The Subprime Crisis:

Can problems in a small part of the mortgage market disrupt the entire economy?

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Disclaimer

- The views expressed today are mine.
- The do not necessarily reflect the views of
  - The Boston Fed

- or the Federal Reserve System

- When I say "we", I mean members of the research department.

Caveat

- Everything I'm about to say could be wrong:
- Example:

> *Until [the depression], mortgages were not fully amortized, as they are now..., but were balloon instruments in which the principal was not amortized, or only partially amortized at maturity, leaving the debtor with the problem of refinancing the balance.*

Fabozzi and Modigliani (1992)

- Is this true?

- Essentially no.

	Mutual svgs banks	Life Insurers	Savings and Loans	Commercial Banks	Individuals and Other
By type of loan (1925-1929)					
Fully Amortized		14.3	94.6	10.1	
Partially Amortized		61.5	0	38.3	
Non-amortized		24.1	5.1	50.3	
Percentage of market (1929)	10.5	11.8	40.3	12.1	25.2
As % of dollar value of all loans					

- Economists find a new theory...
- Old theory is "wrong", new theory is "right"
- New theory will be old some day!

Figure: Theodoric of York, Medieval Barber (and intellectual)

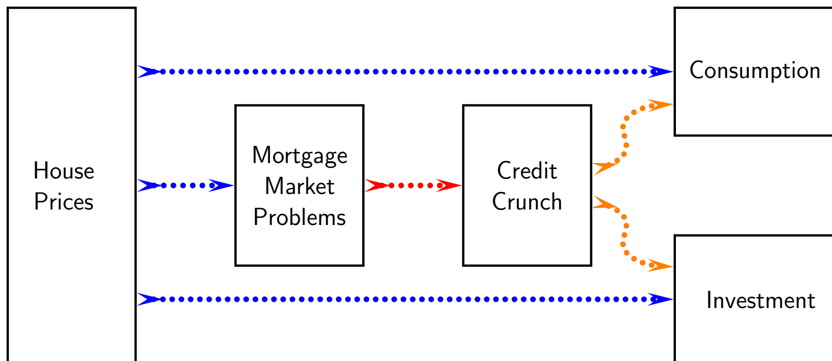
Why, just fifty years ago, they thought a disease like your daughter's was caused by demonic possession or witchcraft. But nowadays we know that Isabelle is suffering from an imbalance of bodily humors, perhaps caused by a toad or a small dwarf living in her stomach.

Short answer

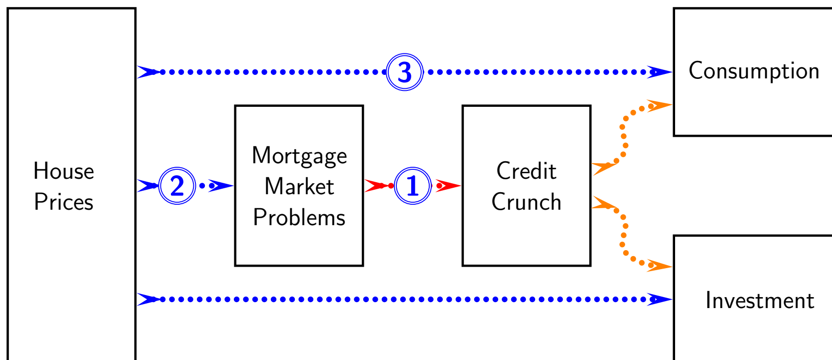
- Can problems in a small part of the mortgage market disrupt the entire economy?
- Answer: No.
- Because we have tools to address problems in the mortgage market. (Point 1)
- But...
  - Problems in mortgage market are symptom of more serious problem: House prices (Point 2)
  - House prices could derail the economy
  - But we believe they probably won't. (Point 3)

Forecast

Component	Share	Quarterly Percent Changes, annual rate								
		2007					2008			
		Q2	Q3	(last)	Q4	(last)	Q1	(last)	Q2	(last)
GDP	100	4	2.5	(2.2)	1.9	(2.5)	2.7	(2.4)	2	(2.3)
Consumption	70.3	1.4	2.4	(2.4)	2.1	(2.3)	2.8	(2.4)	1.7	(2)
Residential Inv	5	-11.6	-15	(-12)	-20.8	(-10.8)	-3.3	(-0.3)	-1.2	(0.4)
Prod. Dur. Equip.	7.3	4.2	5.3	(4)	5.9	(4.6)	3.3	(3.8)	4.7	(4)
Nonres. Struct.	3.3	27.7	0	(0)	4	(4.7)	1.2	(1.4)	0.3	(0.3)
Contrib. of NX		1.3	0.2	(0)	0.4	(0.3)	0.2	(0.1)	0.1	(0.1)
Exports	11.5	7.6	8.5	(6.5)	8.6	(8.3)	8.5	(8.2)	8.4	(8.3)
Imports	-16.7	-3.2	4	(4.5)	3.1	(3.6)	4.1	(5)	4.9	(4.5)
Unemployment		4.5	4.6	(4.5)	4.6	(4.5)	4.6	(4.5)	4.6	(4.5)
Overall CPI		6	2.4	(2.5)	2.2	(2.2)	1.7	(2.3)	1.9	(2.1)
Core PCE		1.3	2	(2.1)	2.2	(2.3)	2.1	(2.2)	2	(2)



- Reckless lenders, new products, mortgage resets
- Problems spread
- Source of problems is stagnant or falling house prices

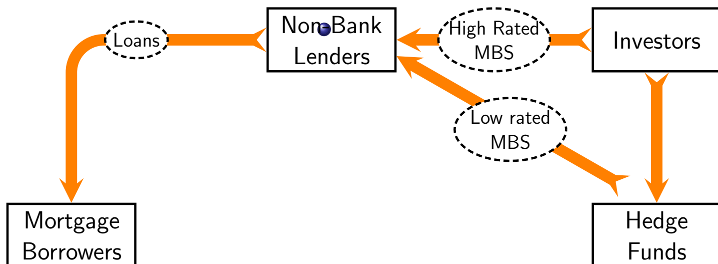


- We will focus on:
    1. Addressing the credit crunch
    2. It's the house prices...
    3. The housing wealth-consumption link

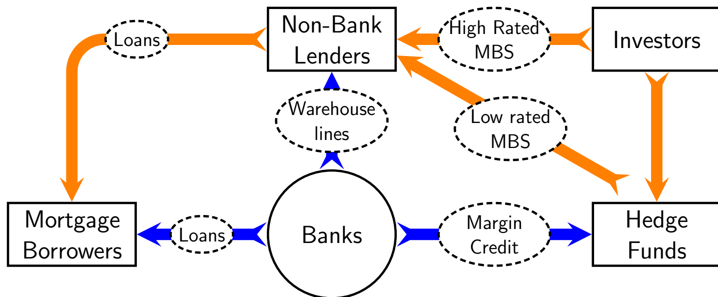
The Credit Crunch

- Paul Krugman (*NYT*, 9/20/2007)

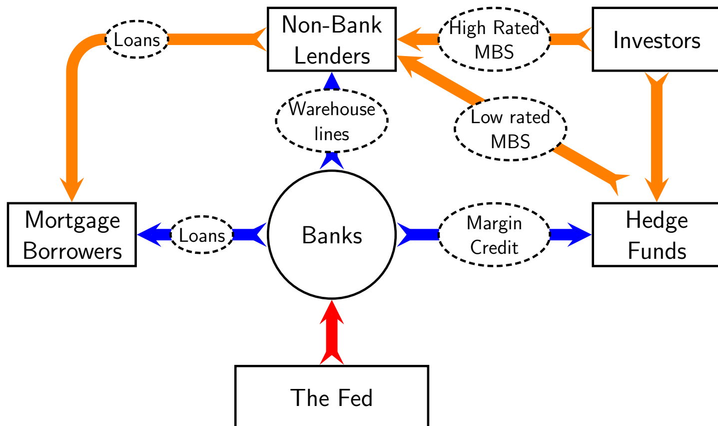
> *It makes more funds available to depository institutions, a k a old-fashioned banks but old-fashioned banks arent where the crisis is centered. And the Fed doesnt have any clear way to deal with bank runs on institutions that arent called banks.*



- "New Housing Finance System"
- No banks necessary

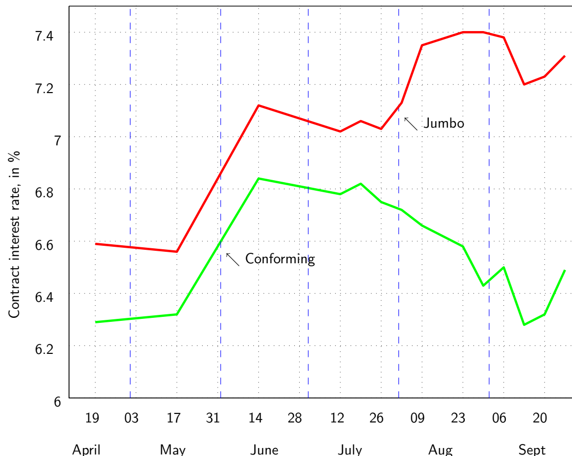


- Banks still at the center of it all!
  1. Margin Credit
  2. Warehouse lines
  3. Direct lending



- The Fed – the lender of last resort.
  1. Can we get the ball rolling again?

Figure: Rates on 30-year, fixed rate mortgages. Source: Bankrate.com.



- Forecasters have historically overestimated the impact of financial crises.
- Will we do that again?

Global Insight's Forecast of Real GDP q-o-q, annual rate. Forecast Date

2007:Q3	2007:Q4	2008:Q1	2008:Q2	2008:Q3	2008:Q4	
Aug. 2007	2.3	2.3	2.3	2.3	2.7	3.2
Sept. 2007	2.3	1.7	1.5	1.8	2.6	2.7

- Some financial crises in the past

1. 1970 Q2: Penn Central bankruptcy.
2. 1982 Q3: Latin American defaults (e.g. Mexico) and crises in commercial banks and thrift institutions.
3. 1987 Q4: Stock market crash (Black Monday).
4. 1994 Q1: Bond Market Meltdown.
5. 1998 Q3: Russian defaultand LTCM crisis.
6. 2001 Q3: September 11th attacks in NYC and Washington DC.

Figure: Forecasting experience with 9/11.

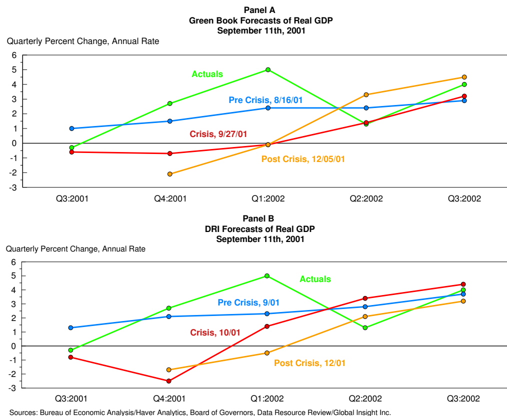


Figure: Forecasting experience with the Russia Crisis in 1998.

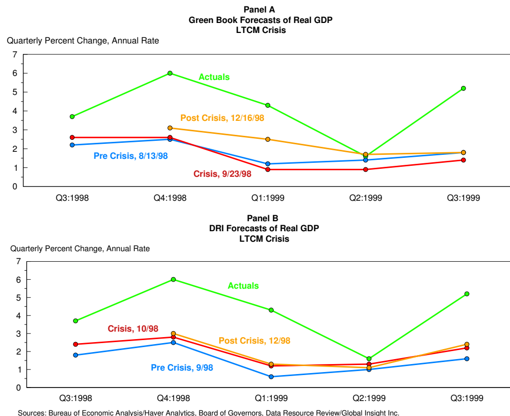


Figure: Forecasting experience with the 1987 stock market crash.

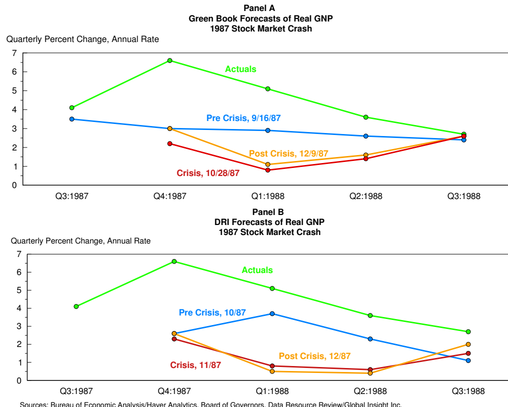
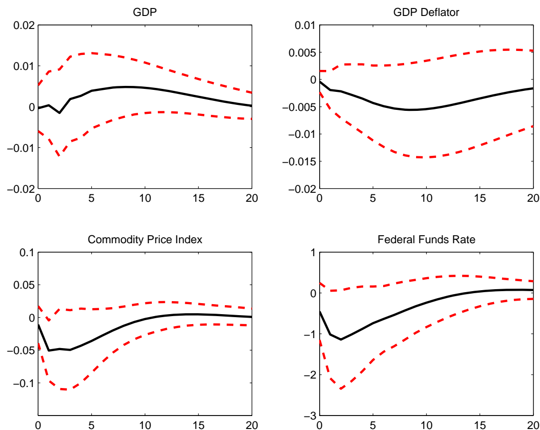


Figure: Impulse Responses to a Liquidity Crisis



Fed response

- Banks still matter!
- Fed policy tools still matter!

A theory (more of a story)

- Conventional wisdom right now:
- Lenders threw out 100 years of best practice and did stupid things:
  - Reduced documentation
  - "Exploding ARMs"
- Our theory:
  - It's house prices
  - even if they had followed reasonable guidelines, we'd still have a problem, even if not as big as the problem that we now face.

It's not the products...

- Loan Performance data for Middlesex county
- All securitized, non-agency mortgages

- Divided up by documentation
- Composition doesn't matter

Year	Delinq. Rate		Full Doc Share	Full Doc Delinq. Rate	Red. Doc Share	Red. Doc Delinq. Rate	Overall Share	Overall Delinq. Rate
All mortgages								
2006	Level	7.6	38	7.6	62	7.7		
2005	Level	6.4	43	6.7	57	6.1		
2004	Level	5.2	49	5.7	51	4.7		
2003	Level	3.5	58	3.0	42	4.1		

It's not the resets

- There is no such thing as a low teaser on subprime loan
- Focus on 2/28s because
  - More than half of all subprime loans
  - Almost all the subprime ARMs
  - Disproportionate delinquencies
- Source: LoanPerformance data

			Fully indexed rate	
	"Teaser"	1-yr Prime ARM	at origination	at reset
2003	7.5	3.76	7.12	9.93
2004	6.96	3.90	7.66	11.12
2005	7.3	4.49	9.52	11.02
2006	8.35	5.54	11.27	11.41

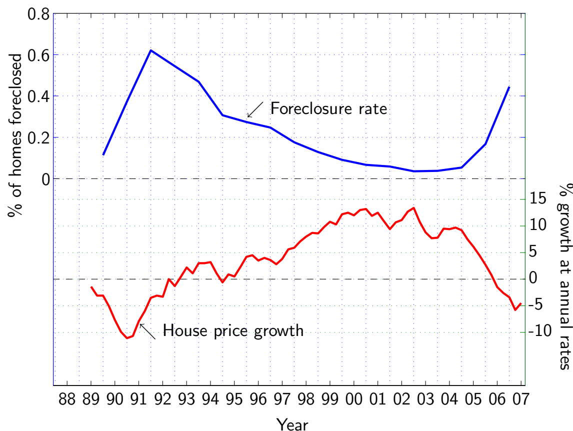
- Subprime business model
  - Extract high fees
  - High interest rates prior to reset
  - Borrowers refinances (or defaults) prior to reset.
  - NOT the same as credit cards.
- Old vintages of 2/28s

	Before the reset	
	% prepaid	% of all delinquencies
2003	76	72
2004	68	72

- More recent vintages of 2/28s
- As of 3/2007

Origination	Reset	% prepaid
2005	2007	56
2006	2008	34

Figure: Foreclosures and house prices in Mass., 1989-present. Source: Boston Fed and The Warren Group.



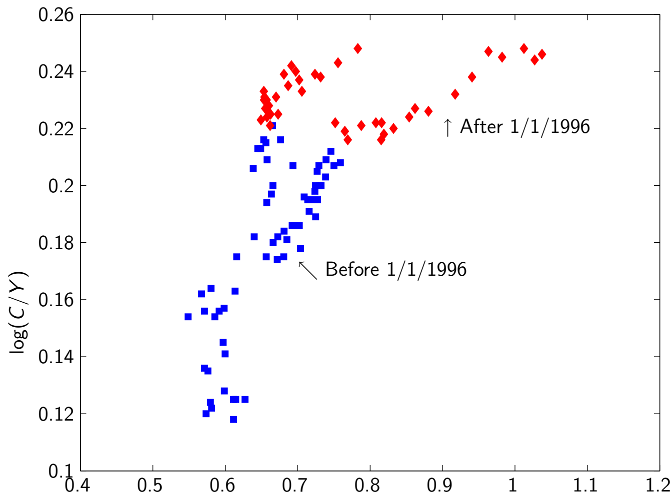
Subprime outcomes

- Do subprime loans lead to problems?
- Look at delinquency rates on subprime loans.
- Deceptive for two reasons
  1. Most subprime loans are refinances – people are already in trouble when they get them. Causality goes the wrong way.
  2. Subprime purchase loans? Most end with refinance
- Look at whole *homeownership experience*
  - How often do borrowers who buy houses with subprime loans get into trouble?
- We estimate that between 13% and 18% of subprime purchase experiences end in foreclosure.

Credit channel and consumption

- Main difference with many others has to do with consumption.
- How does a change in wealth affect consumption?
- Some says $1 fall in housing wealth reduces spending by 5 cents
- We think it's closer to 2 cents.

Figure: Consumption to housing wealth relationship over time, based on NIPA data.



- We attempted to put some numbers on it.
- Essentially, we estimated that the wealth effect after 1996 is about half what it was before.
- A one-dollar increase in net worth
  - led to a 5.4 cent long-run increase in consumption before 1/1/1996.
  - led to a 2.2 cent long-run increase in consumption after 1/1/1996.
- A one-dollar increase in housing equity
  - led to a 10 cent increase in consumption before 1/1/1996.
  - led to a 0 cent increase in consumption after 1/1/1996.

Financial Innovation and Credit Constraints

- "Financial innovations" have made it easier to borrow against your house since the 1990s
  - No paperwork!
  - No fees!
- So doesn't this mean that spending should be more sensitive to house prices?
- No, just the opposite.
  - *Level* of borrowing will go up.
  - *Sensitivity* of borrowing goes down.

- Increased house prices relax a borrowing constraint
  - Households have more debt...
  - But the constraint matters to fewer consumers.
- For most consumers, borrowing self-limited.

Conclusion

- Two key things to worry about:
  - Can the Fed manage the liquidity squeeze?
  - How much will house prices fall and how much will that affect consumption?