigation into what went wrong with these ratings.

The first possible explanation of what went wrong with credit rating agencies can be found in the models themselves. Rating agencies primarily relied on mathematical models that estimated the loss distribution and simulated the cash flows of RMBS (Residential Mortgage Backed Securities) and CDOs using historical data.[86] The modeling of mortgage-related securities by credit rating agencies contained mistaken assumptions about the independence of the underlying mortgages. In addition, many of the rating agencies' models involved overly optimistic assumptions about the direction of housing prices. When asked during a conference

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[84] Coval, Jurek, and Stafford 2008.

[85] Committee on Oversight and Government Reform Credit Rating Agencies and the Financial Crisis, Rep. Henry A. Waxman Chairman (October 22, 2008).

[86] Jeffrey David Manns, "Rating risk after the subprime mortgage crisis: A user fee approach for rating agency accountability," *North Carolina Law Review* (forthcoming), 32-33.

call in March 2007 how a one-to-two percent decline in house prices over time would affect Fitch's modeling of certain subprime-related securities, a Fitch representative conceded, "The models would break down completely."[87] The multiple rounds of structuring were another problem for credit rating agencies. Three finance professors explained, "...even minute errors at the level of the underlying securities, which would be insufficient to alter the security's rating, can dramatically alter the ratings of the structured finance securities.[88]"

The second reason would be the Nationally Recognized Statistical Rating Organizations (NRSRO) issue. The term was introduced in 1975, and at that time, nobody expected this term to produce unintended effects. Major credit rating agencies could enjoy a protected status because they were specially-designated credit rating agencies, or NRSROs. This situation naturally made them more careless with the quality of their ratings. In fact, there is concern about the extent to which state, federal, and global financial regulations are linked to private credit ratings.

The third reason would be "issuer pays" model. This model encourages "ratings shopping" by issuers.[89] This practice of charging issuers for their ratings began at Fitch and Moody's in 1970 and at Standard & Poor's a few years later.[90] The practice of collecting payments from issuers can lower the rating quality.

To improve the credit rating system, first, credit rating agencies should note that structured finance rating differs from traditional corporate debt ratings in that they are model-based.

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[87] Oren Bar-Gill and Elizabeth Warren, "Making credit safer," *University of Pennsylvania Law Review* (Nov. 2008).

[88] Depository Institutions Deregulation and Monetary Control Act of 1980, Pub. L. No. 96-221, and the Depository Institutions Act of 1982, Pub. L. No. 97-320.

[89] House Committee on Oversight and Government Reform, Testimony of Jerome S. Fons, *Credit Rating Agencies and the Financial Crisis,* 110th Cong., 3, Oct. 22, 2008.

[90] Richard Cantor and Frank Packer, "The credit rating industry," *FRBNY Quarterly Review*, 4 (Summer-Fall 1994).

Therefore, there is potential for significantly higher ratings volatility in certain circumstances. Despite these differences, agencies applied the same rating categories to both structured products and corporate bonds. Many investors did not understand, or fully appreciate, the differences in risk characteristics between those products. Therefore, rating agencies should disclose factual information to allow investors to reach their own conclusions regarding the risks that structured finance securities pose. In other words, issuers, sponsors, and underwriters of structured finance securities should be required to make available information about the key parties, terms of the securities, legal structure, underlying asset pool, scenario-modeled cash flows, sensitivities to timing, and other risks. Moreover, credit rating agencies should disclose the quantitative and qualitative bases for their ratings of structured finance securities, including the asset pool data used to produce the ratings, model parameters, key assumptions, and model outputs under various scenarios. Investors should also have access to the assumptions about future house price movements and broader economic conditions underlying the rating of structured financial products.

To provide investors with additional information about the different risk characteristics of structured products, agencies can use a separate rating scale or additional rating symbols for structured products. These can signal to investors that the credit ratings of structured products have different risk properties. However, at the same time, the introduction of a new, separate rating system can also require fundamental changes to investment guidelines and to regulations that reference credit ratings. Therefore, the introduction of a different rating system should be subject to a review of its implications for markets and regulations.

Second, creating a review entity would be a solution. One of the important triggers of the current turmoil was the NRSRO designation itself. In fact, it may be time to consider the

possibility of eliminating, or at least dramatically scaling back, the NRSRO designation and replacing it.[91] For example, even if an asset was awarded a good grade by a credit rating agency, it would still not be added to a bank or pension fund portfolio unless the rating was also approved by a credit rating review entity. The advantages of such a review entity approach are that it would permit a dramatic opening of the market for private credit ratings and at the same time discontinue the unsuccessful outsourcing of vital regulatory monitoring. Moreover, this review entity would be better for public boards, such as non-profit corporations. In such a scenario, the rating agencies can be forced to audit their ratings. With this process, the soundness of the ratings agencies' methodologies can be ensured.

Third, for each rating, issuers could be required to pay a specific sum into a pool, from which a rating agency would be chosen at random.[92] There is some disagreement about this option because it might be difficult to maintain the quality of ratings after separating the link between pay and performance. To improve incentives, the SEC or other regulatory bodies should further encourage additional competition by progressively expanding the ranks of the NRSROs.[93]

Fourth, government should not interfere in the rating determination process. For capital markets to function most efficiently, credit rating agencies should be free to develop their rating processes and methodologies as they see fit and to express their opinions.

Lastly, the regulatory frameworks should be globally consistent. Credit rating agencies operate globally and affect capital markets worldwide. The differences between the United States and European Union, however, still exist.

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[91] Frank Partnoy has suggested linking regulation instead to market-based measure of risk, such as credit spreads or the prices of credit default swaps. Partnoy, supra note 100, 80-81.
[92] David G. Raboy, *Concept Paper on Credit Rating Agency Incentives* (Jan. 9, 2009).
[93] Hill, supra note 83, 86-87.

Chapter 8. Conclusion

In this thesis, various perspectives were offered to understand the 2007 financial crisis.

First, the housing bubble and burst were examined in detail. Cash inflows from China's savings made cheap money available, and this made it possible for American people to borrow money for houses easily, which led to the housing bubble. Moreover, free market capitalism and Greenspan's faith in self-regulation played crucial roles in the housing and asset bubbles. After all, the U.S. could not use all the money that was put into the financial system efficiently.

U.S. financial firms created many complicated products and did a lot of leveraging to maximize their own profit. Naturally, the financial sector garnered economic and political power, and Wall Street companies actually started to influence Washington.

After the housing bubble burst, many financial derivatives that were based on the housing market, such as mortgage-backed-securities, experienced difficulties.

The U.S. economic crisis has many similarities with the Korean crisis of 1997. In fact, if the Korean Letter of Intent is reviewed, it seems that the crisis recurred repeatedly:

> Financial institutions have priced risks poorly and have been willing to finance an excessively large portion of investment plans of the corporate sector, resulting in high leveraging. At the same time, the dramatic decline in stock prices has cut the value of banks' equity and further reduced their net worth.[94]

After the crisis, the Korean government rescued major banks, similar to the U.S. government bailing out large financial firms.

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[94] Johnson and Kwak 2010, 56; Originally from *Korean Letter of Intent to the IMF*, supra note 1.

In fact, except for the Korean crisis, there were other similar financial crises before the one in the U.S., such as Japan's post-bubble Great Recession in the 1990s or the Nordic countries' crisis from 1992 to 1995. The scale of the banking problem could be different from that of the U.S., but the nature of the banking problem is similar.

It is vitally important to understand why these kinds of crises keep happening by learning lessons from them.

Government's responsibility to engage with the economic and political environment is crucial. Financial regulators, banks, and the economic elite have made the U.S. financial system less efficient and much more dangerous. The U.S. government would be well advised to eliminate the Wall Street-Washington relationship and to consider steps for creating a fair system.

Returning to Summer's argument mentioned in the introduction, Chapter 2 explained the imbalances in U.S. trade and debt. Despite this imbalance, if one company had a stable and reasonable financial system, the country would not face another financial meltdown but be able to manage the high debt level.

To prevent the next financial crisis, the U.S. financial crisis was analyzed from six perspectives: first, macroeconomic; second, banking; third, political; fourth, regulation system; fifth, Black Swan; and sixth, credit rating agencies. In fact, these perspectives are not independent but interconnected. Therefore, through these various perspectives, one can obtain a clearer view about the detail of how the crisis happened and what must be done to avoid another crisis. Personally, I agree with Volcker's rule, and I believe that financial industry reform must be undertaken as soon as possible.