Investment Analysis

Lecture 6: Financial Crises and The Great Recession[1]

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Introduction

- This lecture is inspired by two interviews Tom Sargent gave to the Euro Area Business Cycle Network[3] and the Minneapolis Fed.[4]
- Sargent offered a strong defence of modern macroeconomics, which came under fire following the fallout of the Global Financial Crisis (GFC).
- But we will show that economics can explain why financial crises occur, and we will look at two models which do precisely this:
  - The Diamond-Dybvig (1983) model
  - The Kareken-Wallace (1978) model
- We will also look at explaining why and how the GFC happened.

[3] http://www.eabcn.org/podcast/andrew-scott-interviews-tom-sargent-nyu

[4] https://www.minneapolisfed.org/article/2010/interview-with-thomas-sargent

Setting up the model

- Financial crises are about runs on short term bank debt.
  - The situation in which short term liability holders "run" en masse to liquidate their savings in financial intermediaries, forcing intermediaries to engage in asset sales that could render them insolvent, is referred to as a bank run.
- Bank runs are a recurrent problem in economic history.
- Key questions:
  - Why are bank runs so common?
  - Why do people hold short term bank debt (deposits) if they're vulnerable to runs?
  - What type of policies can be used to prevent/reduce/mitigate runs?

Key insights of the model

- The Diamond-Dybvig model is a celebrated contribution that:
  - Provides a precise definition of liquidity.
  - Exposits the benefits of the liquidity transformation that financial intermediaries do.
  - Points out the perils of liquidity transformation.
  - Provides a framework to think about policies.

Model basics

- There are three periods indexed by T: $T = \{0, 1, 2\}$. $T = 0$ is today and $T = \{1, 2\}$ measures the future.
- Many households who are (ex-ante) identical and have an endowment of 1 in $T = 0$. They need to consume in either $T = 1$ or $T = 2$.
  - A "shock" occurs randomly to households. So at $T = 0$ they don't know if they're impatient ("type 1"; needs to consume in period $T = 1$) or patient ("type 2"; can consume in period $T = 2$).
  - Each household's type is revealed in $T = 1$
  - A fixed fraction, $t \in [0, 1]$ of households will be type 1, and $1 - t$ fraction will be type 2.
- Two assets:
  - Costless storage (cash). Pays no extra return, but can be withdrawn from at any time.
  - Illiquid investment (e.g. bond). Pays R_1 gross return if liquidated in $T = 1$, or it pays $R_2 \geq R_1$ if liquidated in $T = 2$.

Model basics (cont.)

- An individual household has utility:

$$U(c) = 1 - \frac{1}{c},$$

and its expected utility is simply the probability-weighted sum of utility flows depending on which type it ends up being:

$$\mathbb{E}[U] = tU(c_1) + (1-t)U(c_2),$$

where c_1 and c_2 are consumption at each date depending on type:

- $c_1 = c_2 = 1$ if the storage is used.
- $c_1 = R_1$ and $c_2 = R_2$ is the investment is used.

Numerical example

- Suppose $R_1 = 1$ and $R_2 = 2$ on the investment technology, and that $t = \frac{1}{4}$. The expected return (gross) from investing is:

$$\mathbb{E}[R] = \frac{1}{4} \times 1 + \frac{3}{4} \times 2 = \frac{7}{4} > 1,$$

and the expected return (gross) on the storage is of course just 1.

- The expected utility from storage and investing are:

$$\mathbb{E}[U]_{\text{store}} = \frac{1}{4} \times 0 + \frac{3}{4} \times 20,$$
$$\mathbb{E}[U]_{\text{invest}} = \frac{1}{4} \times 0 + \frac{3}{4}\left(1 - \frac{1}{2}\right) = \frac{3}{8},$$

and thus the household prefers investment to storage.

Numerical example (cont.)

- We can think about the liquidity of an asset as the discount has to pay for "early" liquidation:

$$L = \frac{R_1}{R_2},$$

and since $R_2 \geq R_1$, $L \leq 1$.

  - The further L is from 1, the less liquid is the asset. Cash is of course perfectly liquid ($L = 1$).
  - The investment opportunity is less liquid than cash, since its $L = \frac{1}{2}$. But the household still prefers the less liquid asset.

Another example with less liquid investment

- Suppose that early liquidation of the investment incurs a cost of $1-\tau$, where $\tau \geq 0$. So you get $(1-\tau)R_1$ for early liquidation. The liquidity of investment in above example is then:

$$L = (1-\tau)\frac{1}{2} \leq \frac{1}{2}.$$

- How big must τ be for the household to not want the investment?

$$\mathbb{E}[U]_{\text{invest}} = \frac{1}{4}\left(1 - \frac{1}{1-\tau}\right) + \frac{3}{4}\left(1 - \frac{1}{2}\right) < 0.$$

  - We can show $\tau > \frac{3}{5}$ makes investment undesirable relative to storage.

Another example (cont.)

- Now, consider the case where $\tau = \frac{2}{3}$. The expected utility from storage verses investment is:

$$\mathbb{E}[U]_{\text{store}} = 0,$$
$$\mathbb{E}[U]_{\text{invest}} = \frac{1}{4}\left(1 - \frac{1}{\frac{1}{3}}\right) + \frac{3}{4}\left(1 - \frac{1}{2}\right) = -\frac{1}{8},$$

  and now the household prefers storage to investment. This is despite the expected (gross) return to investment is higher:

$$\mathbb{E}[R]_{\text{store}} = 1,$$
$$\mathbb{E}[R]_{\text{invest}} = \frac{1}{4} \times \frac{1}{3} + \frac{3}{4} \times 2 = \frac{19}{12} > 1.$$

- Thus, if a project is sufficiently illiquid and/or the household is sufficiently risk averse (i.e. $u''(C) < 0$), then the household may not want to directly invest in positive net return projects.

Banks and liquidity transformation

- Suppose there is a mutual bank (a bank with no equity and just wants to make a profit).
- Since exactly fraction t households will be type 1, and $1-t$ will be type 2, the bank can pool resources from many households.
  - Since there is a preference for liquidity, it can juggle and redirect savings from patient households to impatient households.
- Assume the same setup as before: $R_1 = 1$, $R_2 = 2$, $t = \frac{1}{4}$, and $\tau = 0$. Now suppose that the bank offers:

$$R^d = \begin{cases} 1.28 & \text{in period 1,} \\ 1.813 & \text{in period 2.} \end{cases}$$

- This is more liquid than the investment opportunity:

$$L^d = \frac{R_1^d}{R_2^d} = \frac{1.28}{1.813} = 0.706 > \frac{1}{2}.$$

Banks and liquidity transformation (cont.)

- What does the household prefer?
- Three options: storage ($\mathbb{E}[R] = 1$), deposits ($\mathbb{E}[R] = 1.68$), or direct investment ($\mathbb{E}[R] = 2$).
- Its expected utilities are:

$$\begin{aligned}
\mathbb{E}[U]_{\text{store}} &= 0, \\
\mathbb{E}[U]_{\text{invest}} &= \frac{3}{8}, \\
\mathbb{E}[U]_{\text{deposit}} &= \frac{1}{4}\left(1 - \frac{1}{1.28}\right) + \frac{3}{4}\left(1 - \frac{1}{1.813}\right) = 0.391 > \frac{3}{8},
\end{aligned}$$

  So, it prefers deposits.
- Household is willing to tolerate a lower expected return because of higher liquidity of deposits relative to direct investment.

Consumption smoothing and preference for liquidity

- We have assumed that households are risk averse and uncertain about when they will need to consume. Given risk aversion ($U''(c) < 0$), the household has incentive to smooth consumption across states (i.e., type 1 or type 2).
- You get a low return if you become a type 1, and a high return if type 2: What if there was a way to bring some of the return from the "type 2 world" to the "type 1 world"?
- That's exactly what a bank does in this instance – it engages in liquidity transformation:
  - It is creating an asset (deposits) that is more liquid than the underlying asset it is investing in.
  - In doing so, it can make households better off.
- Sort of like how insurance works.

Nash equilibrium

- With many households and a mutual bank, what we described is a Nash equilibrium.
  - Everyone is behaving optimally given beliefs about how others are going to play, which implies that there is no incentive to deviate.
  - Suppose I wake up in $T = 1$ and am revealed to be type 2. I do worse by withdrawing in $T = 1$ rather than waiting until $T = 2$, since $R_1^d = 1.28 < 1.813 = R_2^d$. This of course implies that I think the other type 2 households are going to wait.
- When would it make sense to withdraw in $T = 1$ even if I don't have to? Only if I think I will get back less than 1.28 in $T = 2$.
  - For example, if I think that too many type 2 households are going to withdraw 'early'.
- Let's focus on a situation where there are two equilibria: a good equilibrium (where everyone behaves well), and a bad equilibrium (where type 2 households withdraw early).

Two equilibria

- Let $\hat{f}$ be the expectation of each household about what f will be (i.e., the fraction who will withdraw in $T = 1$).
  - Suppose $\hat{f} = \frac{1}{2}$, so it's believed that half the population is going to withdraw early. Is this expectation self-fulfilling? If $\hat{f} = \frac{1}{2}$, then:

$$\begin{aligned}\hat{R}_2^d &= \frac{(1 - \hat{f}R_1^d)R}{1 - \hat{f}} \\ &= \frac{(1 - \frac{1}{2}1.28)2}{1 - \frac{1}{2}} \\ &= 1.44.\end{aligned}$$

  - This is less than what was promised, $R_2^d = 1.813$, but nevertheless better than what you get by withdrawing today.
  - So in an example economy where $t = \frac{1}{4}$, $\hat{f} = \frac{1}{2}$ cannot be an equilibrium. Thus, $\hat{f} = f = t = \frac{1}{4}$ is a Nash Equilibrium.

Two equilibria (cont.)

- Now suppose that $\hat{f} = \frac{3}{4}$. Then people will believe they will get:

$$\hat{R}_2^d = \frac{(1 - \frac{3}{4}1.28)2}{1 - \frac{3}{4}} = 0.32.$$

- This is significantly worse than R_1^d.
- Given this belief, it's best to 'get out now'.
- BUT $\hat{f} = \frac{3}{4}$ is not self-fulfilling: If everyone think it's best to withdraw now, EVERYONE will.
- Thus, $\hat{f} = f = 1$ is another Nash Equilibrium.

Two equilibrium (cont.)

- If everyone withdraws, then the bank will fail.
- It can at most come up with N in $T = 1$, where N is the mass of households who each hold 1 unit of endowment.
- Suppose that $N = 100$, and everyone chooses to withdraw their deposits, then the bank can't even meet the promised R_1^d.
  - The first 78 people to line up ($100/1.28 \approx 78$) get $R_1^d = 1.28$ as promised, but the last 22 get nothing.
  - This increases the incentive to withdraw and withdraw early.
- Thus there are two equilibria: good (no run) and bad (run).
- How do we know which equilibrium will be 'played'? We don't – there will exist a cutoff $\bar{f}$ above which any $\hat{f} \to 1$ (run) and below which $\hat{f} \to t$ (no run). In the above example $\bar{f} = 0.5625$.

Dealing with runs

- Financial intermediation (i.e. "borrow short, lend long") is structurally subject to runs because of liquidity transformation. Given that runs occur, what kind of policies can be instituted to deal with runs once they start?
- Key point of the Diamond-Dybvig model: A policy which effectively deals with runs ought not to really need to be used in practice. Basically, common knowledge of an effective policy once a run has started decreases the likelihood of a run happening in the first place.
- If we know our deposits are safe no matter how many type 2's withdraw early, we have no reason to withdraw early ourselves, and we all stay in the "good" equilibrium.

Lender of last resort

- The key difficulty is that some people really do need their funds at short notice. How do you decide how much conversion to do before suspending? How do you make sure the cash gets into the appropriate hands?
- Fed Reserve was formed largely to address this. The idea was that the Fed could create all the reserves it wanted to, which would prevent running out of liquidity.
- But this didn't end financial crises for a variety of reasons.
- In response to the bank failures of the early 1930s, the Federal Deposit Insurance Corporation (FDIC) was established in 1933. It promised the full value of deposits at member institutions up to a certain limiting value (originally \$2,500, now \$250,000) in the event that the bank failed.
  - In practice this has more or less eliminated traditional banking panics – people know deposits are safe, so no need to run, and we stay in the good equilibrium.

Introduction

- In stark contrast to Diamond and Dybvig, Kareken and Wallace paper argues that the provision of deposit insurance may be problematic because it gives financial intermediaries incentives to take too risky positions.
  - A policymaker contemplating introducing deposit insurance should therefore brace themselves to also regulate the portfolio positions of financial intermediaries.
  - The argument is a simple one, in that deposit insurance creates a moral hazard problem and too much risk taking.
- The Kareken and Wallace paper is a difficult read so we look at a simple model to highlight the dangers of insurance when agents select the riskiness of their portfolios.

Model setup

- Households have a wealth endowment of 1 in period 1 which they wish to transfer to period 2 for consumption.
- They have access to two assets: i) Safe assets; and ii) Risky assets.
- The safe asset pays a certain [gross] return of $R > 1$ in period 2. The risky asset pays a return of:

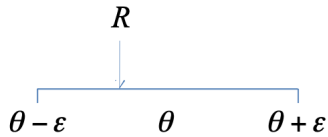
$$R^r = \begin{cases} \theta + \epsilon & \text{w.p. } \frac{1}{2}, \\ \theta - \epsilon & \text{w.p. } \frac{1}{2}, \end{cases}$$

  where ϵ is small.
- We assume that $\theta > R$ so the risky asset has a higher expected return than the safe asset.

Model setup (cont.)

- To ensure neither asset dominates we also assume $R + \epsilon > \theta > R$, so the asset returns are as follows:

Figure: Payoff Schedule



- The household invests a proportion $1 - \mu$ of their endowment in the safe asset and proportion μ in the risky asset.
- Assume a quadratic utility function:

$$U(c) = -(c - \bar{c})^2,$$

where c is consumption in period 2.

Maximisation problem of the household

- Maximisation problem of the household in the absence of deposit insurance is:

$$\max_{\mu} \; -\frac{1}{2}\left[(1-\mu)R + \mu(\theta+\epsilon) - \bar{c}\right]^2 - \frac{1}{2}\left[(1-\mu)R + \mu(\theta-\epsilon) - \bar{c}\right]^2.$$

- The FOC gives the following optimal portfolio share:

$$\mu = \frac{(\bar{c}-R)(\theta-R)}{\epsilon^2 + (\theta-R)^2} < 1,$$

if $\bar{c} - R$ is small.

Deposit insurance

- We now introduce deposit insurance so that the household is guaranteed a return of at least R whatever the state of the world.
- The insurance will only be invoked if the return on the risky asset turns out to be bad, $\theta - \epsilon$.
  - If this happens, household receives R.
- Optimisation problem under insurance is:

$$\max_{\mu'} \; -\frac{1}{2}((1-\mu)R + \mu R - \bar{c})^2 - \frac{1}{2}\left[(1-\mu')R + \mu'(\theta+\epsilon) - \bar{c}\right]^2,$$

and the optimal share of risky assets in the portfolio is:

$$\mu' = 1.$$

Risk taking

- Comparing portfolio shares with and without insurance, we find that

$$\mu^{'} > \mu.$$

- The introduction of deposit insurance therefore incentivises the household to take riskier portfolio decisions.
- Kareken and Wallace extend this intuition to a model in which deposit insurance induces bankers to take positions that lead to bankruptcy with positive probability in equilibrium.
- It is thus necessary for policymakers to regulate the portfolio positions of banks.
  - The focus on Basel II and III on risk-adjusted capital requirements can be seen as a response to this problem.
- Note that in the Kareken and Wallace framework there is no moral hazard problem until deposit insurance is introduced.
  - In this sense, we see that deposit insurance is unambiguously bad in the Kareken and Wallace framework.

Introduction

- A lot has been said and written about the GFC. I'm sure you can find editorials on *The Financial Times*, *The Economist*, *The Wall Street Journal*, and economists such as Nassim Taleb and Raghuran Rajan[5] have written extensively on the crisis in an effort to explain it to the general public.
- So, we won't focus so much on the narrative of the GFC, but rather some of the key insights gained from the crisis.
- In particular, we will focus on:
  - The rise of the shadow banking system.
  - The mechanism of spread of the crisis.
  - Monetary policy and its interaction with the crisis.

[5] I would actually recommend reading *Fault Lines: How Hidden Fractures Still Threaten the World Economy* if you have the time.

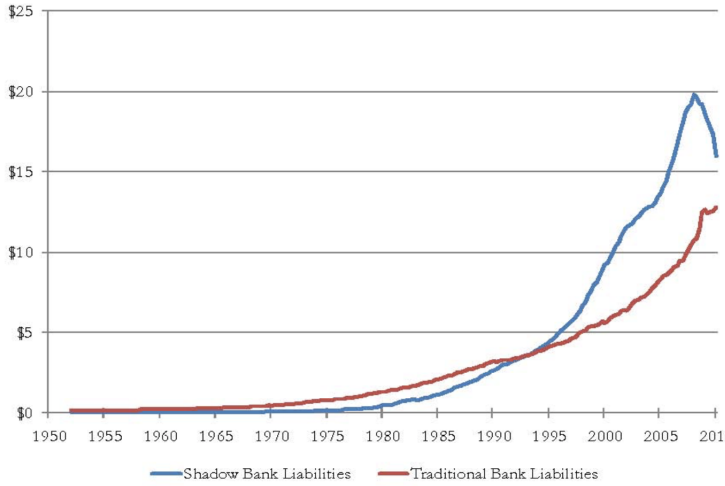
The rise of shadow banking

- Shadow banking were the seeds of the GFC.
- The term "shadow banking"[6] refers to non-bank financial intermediaries which buy, sell, and create credit.
- Credit is intermediated through a wide range of securitisation and secured financing techniques, including asset-backed commercial paper (CP), asset-backed securities (ABS) – such as mortgage backed securities (MBS) – collateralised debt obligations (CDOs), and repurchase agreements (repos).

[6] There is an excellent article by the New York Fed which explains what this means: https://www.newyorkfed.org/medialibrary/media/research/epr/2013/0713adri.pdf

The rise of shadow banking

Figure: Shadow Bank Liabilities vs Traditional Bank Liabilities ($ trillion)



Deregulation of shadow banking

- Financial deregulation which began in the 1970s, culminating in the 1990s, spurred the growth of the shadow banking sector.
- In particular, regulations which enforced a strict separation between commercial and investment banks, and geographical restrictions on bank branches were rolled back.
- By the 2000s even investment banks and government sponsored enterprises (GSEs) (such as Fannie Mae and Freddie Mac) had become involved in financial markets with other shadow banks.
- The result was a systematic increase in competition between all these financial institutions; yet, almost paradoxically, an increase in risk-taking within the banking sector at large.

Surging profits

- The finance sector had become increasingly hungry to drive profits, and so they sold more originated risk (which was a clear example of moral hazard), and more illiquid activities became profitable.
- Compounding this problem was of course the continued systematic watering-down of regulations and regulators. As the former-CEO of Citibank Group once infamously stated:

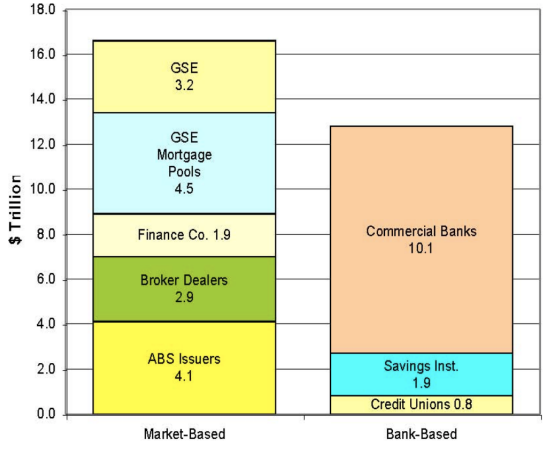
  "As long as the music is playing, you've got to get up and dance. We're still dancing."

– Charles "Chuck" Prince (July 2007)[7]

[7] https://www.ft.com/content/80e2987a-2e50-11dc-821c-0000779fd2ac

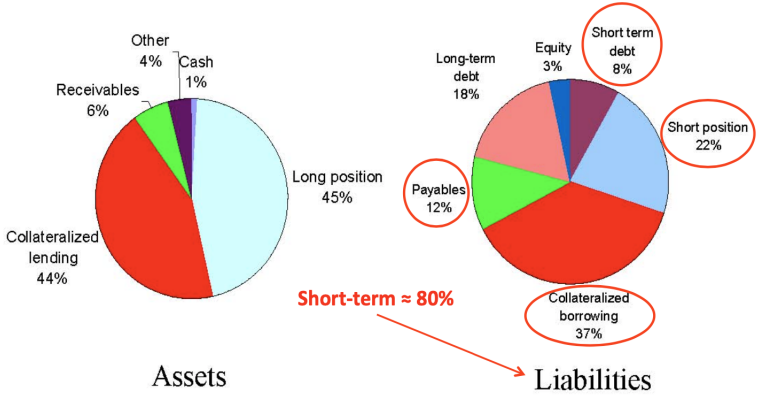
Asset composition

Figure: Total Assets at 2007Q2



Lehman Brothers Balance Sheet

Figure: Lehman's Balance Sheet (2007)

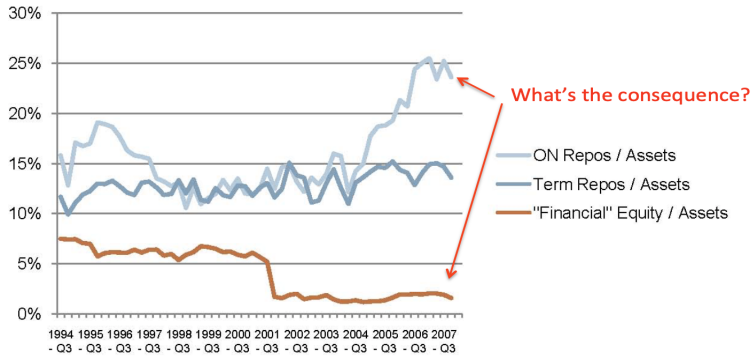


Asset composition

- Not only did financial intermediaries specialise in liquidity transformation, but they were also in the game of maturity transformation – raise short term funds using CP markets to finance long-term assets and sell them off.
- This shortening of maturity can best be observed by repo balances and leverage.
- Consider the balance sheet of Lehman Brothers in 2007 – short-term liabilities made up around 80 percent of Lehman's balance sheet obligations!

Repos

Figure: Overnight Repos as a Fraction of Broker/Dealers' Assets



Leverage

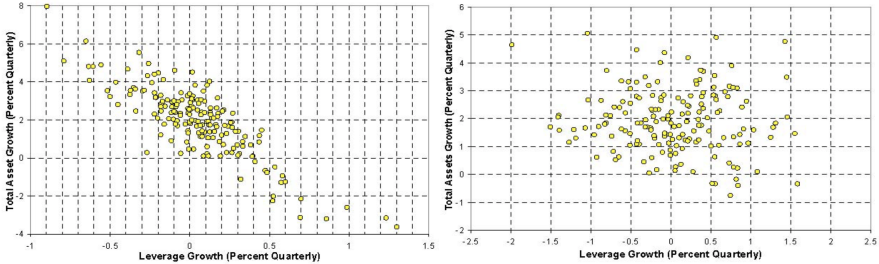
- Leverage is defined as:

$$\text{Leverage} = \frac{\text{Assets}}{\text{Equity}} = \frac{\text{Assets}}{\text{Assets} - \text{Liabilities}}.$$

- Now, typically, leverage should be inversely related to asset valuations.
  - Take the example of a household. The house price goes up, home owners build more equity in their property, and so their leverage goes down – assuming of course that liabilities remain the same.
  - This is of course intuitive. You take out credit, make an investment, and if your investment pays off (asset prices increase) you reduce your leverage position in that investment.
- So how about leverage and asset growth in the US for households and corporations?

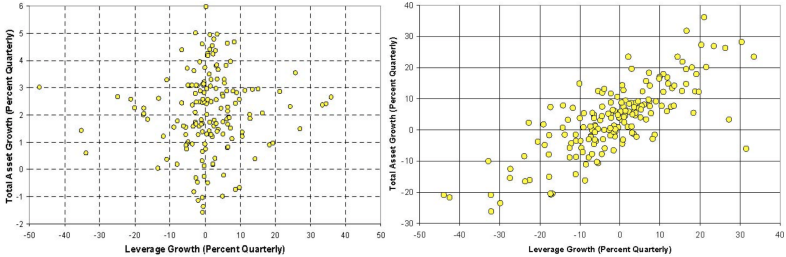
Leverage (cont.)

Figure: Household (left) and Corporate (right) Leverage (1994Q3-2007Q3)



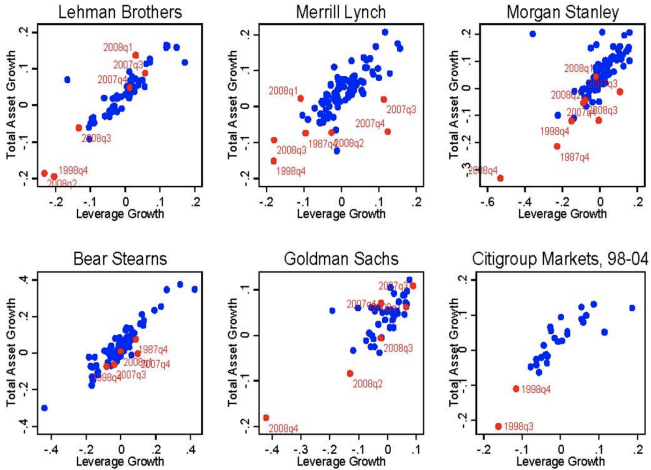
Leverage (cont.)

Figure: Commercial Bank (left) and Broker/Dealer (right) Leverage (1994Q3-2007Q3)



Leverage (cont.)

Figure: Leverage of US Investment Banks



Leverage (cont.)

- ...and now we see where the problem arises.
- Rather than countercyclical leverage, we see procyclical leverage.
- As asset valuations increased, the banking sector doubled down on their leveraged positions.
- Result: great potential amplifiers for the crisis!

Targeting a leverage ratio

- Suppose a bank wants to target a leverage ration of 10 (in reality, this was more like 30 or 40!), where assets are marked to market, and the bank's balance sheet initially looks like:

Assets		Liabilities	
Securities	100	Debt	90
		Equity	10

- Now suppose there is a 1 percent increase in asset prices, holding liabilities constant:

Assets		Liabilities	
Securities	101	Debt	90
		Equity	11

where the leverage ratio is $101/11 = 9.18$.

Targeting a leverage ratio (cont.)

- To hit the target leverage ratio, the bank will take on additional debt D such that:

$$\frac{101 + D}{11} = 10.$$

The bank's final balance sheet would thus be:

Assets		Liabilities	
Securities	110	Debt	99
		Equity	11

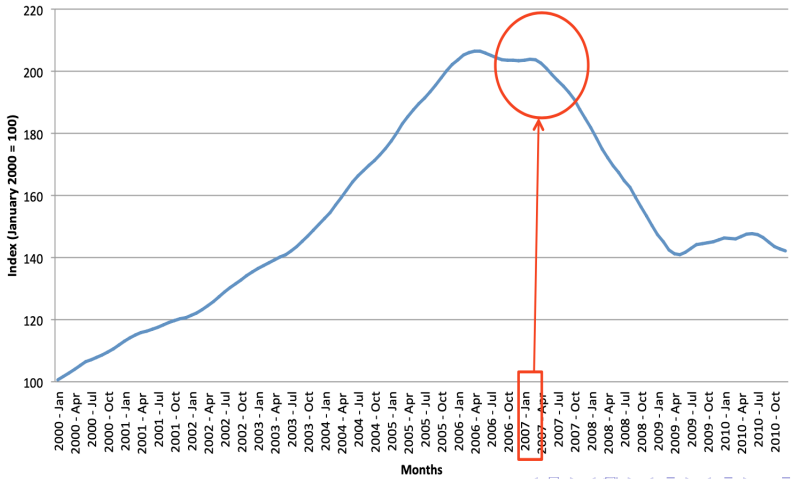
- So the bank's 1 unit increase in asset values, with a constant leverage ratio, allows the bank to increase its holdings by 10 units (and its debt by 9 units).
- Just imagine the multiplier-like effects a leverage ratio of 30 or 40 would do.
- This effect also works in reverse, as show by Adrian and Shin (2010).

Targeting a leverage ratio (cont.)

- The point of capital rules are to keep individual institutions solvent.
- Indeed, these rules are called prudential regulation: They are there to maintain stability by encouraging prudence.
- However, rules put in place to encourage each institution to be prudent can lead to the whole financial system becoming unstable (think back to the Kareken-Wallace model).

Lighting the powder keg

Figure: S&P/Case-Schiller Composite 20 House Price Index

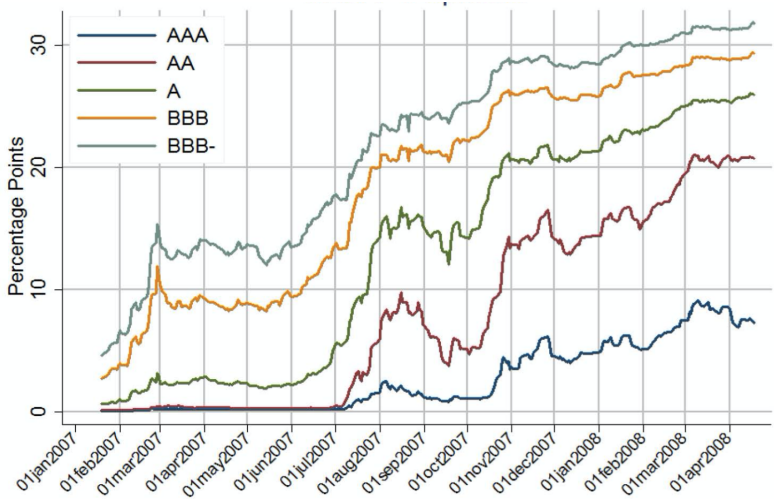


Lighting the powder keg (cont.)

- Just look at the growth before the peak and decline!
- US financial sector boom was built on a housing boom.
- But the boom was itself fuelled by subprime mortgages (in the form of CDOs).
- Approx 15 percent of the $10 trillion US mortgage market was subprime.
  - Assuming that half of these mortgages default, and only half of those defaults are recoverable, we're looking at a loss of roughly $375 billion!

Lighting the powder keg (cont.)

Figure: ABX 7-1 Spreads



Repo runs on investment banks

- The deterioration of the underlying subprime mortgage market led to a domino effect of chaos.
- A key amplification mechanism was a run on financial institutions.
- As we saw in the Diamond-Dybvig model, bank runs benefit first movers.
  - Panic led to runs in different sectors: commercial banks (e.g. Northern Rock), hedge funds (prime brokers), and investment banks (e.g. Bear Stearns and Lehman Brothers).

Repo runs on investment banks (cont.)

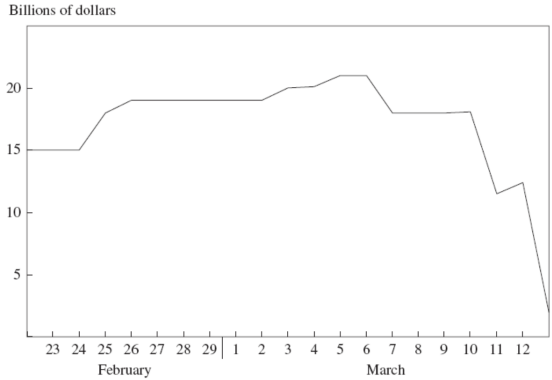
> *"By mid-afternoon the dam was breaking. One by one, repo lenders began to jump ship. As word spread of the withdrawals, still more repo lenders turned tail .... A full $30 billion or so of repo loans would not be rolled over the next morning. They might be able to replace maybe half that in the next day's market, but that would still leave Bear $15 billion short of what it needed to make it through the day ... By four o'clock the firm's reserves, which had been $18 billion that Monday, had dwindled to almost nothing."*

– "Bringing Down Bear Stearns" (Vanity Fair, 2008)[8]

[8] https://www.vanityfair.com/news/2008/08/bear_stearns200808-2

Repo runs on investment banks (cont.)

Figure: Bear Stearns' Cash Holdings (22 February-13 March, 2008)



Source: Letter from SEC Chairman Christopher Cox to the Chairman of the Basel Committee on Banking Supervision, 20 March, 2008.

Monetary policy and the housing boom

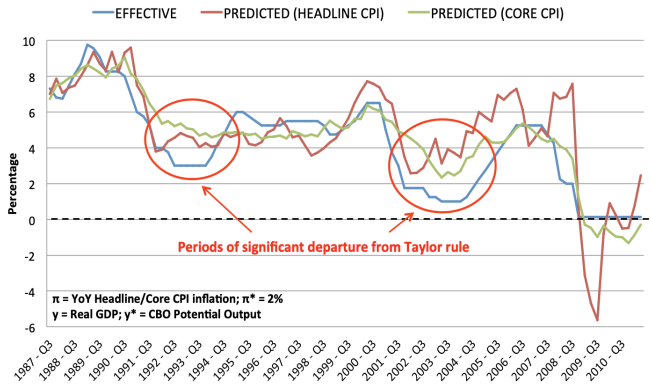
- There were several hypotheses presented to the Fed's involvement or contribution to the GFC:
  - Deregulation and financial innovation;
  - The "global savings glut"[9] (Bernanke, 2005);
  - Irrational exuberance[10] (Greenspan, 1996); and
  - Interest rates being "too low for too long" (Taylor, 2007).

[9] https://www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm
[10] https://www.federalreserve.gov/boarddocs/speeches/1996/19961205.htm

Monetary policy and the housing boom (cont.)

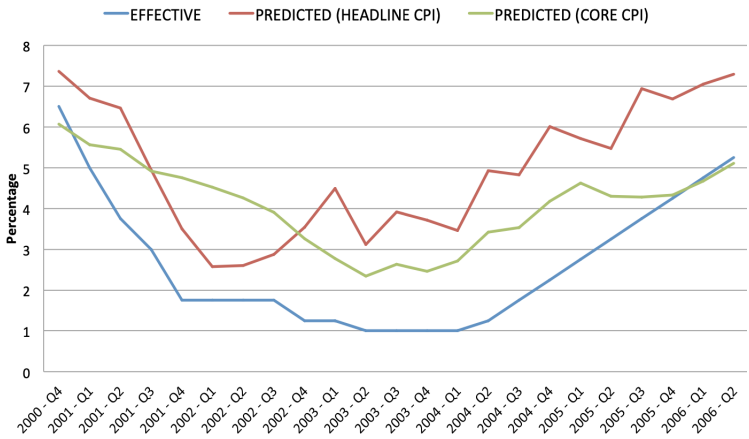
- According to "Housing and Monetary Policy" (Taylor, 2007), the Federal Funds Rate (FFR) was too low for too long, contributing to house price bubble:

Figure: Federal Funds Rate



Monetary policy and the housing boom (cont.)

Figure: Federal Funds Rate



Monetary policy and the housing boom (cont.)

- This argument was of course rebutted by then-Chairman of Fed, Ben Bernanke:

  "The aggressive monetary policy response in 2002 and 2003 was motivated by two principal factors. First, [...]the recovery remained quite weak and "jobless" into the latter part of 2003[...] Second, the FOMC's policy response also reflected concerns about a possible unwelcome decline in inflation.

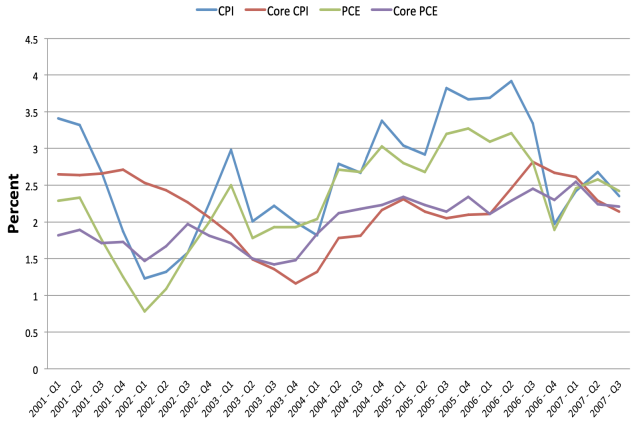
  FOMC decisions during this period were informed by a strong consensus among researchers that, when faced with the risk of hitting the zero lower bound, policymakers should lower rates preemptively, thereby reducing the probability of being constrained by the lower bound on the policy interest rate."

– Ben Bernanke, Speech at the American Economic Association (January 2010).

Monetary policy and the housing boom (cont.)

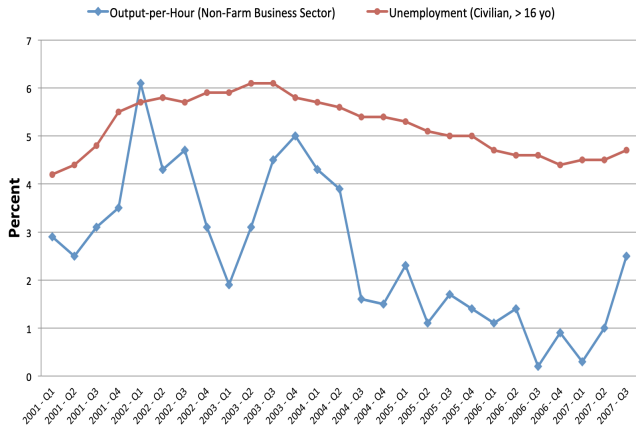
- Does his argument stack up? You be the judge:

Figure: US Prices and Inflation



Monetary policy and the housing boom (cont.)

Figure: US Jobless Recovery



Monetary policy and the housing boom (cont.)

- Broadly, it seems like both Taylor and Bernanke's arguments hold some merit – and the aforementioned factors contributed to the GFC too.
- Ultimately, however, one could blame greed and ignorance for the GFC, and there is a beautiful quote from Alan Greenspan I would like to share:

  "Those of us who have looked to the self-interest of lending institutions to protect shareholder's equity—myself especially—are in a state of shocked disbelief."

– Alan Greenspan, former-Chairman of the Fed to the House Committee on Oversight and Government Reform (October, 2008).[11]

[11] https://www.nytimes.com/2008/10/24/business/economy/24panel.html

Conclusion

- Many factors led to the GFC/Great Recession.
  - Ultimately, I like to believe it was the systematic incentives and rewards to excessive greed.
- Contrary to popular opinion, many economists were not shocked or surprised by the GFC – in fact, in the lead up the GFC, many macroeconomists were concerned about financial conditions.
  - Even now, many economists' warnings over inequality and lack of financial regulations fall on deaf ears.
- An excerpt from an interview with Thomas Sargent:

  This is 1978 so what Kareken and Wallace concluded is if you are going to have deposit insurance then you are going to have to regulate bank portfolios. Or else you are going to have to price it right. So this was a warning against deregulation. Kareken and Wallace's message was ignored for various reasons although I do not think it is really the fault of economists that it was.