

## **The Problem With Financial Innovation<sup>1</sup>**

*By Simon Johnson and James Kwak*

Innovation is among the most powerful forces that shape human society. The improvements in the material standard of living enjoyed by most (though not all) Americans are largely due to innovation. One of the principal arguments for free-market capitalism is that it is the economic system that most encourages innovation, because it allows innovators to capture a significant part of the benefits of their work.

Today, financial innovation stands accused of being complicit in the financial crisis that has created the first global recession in decades. The very innovations that were celebrated by former Federal Reserve Chairman Alan Greenspan earlier this decade - negative-amortization mortgages, collateralized debt obligations (CDOs) and synthetic CDOs, credit default swaps, etc. - either amplified or caused the crisis, depending on your viewpoint.

However, the conventional wisdom is coalescing around the idea that financial innovation is basically good, but just needs to be watched a little more carefully. As Ben Bernanke said in a [speech in May 2007](#):

We should also always keep in view the enormous economic benefits that flow from a healthy and innovative financial sector. The increasing sophistication and depth of financial markets promote economic growth by allocating capital where it can be most productive. And the dispersion of risk more broadly across the financial system has, thus far, increased the resilience of the system and the economy to shocks. When proposing or implementing regulation, we must seek to preserve the benefits of financial innovation even as we address the risks that may accompany that innovation.

Intellectual conservatives and bankers have mounted a more fervent defense of financial innovation. [Niall Ferguson](#) claimed, "We need to remember that much financial innovation over the past 30 years was economically beneficial, and not just to the fat cats of Wall Street."

This is too generous.

It seems obvious that if innovation is good, then financial innovation must be good. But that does not necessarily follow. To understand this, we need to think about what we mean by innovation.

### **The Nature of Innovation**

Take the computer industry, for example - an industry that has transformed the way many of us live and work. The computer industry has benefited from many types of innovation. There have been: the invention of completely new products, such as the mouse and the graphical user interface; repeated innovation in manufacturing processes, such as Intel's consistent ability to shrink the dimensions of chip manufacturing; innovation in distribution, such as Dell's build-to-order process driven by customer configurations; innovation in design, such as the iPod, which didn't do anything that MP3 players didn't already do, but just did it better; and even innovations

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<sup>1</sup> An earlier version of this essay appeared in *Democracy*, August 2008.

in the basic business model, such as the open source revolution that gave us Linux, Firefox, and many other mainstays of the software industry.

All of these innovations make it possible to do things that could not be done before (publish content that is immediately available to anyone in the world), or make it easier to do things (read newspapers from around the world), or make it cheaper to do things (make international phone calls).

Financial innovation is a different type of animal. Certainly the financial services industry has taken advantage of technological innovation; you can now access your financial statements and pay your bills online, for example. However, these innovations do not affect the core function of the financial sector, which is financial intermediation - moving money from one place where it is not needed to another place where it is worth more.

The classic example of financial intermediation is the archetypal community savings bank. Ordinary people put their excess cash into savings accounts; the bank accumulates that money and loans it out as mortgages (or commercial loans). Savers earn interest, homebuyers can buy homes without having to save for decades (or entrepreneurs can start or expand businesses), and the bank makes money on the spread - the difference between the interest paid to depositors and the interest charged to borrowers.

The purpose of financial innovation is to make financial intermediation happen where it would not have happened before. And that is what innovation has given us over the last thirty years. As Ferguson said, "New vehicles like hedge funds gave investors like pension funds and endowments vastly more to choose from than the time-honored choice among cash, bonds and stocks. Likewise, innovations like securitization lowered borrowing costs for most consumers."

However, there are two differences in how we should think about financial innovation as opposed to other forms of innovation.

### **The Nature of Financial Innovation**

First, financial innovation is only good if it enables an economically productive usage of money that would not otherwise occur. If a family is willing to pay \$300,000 for a new house that will cost \$250,000 to build (including land), and they could pay off a loan comfortably over 30 years, then that is an economically productive usage of money that would not occur if mortgages did not exist. But the financial innovation (a mortgage) does not make the world better in and of itself; it depends on someone else having found a useful way to employ money.

Second, financial innovation can go too far. Financial intermediation creates value by moving money to places where it is more valuable - making credit more available. But it is possible for the economy to be in a state where anyone who can employ credit effectively already has access to credit - or where people have too much access to credit.

With the benefit of hindsight, it is easy to see that the U.S. housing sector passed this point earlier this decade. With negative-amortization mortgages (where the monthly payment was less

than the interest, causing the principal to go up) and stated-income loans (where the loan originator did not verify the borrower's income), virtually anyone could buy a new house - leading developers to build tens of thousands of houses that are now rotting empty, their current value far less than their cost of construction. In short, excess financial intermediation destroys value by causing people to make investments with negative returns; in that case, the banks would have been better off taking their deposits and investing them in Treasury bills.

So in evaluating financial innovation, we need to think about whether it promotes beneficial financial intermediation or excessive and destructive financial intermediation. We cannot simply say that innovation is necessarily good, simply because there is a market for it. The fact that there was a market for new houses does not change the fact that building those houses was a spectacularly destructive use of money.

### **Evaluating Innovations**

In the early 1970s, Mohammed Yunus lent [\\$27 to 42 female basket weavers](#) in a village in Bangladesh; they repaid the loan, with interest, from the proceeds of their sales. In 1976, he founded Grameen Bank to make small loans to poor villagers, often to fund startup costs for small ventures. Grameen Bank was the first modern provider of microcredit, which has since spread throughout the developing world. Yunus's innovation was recognizing that poor people could be good borrowers, but were ignored by a traditional banking sector that refused to or was unable to serve them. In other words, he found an economically productive usage of money that was not otherwise occurring.

How does recent financial innovation in the developed world compare?

For Ben Bernanke, the balance is mostly positive, as he said in an April 2009 [speech](#): "I don't think anyone wants to go back to the 1970s. Financial innovation has improved access to credit, reduced costs, and increased choice. We should not attempt to impose restrictions on credit providers so onerous that they prevent the development of new products and services in the future."

[Ryan Avent](#), however, noticed that Bernanke did not name a beneficial financial innovation that was more recent than the 1970s:

His examples of successful financial products? Credit cards, for one, which date from the 1950s. Policies facilitating the flow of credit to lower income borrowers was another, for which he credited the Community Reinvestment Act of 1977. And, of course, securitization and the secondary mortgage markets developed by Fannie Mae and Freddie Mac in...the 1970s.

Both Bernanke and Ferguson rely on securitization as a central example of a beneficial innovation. Securitization probably was beneficial on balance, because it expanded the pool of money available for lending; also, securitization on its own - before the new products of the late 1990s and 2000s - did not produce the colossal boom and bust we have just lived through, which

is clear proof of excessive financial intermediation. But it's those newer products that the defenders of innovation are more hesitant to talk about.

One of the paradigmatic products of the last ten years was the collateralized debt obligation (CDO), in which a structurer combined a pool of bonds and sold off the cash flows from those bonds to investors. CDOs did promote financial intermediation; those initial bonds represent loans to real companies, and without the CDO market to absorb those bonds, those loans might never have been made in the first place. But the key issue is why investors were willing to absorb that risk.

The magic of a CDO, as explained in "[The Economics of Structured Finance](#)" by Joshua Coval, Jakub Jurek, and Erik Stafford, lies in how CDOs can be used to manufacture "safe" bonds (according to credit rating agencies) out of risky ones - especially when you create CDOs out of CDOs, known as CDOs-squared. Looking at investors as a group, they were willing to buy CDOs when they would not have been willing to buy all the bonds that went into those CDOs - at least not without demanding a higher return. We don't have to decide who is to blame for this situation - the structurers who pushed these products, the credit rating agencies who blessed them, or the investors who didn't study them thoroughly. The fact remains that at least some CDOs boosted financial intermediation by tricking investors into making investments they would not otherwise have made - investments that destroyed value.

Another paradigmatic product was the credit default swap (CDS), which insured a bond (or a CDO) against the risk of default. Like CDOs, credit default swaps promoted financial intermediation; investors who might otherwise not buy a given bond were willing to buy it, provided that they could buy a CDS for protection. Again, however, this only worked because at least one party did not fully understand the trade. Credit default swaps were priced using models that underestimated the risk of default, because they were based on data from a time period with historically low default rates. As a result, the price of CDS protection was too low, essentially tricking investors into buying financial products that they would not have bought if the CDS had been priced properly. The difference from the CDO example is that this time the losses were borne by the companies that underpriced the credit default swaps, such as AIG - and by the government, which had to bail out AIG. In any case, credit default swaps led directly to the misallocation of capital to value-destroying investments.

In short, collateralized debt obligations and credit default swaps both promoted excessive financial intermediation by inducing investors to underestimate the risk of the investments they were making. As a result, money flowed into value-destroying activities.

What about that other great example of financial innovation - venture capital? Venture capital did play an important role in stimulating technological innovation over the past thirty years, and despite its excesses it is a key part of the Silicon Valley miracle.

But venture capital is not a recent innovation, and as far as financial products go, it is one of the simplest. VC funds are simply pools of money from large investors that are invested for long periods of time, where the profits return to the investors and the fund managers (the VC firms) take a cut. VC firms do lots of old-fashioned due diligence when selecting companies to invest

in, and they make unleveraged investments in relatively simple securities. The preferred means of liquidating a VC investment, the initial public offering, likewise has changed little; indeed, the price of an IPO (the fee paid to investment banks) has managed to resist technological or any other form of innovation, remaining around 7% of the total IPO proceeds. What did change recently was the popularity of VC funds, and the predictable result was a glut of VC money, leading to excessive intermediation in the Internet boom, when money flowed to many companies who had no business being funded.

These are only a few of the forms that financial innovation has taken recently. So far we are not convinced that a return to the financial system of the late 1970s or early 1980s would be such a bad thing.

### **Regulation Innovation**

The financial regulatory system needs to take into account the peculiar nature of financial innovation. In particular, the incentives of the financial sector are biased in favor of too much innovation. Despite the cartel-like pricing of IPOs (and debit cards), the profitability of many other financial products has fallen with competition; the price for executing online stock trades, for example, is down around \$8 per transaction. The ongoing profitability of financial institutions depends on inventing and selling new financial products that are less commoditized and therefore command higher margins.

There may be a debate about who is to blame for the toxic financial products of the last decade - the buyers, the sellers, or the abettors; but few investors woke up one morning thinking, "I wish I could buy a mezzanine tranche of a collateralized debt obligation backed by credit default swaps." It is true that investors prefer a higher yield to a lower yield; but the school board of Whitefish Bay, Wisconsin would never have taken \$35 million, leveraged up to \$200 million, and used the money as collateral to sell CDS protection on a portfolio of corporate bonds - all to get a yield 0.9 percentage points higher than Treasury bonds - had the transaction not been manufactured by one bank and sold by another, as revealed by [Planet Money and The New York Times](#).

The Obama Administration's financial regulatory reform proposals, which became the Dodd-Frank legislation says, in essence, that regulation should be smarter and more modern. There will be a systemic risk regulator; more derivatives should be traded on exchanges and cleared by central counterparties; gaps in regulation should be closed; and so on.

However, the current wave of regulatory reform falls short in two main respects.

First, it follows the old conventional wisdom, which is that innovation is inherently good, and regulators need only watch out for abnormal excesses or "bad apples." Instead, the presumption should be that financial innovation is costly - it increases transaction costs, the cost of effective oversight, and the risk of unanticipated consequences - and should have to justify itself against those costs.

As Arnoud Boot argues, it also adds complexity which can potentially make it harder for managers to understand what subordinates are doing, for boards to supervise executives, and for outside investors to perceive what risks are really being taken. In a financial world where so many people are compensated on the basis of returns not adjusted for risk, there is great incentive to increase leverage and find other ways to increase recognized income in the upside scenario. By the time risks materialize, the decision-makers in question may be long gone.

Instead of a regime where any product is allowed so long as it is sufficiently disclosed, we should consider a regime where only certain types of products are allowed to exist, and they are only allowed to vary along specific dimensions. For example, Adam Levitin has argued that all of the "innovation" in the credit card industry has simply been the invention of new, more complicated, and less transparent fee structures, while the underlying product has remained the same for decades. He proposes that regulation should standardize the terms of credit cards, so that charges cannot be hidden in fine print, and issuers should be allowed to compete on the interest rate, the annual fee, and the transaction fee. This would ensure price competition, while making it harder for consumers to end up with dangerous products that encourage excessive borrowing. This model could be applied to a wider range of financial products - even to commercial products such as interest rate swaps and credit default swaps, which baffled a fair number of supposedly sophisticated players during the boom.

This is exactly the philosophy that Elizabeth Warren proposes we should apply to consumer protection for financial products. Everything should be simplified and made more transparent. Get rid of the fine print. There may be a cost, in terms of reduced financial intermediation, and efforts to document and measure this should be welcomed. But it seems reasonable that these costs are small relative to the social benefits that would be associated with any such move towards requiring limits on complexity.

Second, although the administration's plan makes regulation itself smarter, it doesn't change the power balance that underlies regulation. The problem of regulatory capture has been well known for decades. Large companies and industry groups gain influence over politicians through campaign contributions and other means; regulators become advocates for the companies they regulate, in some cases because they expect (accurately) to be hired by them when they leave government service. Unless this balance of power is changed, any new regulations are only good until the next boom, when the political winds will shift and the pressure will be to let the private sector make money (because "a rising tide lifts all boats").

Ideally, we would find ways to decrease the political influence of the financial sector and to increase the independence and prestige of the regulatory agencies. Simple rules that raise the barriers between lobbyists and politicians, increase the salaries of rank-and-file regulators, and increase the period before regulators are allowed to work in the industries they regulate could go a long way.

Meaningful restrictions on compensation, such as making bonuses in good years vulnerable to reduction in bad years, would also make the financial sector less lucrative, less iconic, and ultimately less powerful. Perhaps most importantly, breaking up the largest banks and

establishing size caps for financial institutions would not only reduce the "too big to fail" problem, but would reduce their political influence as well.

Realistically, however, none of this is going to happen – all reasonable proposals along these lines were shot down during the Dodd-Frank financial reform debate. The best chance for any progress now rests with the regulatory process still at work around capital requirements.

As Anat Admati and her colleagues have demonstrated, the social costs from much higher capital requirements would be essentially zero. All the arguments against requiring more equity relative to debt in banks and other parts of the financial sector are either ill-informed, based on misunderstanding basic finance, blatantly self-serving, or all of the above.

Higher capital requirements would reduce the incentive for some of the most dangerous kinds of financial innovation which aim to increase effective leverage, i.e., raise debt relative to equity. As equity is the buffer against insolvency, anything that increases capital will make individual institutions less prone to collapse and also reduce the probability that a single failure spreads across the financial system through any form of chain effect.

Such capital requirements need to be simple in order to be effective. Much “innovation” around the use of capital amounts to complex ways to disguise the fact that equity is lower – thus upside returns are higher, while downside risks also increase. Low levels of capital are dangerous but when combined with standard “return on equity, unadjusted for risk” compensation schemes, the results will always prove toxic.

The current crisis has amply demonstrated the perils of unchecked financial innovation. But our political establishment has not yet drawn the necessary conclusion from this experience. Inventing the negative-amortization mortgage is not the same thing as inventing the hybrid engine; unless financial innovations overcome recognized, existing barriers to financial intermediation, there is no particular reason to think their benefits outweigh their costs and the risks they create. Only through healthy skepticism toward financial innovation will we be able to protect ourselves from the next financial crisis.

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# Is Innovation Always Good For The Economy?

Simon Johnson

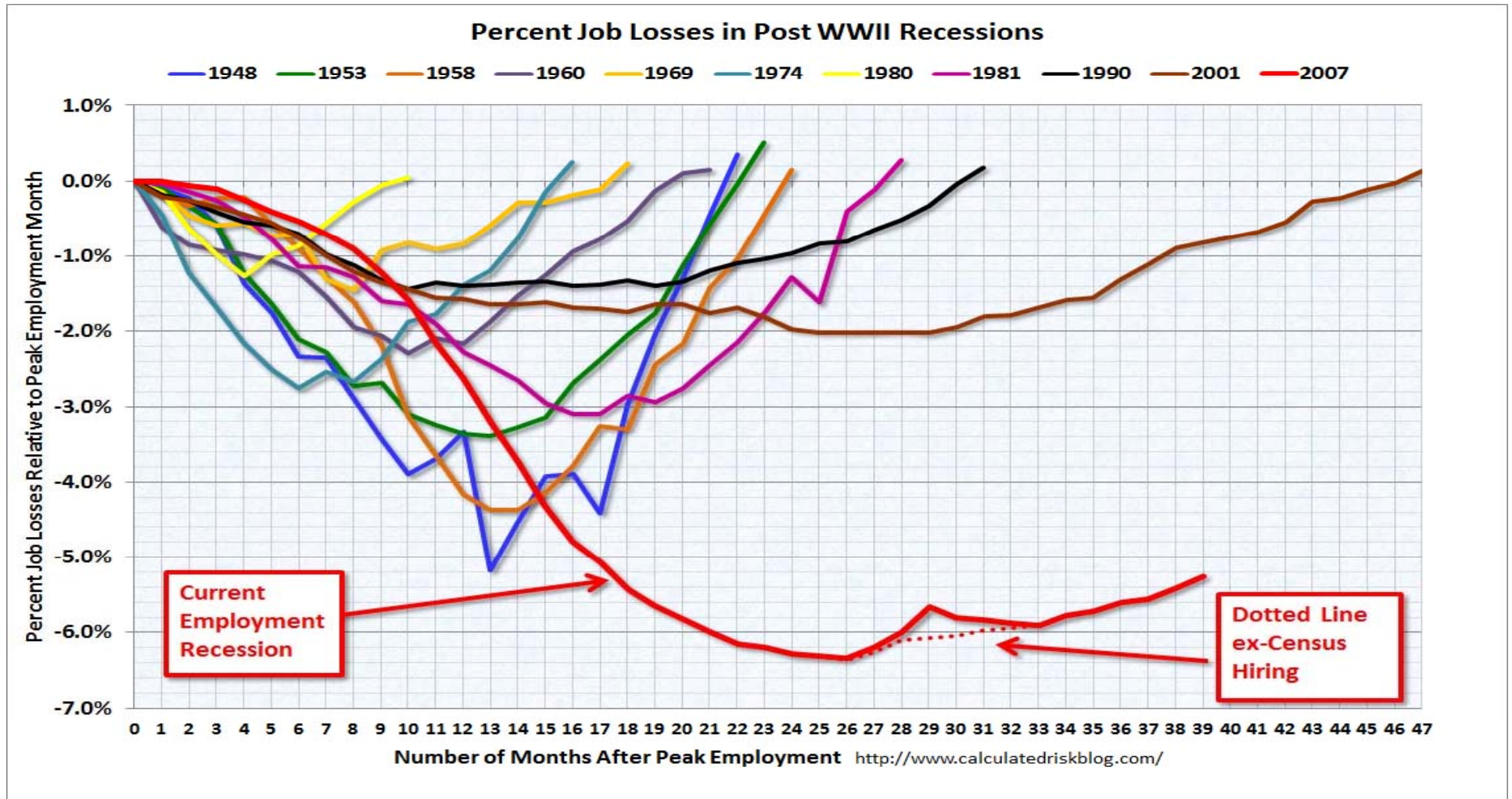
<http://BaselineScenario.com>

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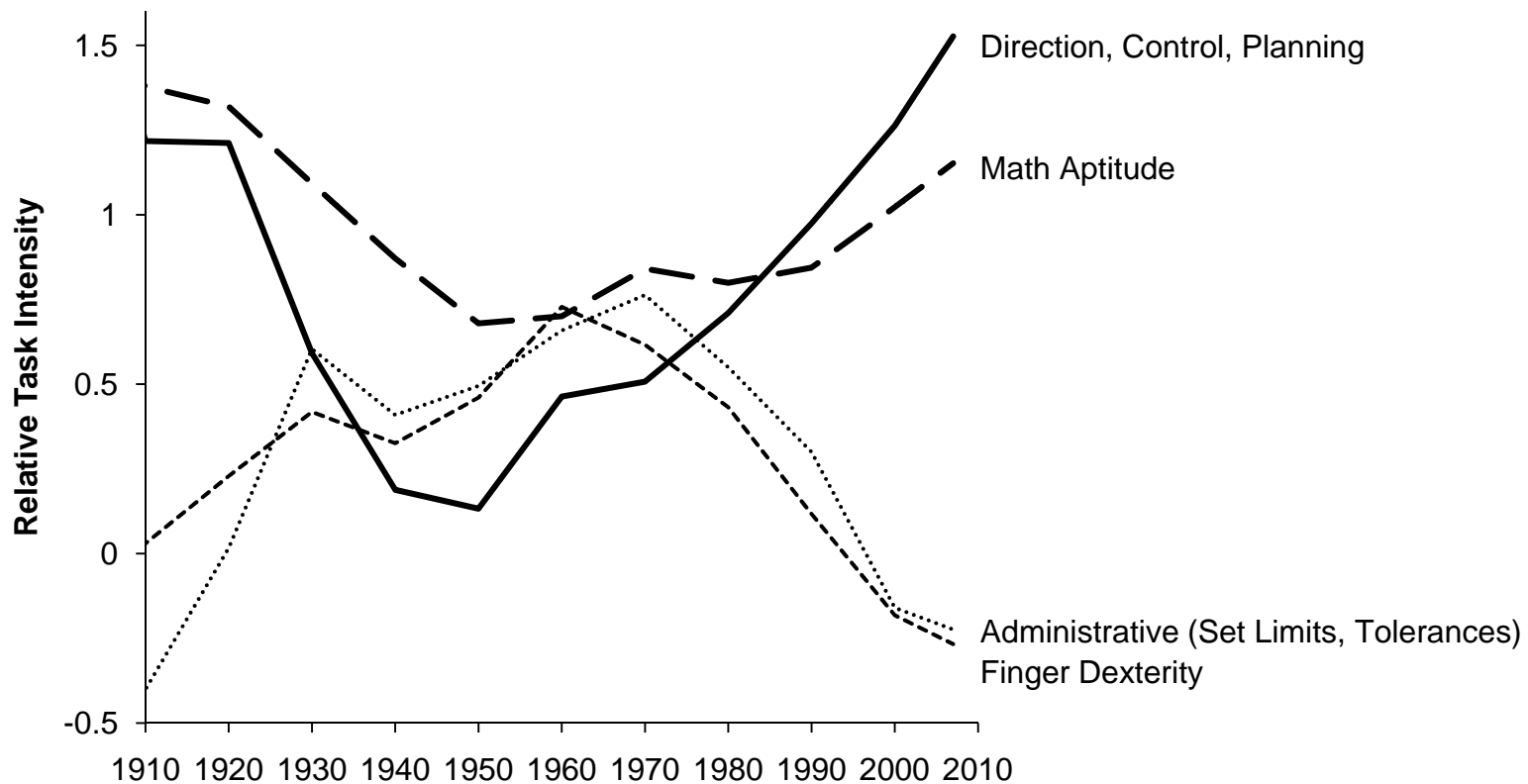
# What Went Wrong?

(CalcuatedRiskBlog.com; March 2011)



# Relative Job Complexity in the Financial Sector

Figure 4.2: Relative Job Complexity in the Financial Sector



Source: Thomas Philippon and Ariel Reshef, "Wages and Human Capital in the U.S. Financial Industry: 1909-2006," Figure 3

# Equity As Percent Of Assets, US Commercial Banks, 1840-1995

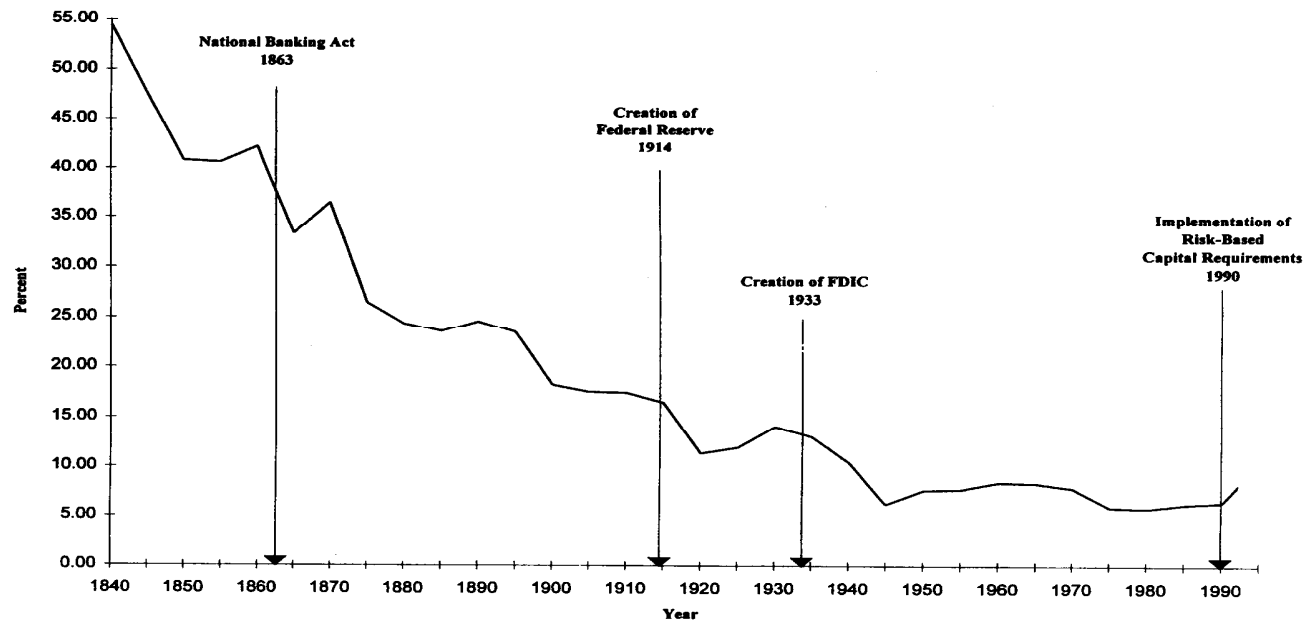
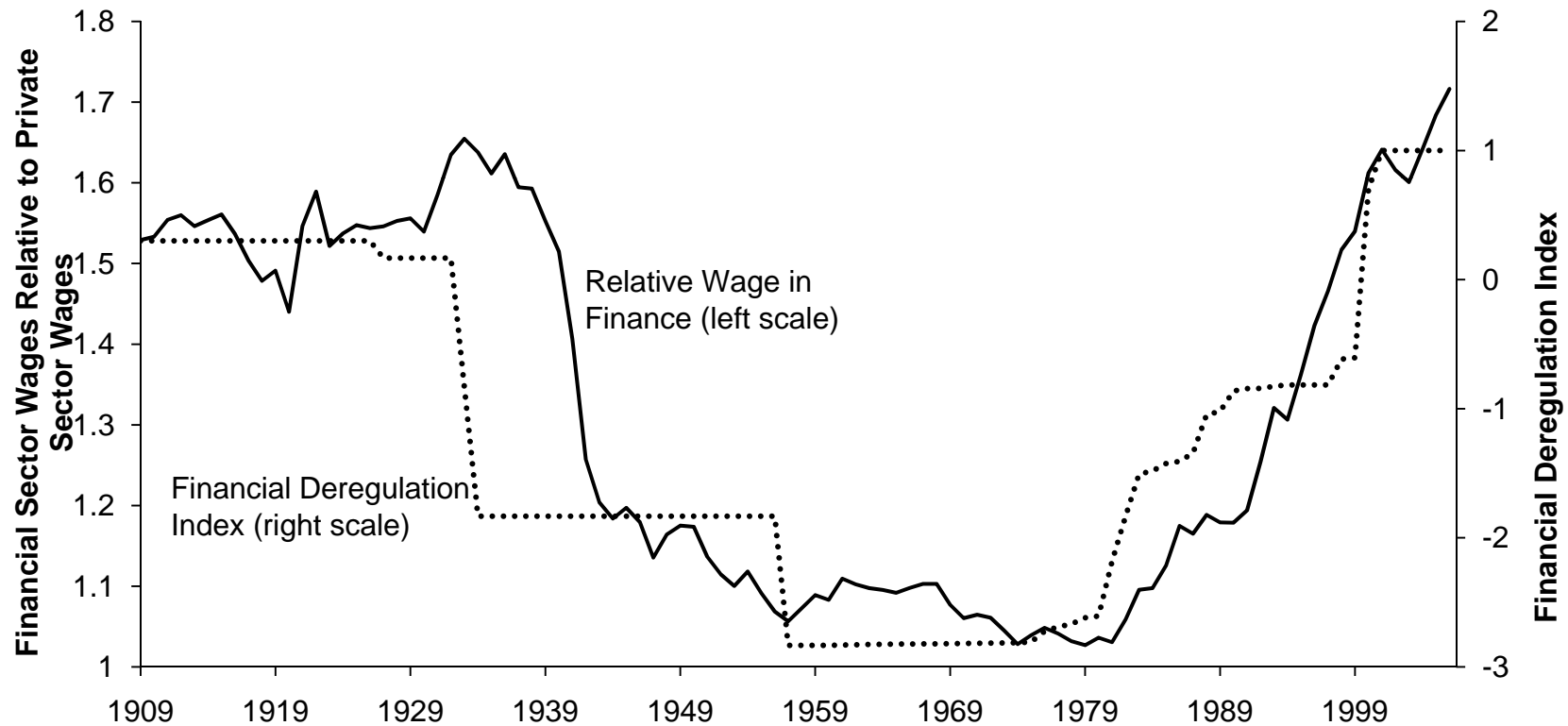


Fig. 1. Equity as a percent of assets, 1840–1993 for U.S. commercial banks. (Ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets.)

Source: Statistical Abstracts through 1970, Report of Condition and Income thereafter.

# Relative Financial Sector Wage and Financial Deregulation, 1909-2006

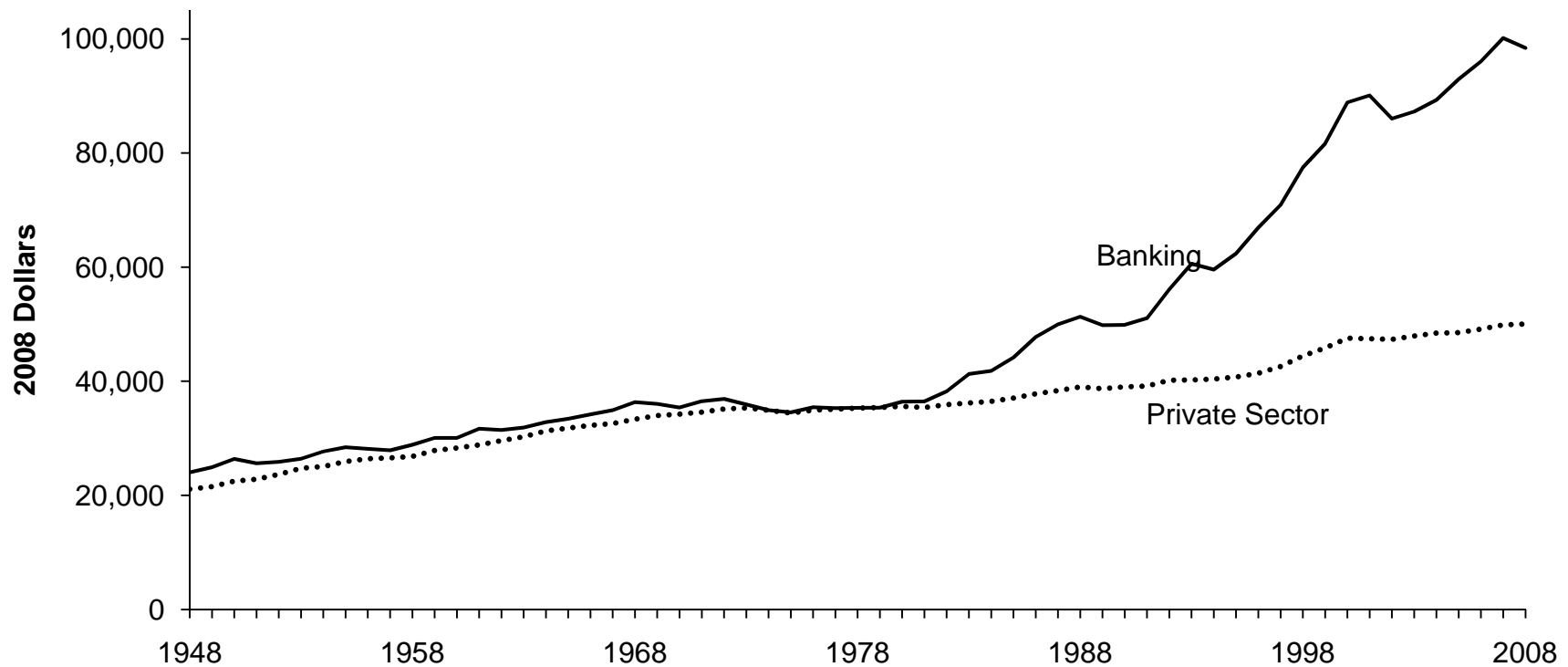
Figure 5.2: Relative Financial Wage and Financial Deregulation



Source: Thomas Philippon and Ariel Reshef, "Wages and Human Capital in the U.S. Financial Industry: 1909-2006," Figure 6

# Real Average Compensation: Banking vs. Private Sector, 1948-2008

Figure 5.1: Real Average Annual Compensation, Banking vs. Private Sector Overall

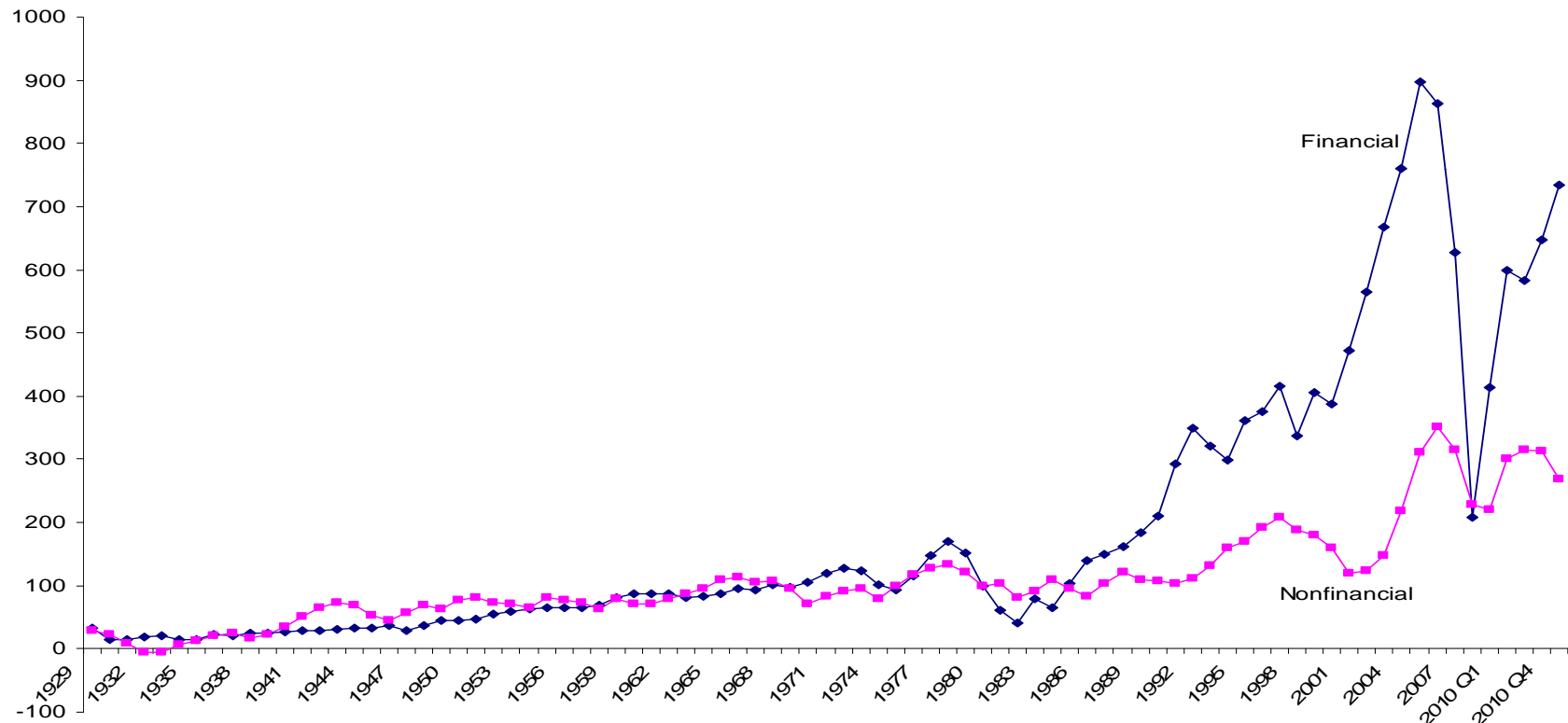


Source: Bureau of Economic Analysis, NIPA Tables 1.1.4, 6.3, 6.5; calculation by the authors. Banking includes financial sector less insurance, real estate, and holding companies. Annual compensation is total wage and salary accruals divided by full time equivalent employees.

# Economic Power Becomes Political Influence

## Real Corporate Profits, 1929-2010

Real Corporate Profits, Financial vs. Nonfinancial Sectors, through Q4 2010



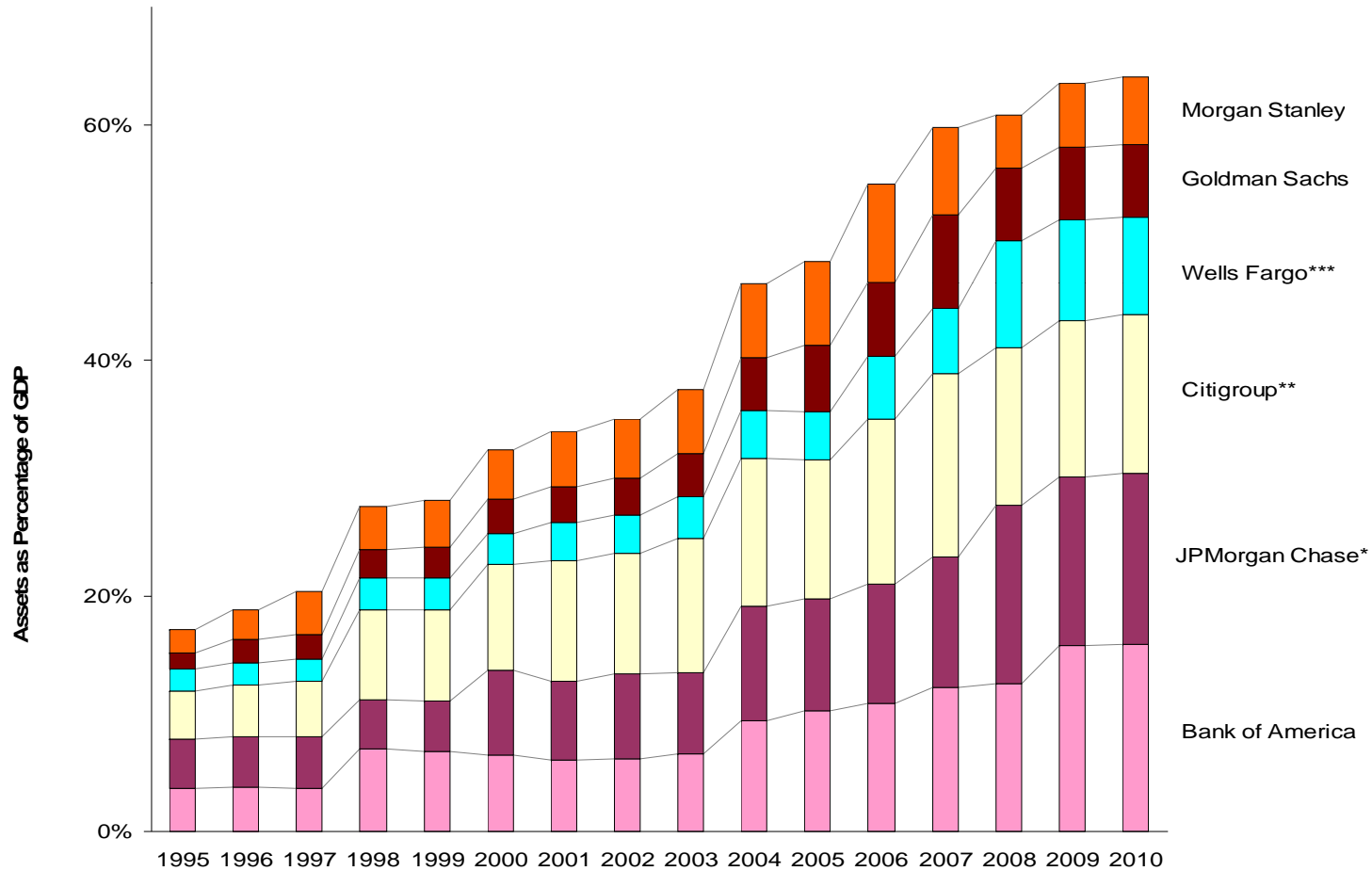
Source: Bureau of Economic Analysis, NIPA Tables 1.1.4, 6.16; calculation by the authors. Financial sector excludes Financial Reserve banks. Annual through 2009, quarterly for 2010 (annualized; seasonally adjusted).

—◆— Financial profits (index=100 in 1980)      —■— Nonfinancial profits (index=100 in 1980)

# Six Big Banks Getting Bigger

(through end of Q3 2010)

Growth of Six Big Banks



\* Chase Manhattan through 1999

\*\* Travelers through 1997

\*\*\* First Union through 2000; Wachovia 2001-2007

Source: Company annual reports and Federal Reserve. 2009 is at end of Q3; 2010 is at end of Q3.

# Is It A Loop?

## The Doomsday Cycle

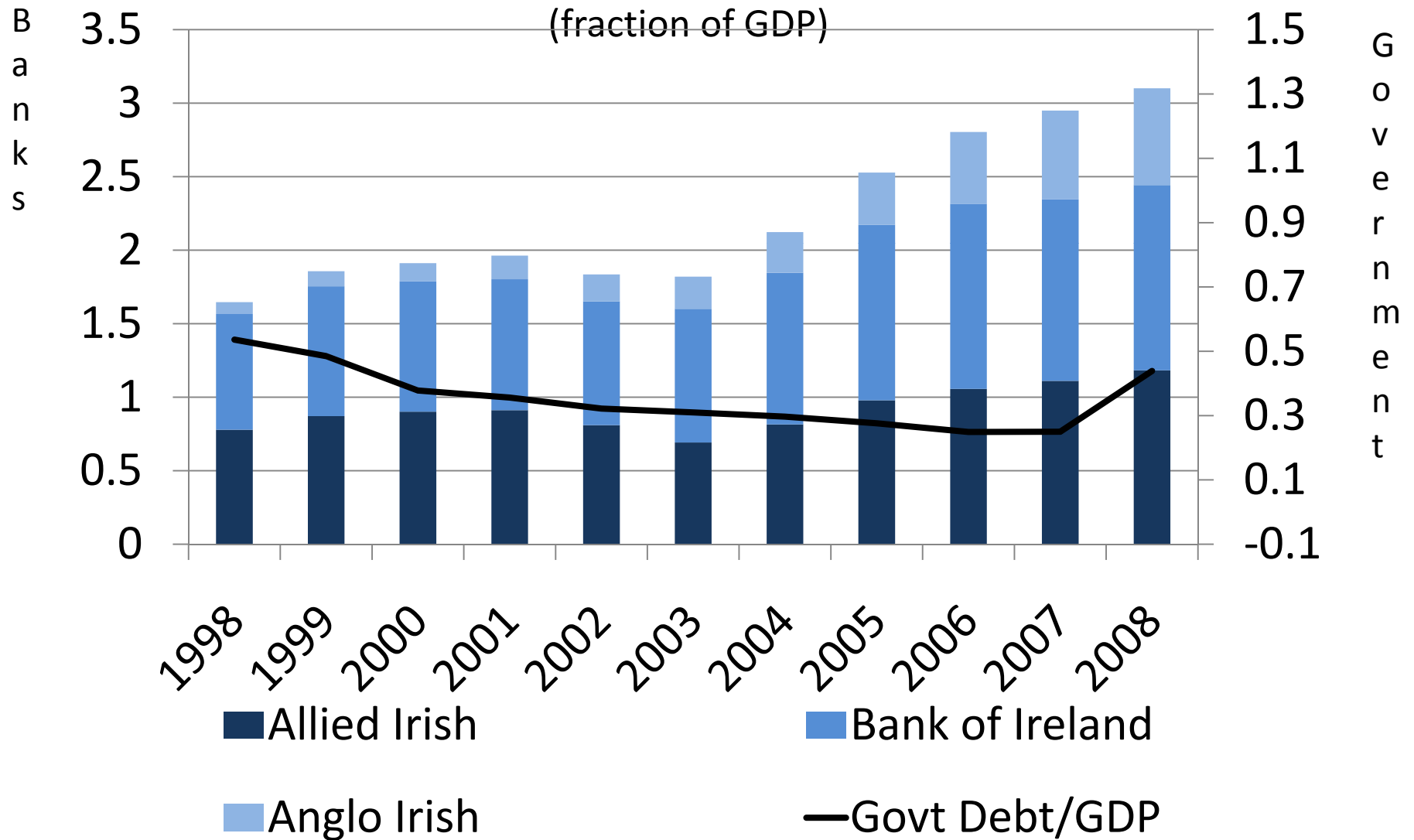


Source: Boone and Johnson, "The Doomsday Cycle," [CEP/Vox](#)



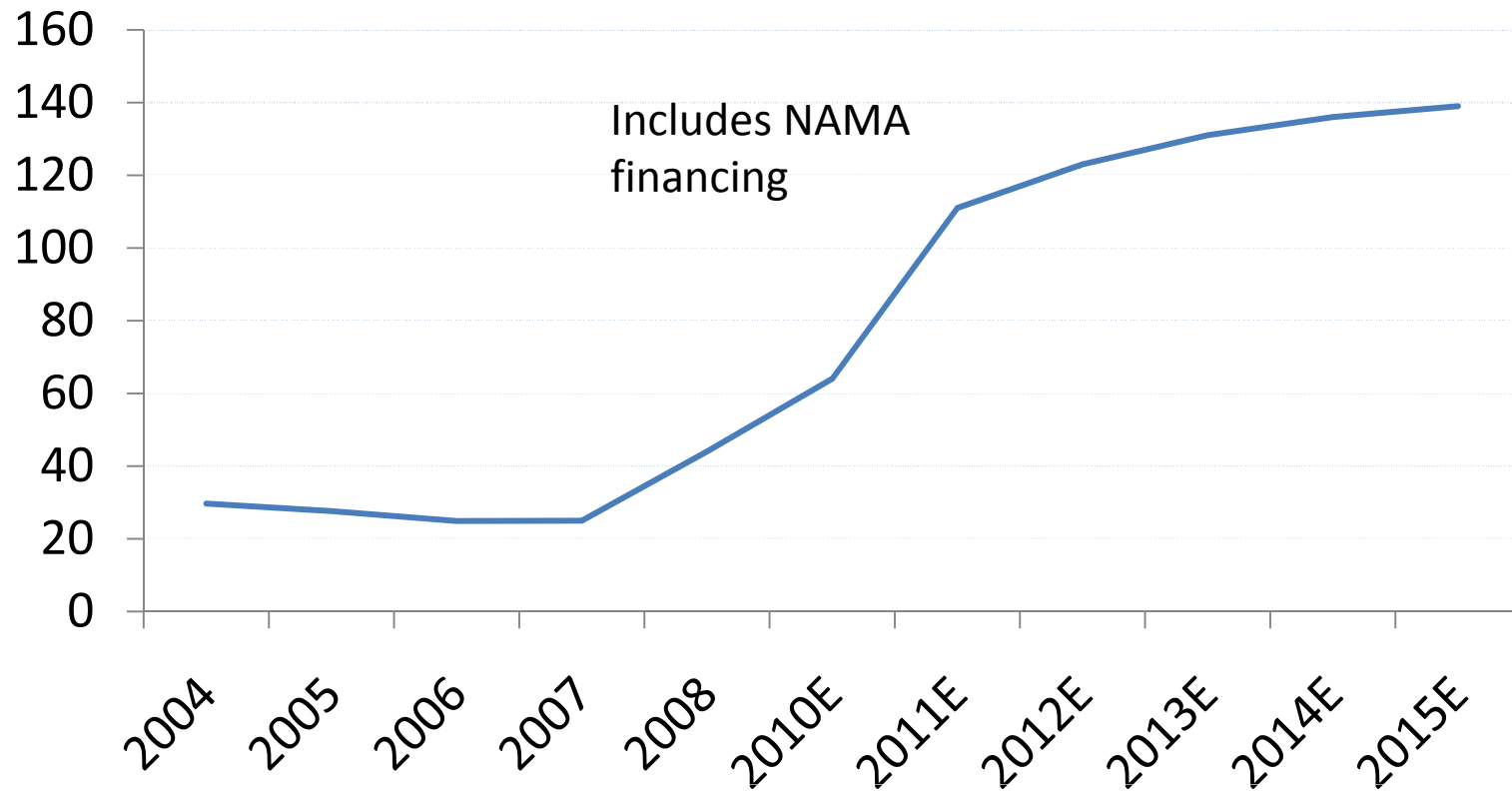
# Or A Fiscal Disaster?

## Ireland: Bank Assets, Govt debt



# Irish Public Debt/GDP

(2004-2015E)



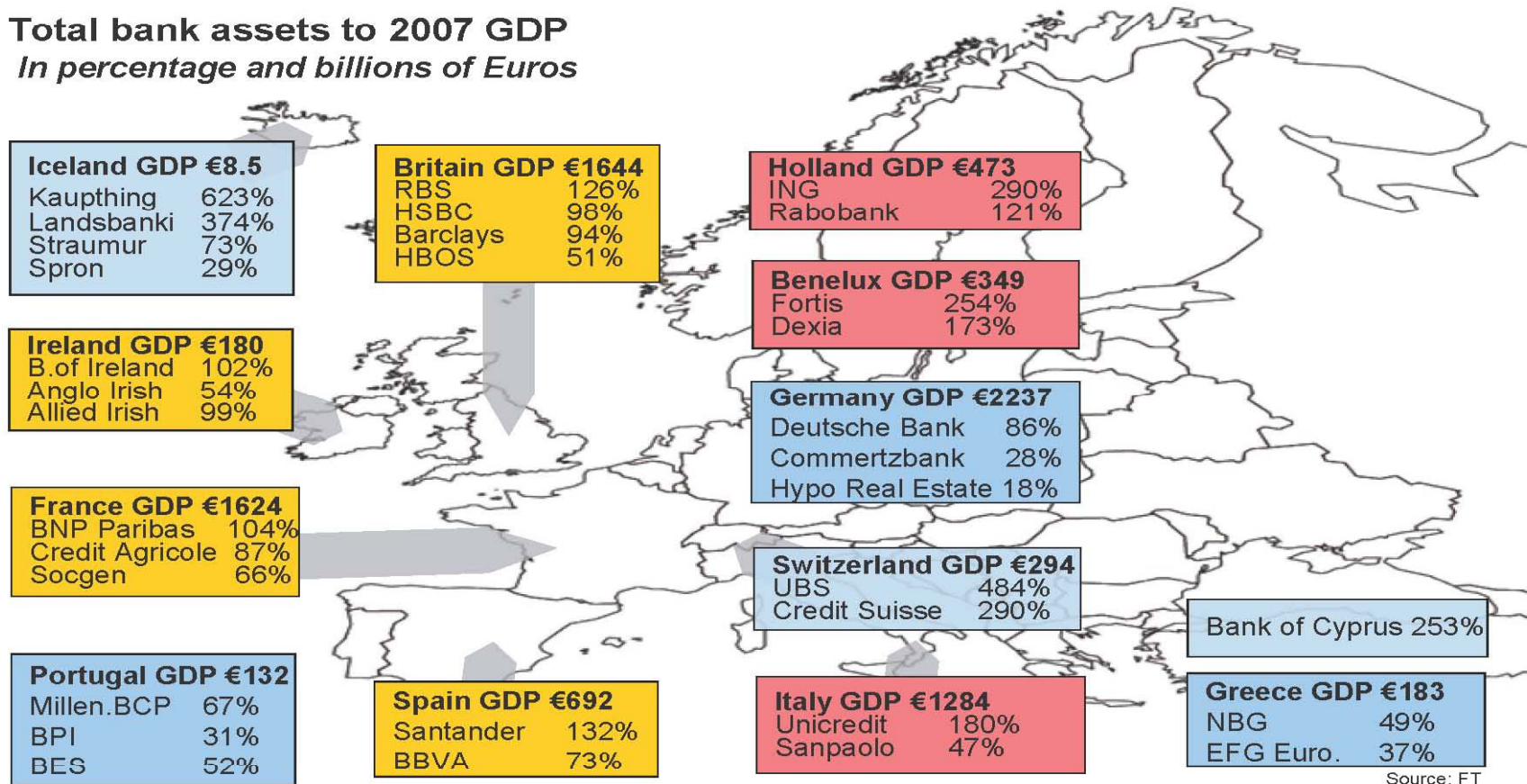
# Market Analysis in October 2008

...provided they are credible

Credit Strategy

Assets of some banks are too large to guarantee

**Total bank assets to 2007 GDP**  
In percentage and billions of Euros

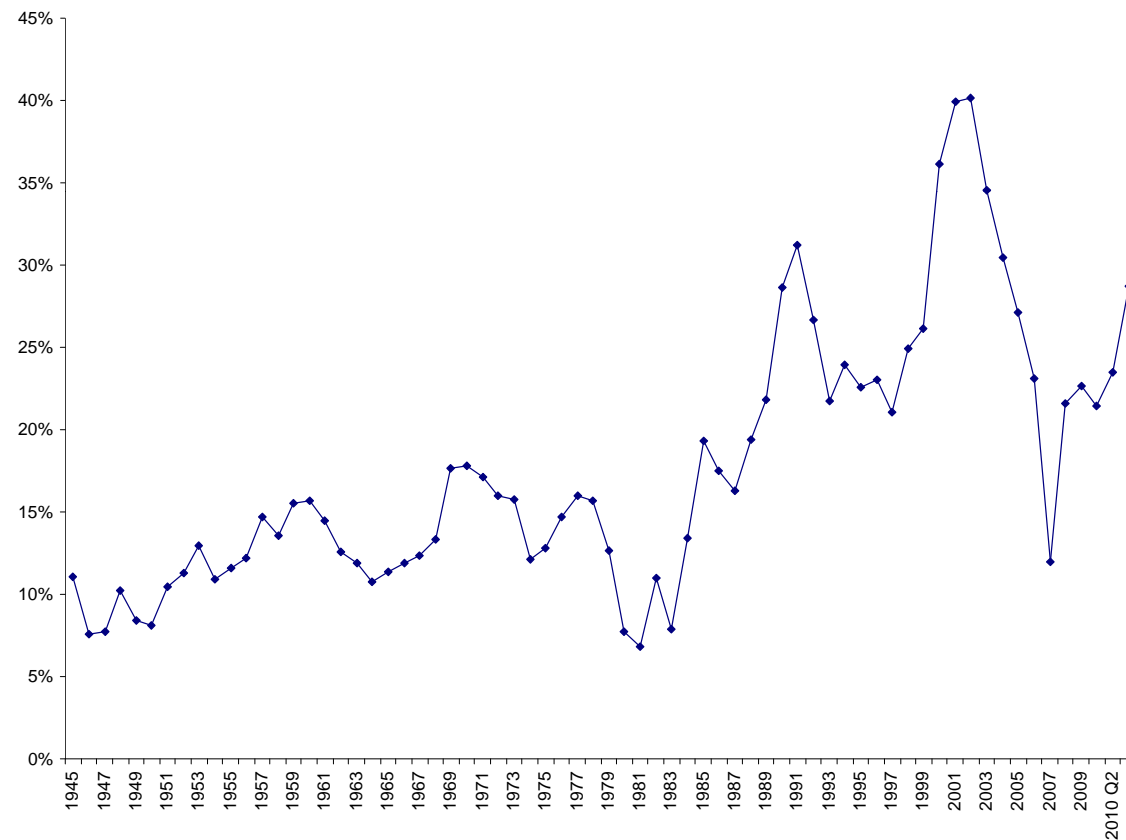


Source: FT

# Measure of Systemic Risk?

## Finance Compared With Total Corporate Profits

Financial Sector Profits as Share of Total Corporate Profits (through Q4 2010)



# Further Reading

- Anat Admati, 2011 (revised), “Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive”
  - <http://www.gsb.stanford.edu/news/research/admati.etal.html>
- Haldane, Brennan, and Madouros 2010, “What is the contribution of the financial sector: Miracle or mirage?”
  - <http://harr123et.files.wordpress.com/2010/07/futureoffinance-chapter21.pdf>
- Boot 2011, “Banking at the Cross Roads: How to deal with Marketability and Complexity”?
  - [http://www.frbatlanta.org/documents/news/conferences/11fmc\\_boot.pdf](http://www.frbatlanta.org/documents/news/conferences/11fmc_boot.pdf)

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vice-chairman of Morgan Stanley  
(after the crisis)

