The Nonprime Mortgage Crisis and Positive Feedback Lending

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(Brief excerpt from two larger projects)

"Talk" paper (w. Jennifer Coupland)

Model paper with Simon Gervais

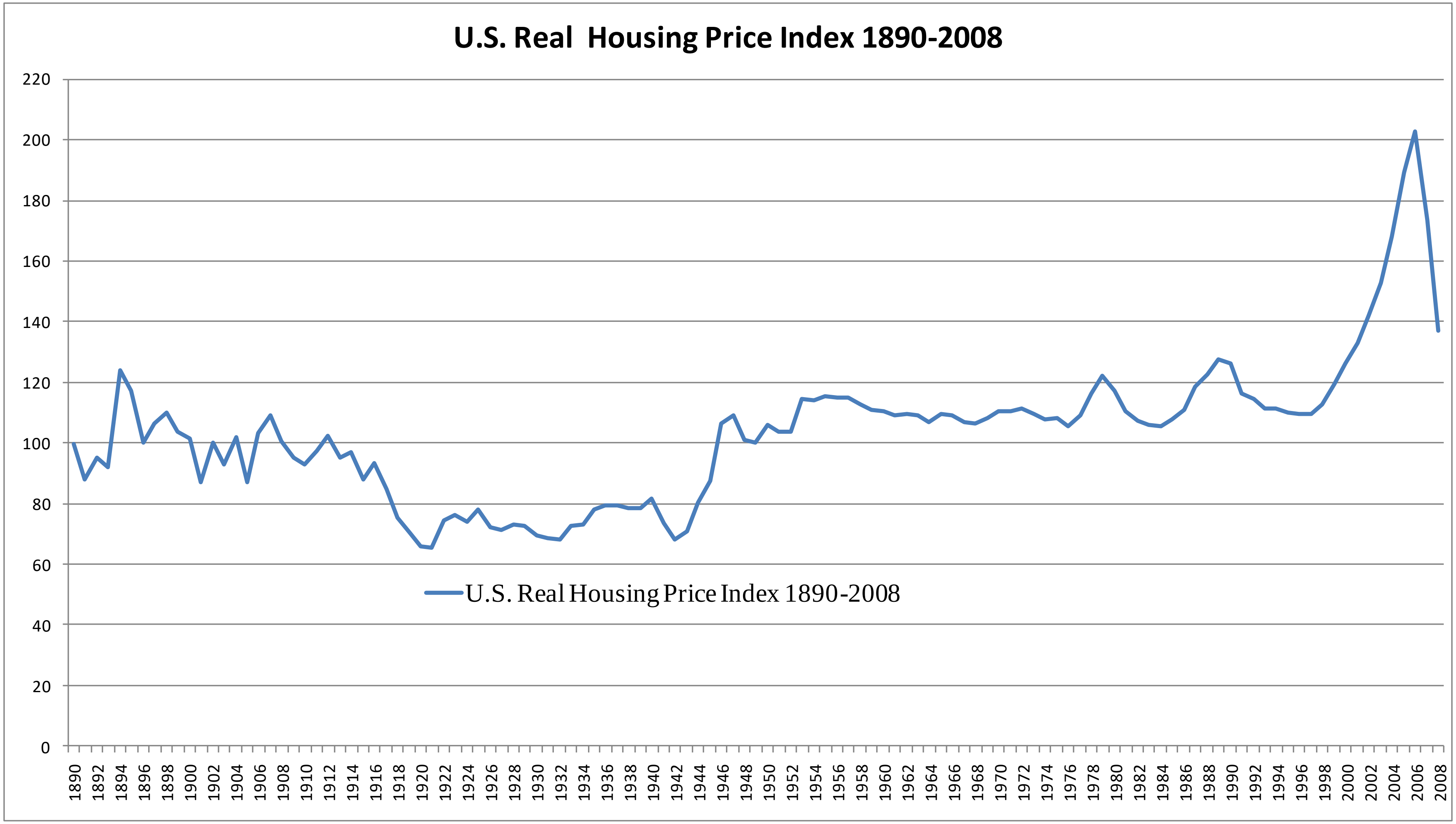
2007-2009 financial crisis

- Multiple causes, but US housing bubble was big piece
- Focus on securitization of “nonprime” (subprime and Alt-A) mortgages
- Gorton (2009):

“The [2007-2009] credit crisis was sparked by a shock to fundamentals, **housing prices failed to rise**.”

Mundane event ➔ huge shock. How??

The US housing bubble

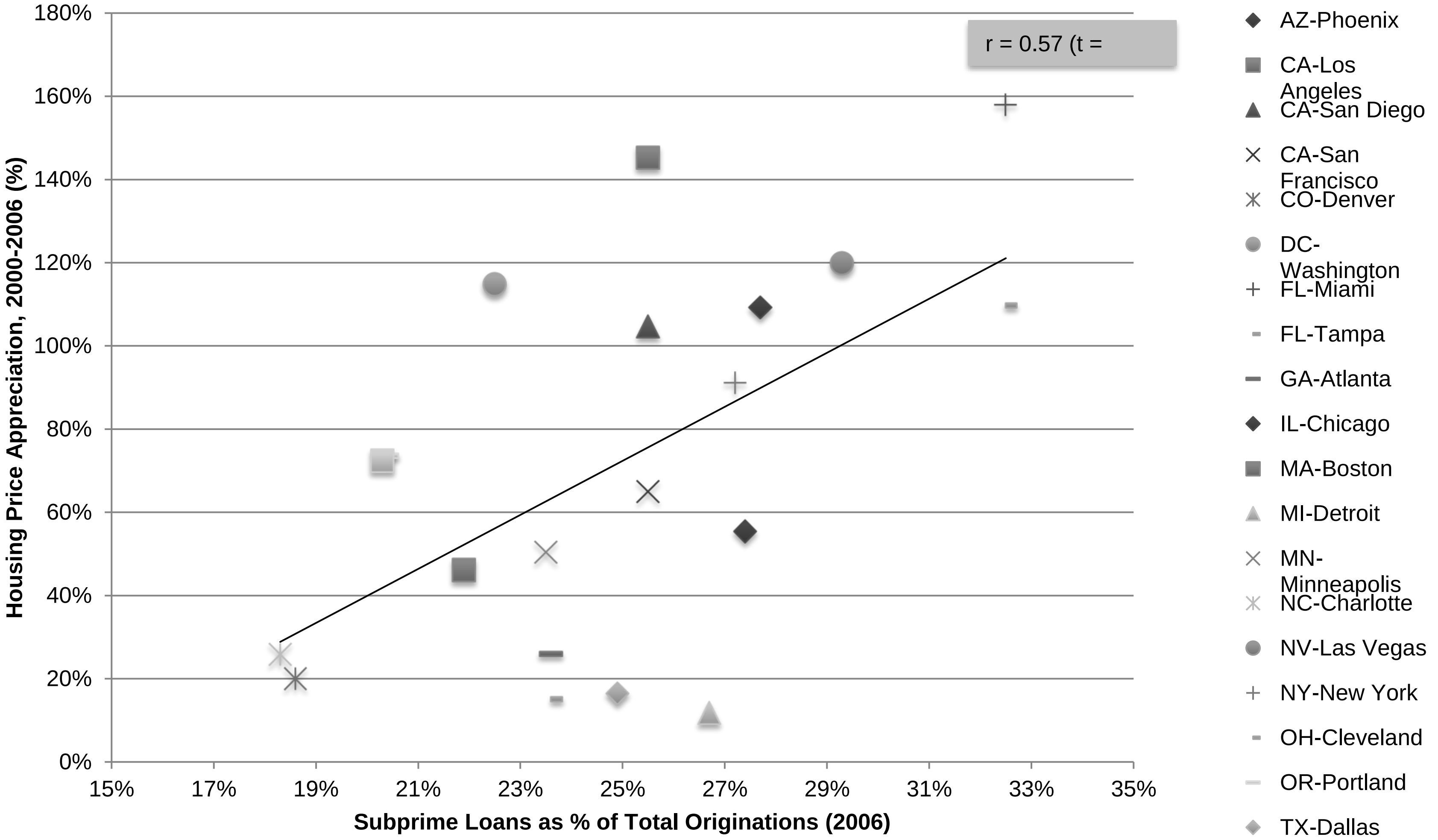


Source: Case-Shiller index

Subprime and Alt-A lending

- Categories blur, but:
  - Subprime = bad credit
  - Alt-A = ok credit, but low documentation
    - “liar” & NINJA (no income, no job or assets) loans
- Volume soared 2000-2006
  - became large % of total market, dominant share in some markets
  - Loan terms became ever flakier

Helped to drive overall prices



Main claims

1. ***Obvious*** that we **might** be in a housing bubble
   - Not we **were**, just might be (at **far above** the < .001 prob. that rating agencies should consider in providing AAA ratings)
2. ***Knowable*** that rating agency models ruled this out
   - But no one asked (why not??)
3. ***Known or knowable*** that rating agencies applied "out of model" adjustments (to already flawed models)
   - How often, how large = plausibly knowable, had anyone asked
4. ***Known*** that nonprime default rates would soar in a sustained housing or economic downturn
   - no sale, no refinance ➔ many borrowers can't repay
5. ***Known*** that loan terms were getting flakier
   - Lo- and no-doc, interest only, negative amortization, "option" ARMs, teaser rates, high loan/value, high loan/(alleged) income, etc.

Main claims (2)

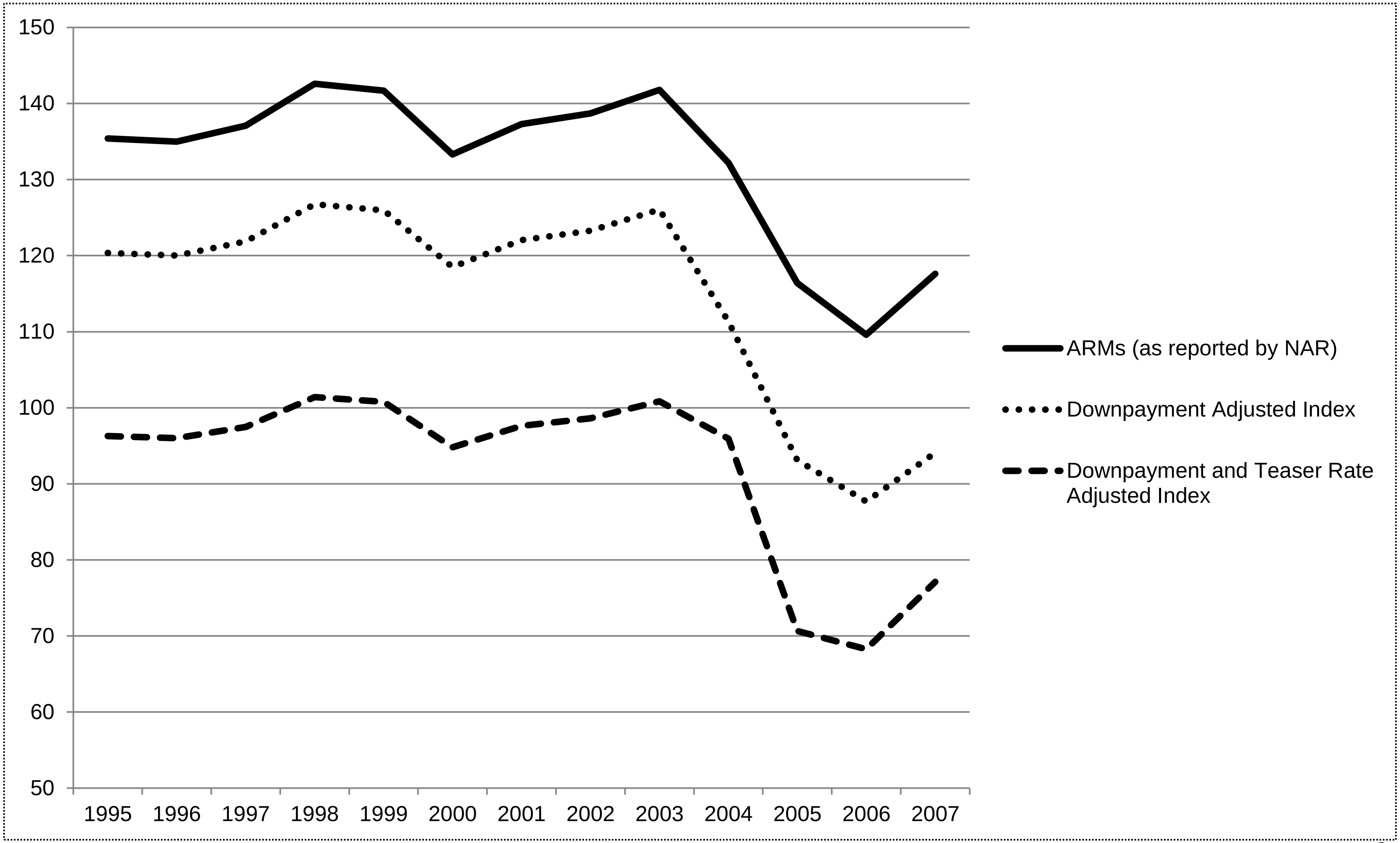
6. ***Known*** that subprime securitization structures were untested in a serious downturn
   – Market was new since mid-1990s; small until early 2000s
   – Known that correlations rise in a crisis (East Asia, LTCM)
7. ***Known*** "originate to distribute" model
   - originators had minimal "skin in game"
   - Securitizers had none (except tranches they couldn't sell)
8. **Knowable** that securitization might shut down
   – Failed once, in 1990s
   – If it does, nonprime is dead; prices must fall

Positive feedback: Knowable, not focused on

Nonprime loans had vicious positive feedback

- Defaults would rise sharply if prices merely flat
  - That would drive forced sales, foreclosures, tighter lending standards, shutdown of flaky loans
- Which would drive price declines
  - Which would drive more forced sales, foreclosures, tighter lending standards, shutdown of nonprime securitization
- Which would drive price declines
  - Which would drive . . . But you get the point

Adjusted NAR affordability index



Nonprime as Ponzi scheme

- Lend to people who (often) can't repay from income
  - High Loan-to-Value ratio
    - Often no recourse (depends on state law)
  - Escalating payments
    - Teaser rates; interest-only and negative amortization loans
  - Loan to income ratio based on teaser rate
    - Income often fake too
  - Large, hidden fees to originators
    - Incentives to induce overborrowing, refinancing
  - Worsening performance/quality by origination year
- **Median** loan-to-value for securitized "purchase" loans
  - subprime: 90% in 2003 to **100%** by 2005
  - Alt-A: 90% in 2003 to **95%** by 2006

Typical unaffordable loan

Moderate income borrower, limited assets

- Loan/value = 100%
- payments/ (alleged) income = 40%
- post-teaser reset = +30%

- **post-teaser:**
  - **payments/(alleged) income > 50%!!**

  ➔ Many can't pay
- Median refinance loan/value = 80%
  - prepayment penalty (need to finance that too)

  ➔ many can't refinance if prices are flat

Originate to Distribute

- Originators to bankers to money managers (for investors)
  - Securitization = main exit for originators
  - Bankers: need “product” to package and resell
- Securitization became a huge business
  - New entry fueled demand for “product”
    - Origination standards dropped
- Marketability required good ratings
  - ~80% AAA, 7% AA-A, 10% BB & BBB “mezzanine”; 3% equity
- “residual” equity – supposed to be held by originator, but
  - “phantom equity” < originator fee
  - often wasn’t held by originator
  - often repaid from early cash flows, not truly “residual”

Who bought the mezzanine?

- Often no one!
- Repackaged into "Mezzanine CDOs" (Coval, Jurek & Stafford, 2009; Citibank, 2007)
  - Most of those were AAA-rated too (Jian, 2007)
- CDO mezzanine ➔ often repackaged as CDO^2 or sold into bank-managed SIVs
- 10% mezzanine for MBS ➔ 1-2% mezzanine in CDO ➔ ≤ 0.5% in CDO^2
- Banks held some of this "toxic waste"
  - found a few fools to buy some of it

Ponzi scheme survives if prices rise

- Borrowers can refinance or sell at a gain
  – Originators earn a new fee
- Scheme totters if prices are flat
  – Defaults rise, prepayments slow
  – Borrowers can't refinance
  – Forced sales push prices down
- Collapses if prices fall
  - Borrowers can't repay or cover loan by selling

Core hidden assumption: no price declines

- Rating agencies assumed: no *nationwide* decline in *nominal* home prices
  - hadn’t happened since Great Depression
- But a thin story:
    - real price declines ***had*** happened
    - model those declines, with low inflation, get different results
    - last two real rises were followed by declines
    - current real rise (thru 2006) was huge
    - last large real rise, **without** later decline, was 1940s
- No nominal decline was possible, even likely
  - But as basis for AAA stress test???
  - Yet bankers sold that story, and money managers and rating agencies bought it

Why Did the Bubble Get So Big?

Why did . . .

- Smart money managers buy this stuff?
- Smart investors give funds to these managers?
- Smart investment bankers securitize this stuff?
  - they're supposed to be "reputational intermediaries"
  - why did they eat their own cooking?
- Smart insurers sell cheap credit protection?
  - AIG and the "monoline" insurers
- Rating agencies bestow AAA ratings?
- Originators resell < 100% of their loans?
  - Countrywide, IndyMac, WaMu, Wachovia, . . .

Some investors saw the problems

- John Paulson (Economist interview, March 2009):
  - "it was obvious that a lot of the [MBS and mezzanine CDO] stuff . . . was practically worthless at the time of issuance"
- Steven Eisman (quoted in Lewis (2008)):
  - "The thing we couldn't figure out is: It's so obvious. Why hasn't everyone else figured out that the [subprime] machine is done?"
- Fairfax (Canadian insurer): $2B gain from shorting CDS on MBS (Fairfax annual meeting slides, 2007-2009)
- Magnetar Capital (ProPublica, 2010):
  - Sponsored synthetic CDOs, held equity + short side of synthetics

Answer: “It’s the incentives, stupid.”

Or if you prefer, Upton Sinclair:

> “It is difficult to get a man to understand something when his salary depends on his not understanding it.”

Why misplaced incentives? Gotta be . . .

- Agency costs
  - at firm level
  - for individuals within firms
  - across the sale chain
    - information costs limit monitoring
- Externalities
  - spillover benefits from due diligence
  - systemic risk

Regulatory response 1: Need to limit positive feedback lending

- Highly dangerous, large externalities
- Cf. portfolio insurance, which sparked 1987 stock market crask

So far:

- No one is talking about positive feedback lending as a core driver of the crisis
- No steps to limit it the next time

Response 2: Due diligence

- Today: no explicit due diligence standard for semi-private 144A offerings
  - No explicit liability for non-diligence
- Value of due diligence:
  - Rub noses in the obvious
  - Harder to ignore
- Diligence by whom?
  - Lenders (if plan to resell)
  - Securitizers
  - Rating agencies

Response 3: Disclose models, data

- Rating agencies should explicitly disclose:
  - Models
  - Model assumptions and justification
  - Data the rating agency relies on
- Same for securitizers

Response 4: Verification

- Require originators, securitizers, rating agencies, to verify:
  - After due diligence
  - Assumptions are reasonable
  - Models are reasonable
  - Data is reasonable choice for what one are modeling