

Discussion of Nathanson/Zwick

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1. A lot to like (starting w/ title: Bluth family business)
 - ▶ Getting away from Coastal usual suspects is *great*
 - ▶ RE cycles seem to occur in elastically supplied markets
 - ▶ Antioch/Brentwood/Tracy way out-cycle SF, Marin, etc.
 - ▶ Builders surely were important in 2000s cycle
 - ▶ “Drive to qualify” exurbs get whacked in many metros, too
 - ▶ Why the Sand States but not e.g. Raleigh/Durham
 - ▶ Within-metro fact: worse in MF neighborhoods makes sense
2. Complaints
 - ▶ 2 cycle concentrations still scream out for explanation
 - ▶ The Sand States (except Coastal CA)
 - ▶ Minority (subprime?) neighborhoods
 - ▶ Heterogeneous demand fits data better than authors’ story
 - ▶ Rental/owner speculation: condo conversions wrong direction
 - ▶ I’m not sure short selling constraints mattered
 - ▶ I don’t understand the developer game equilibrium
 - ▶ Authors should claim credit for drive to qualify bubbles
3. Sand States still a mystery, minority intensity I think also

Point of departure for this paper

- ▶ My REE paper
- ▶ Common demand shock, different supply elasticities is wrong for 2000s
- ▶ Supply elasticity not correlated with 2000s cycle amplitude
 - ▶ Conditional on demand measures
 - ▶ Supply elasticity and historical demand growth correlated
 - ▶ Within CA, coastal has *least* severe cycle
- ▶ e.g. reg cycle on q growth: wrong (+) sign
 - ▶ My interpretation: this is not about supply
 - ▶ NZ interpretation: nonlinear supply effect
- ▶ Sand State dummy explains 66% of cycle intensity across metros
- ▶ Paper I've wanted to write: who failed to build out their Reno/Modesto/Ocala ag land? Why?

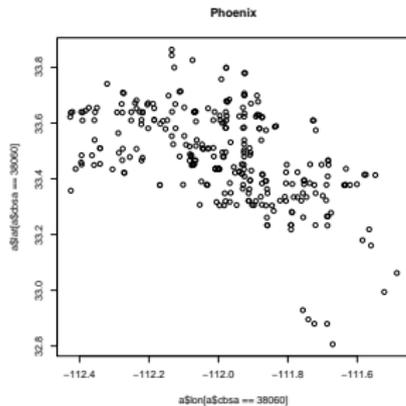
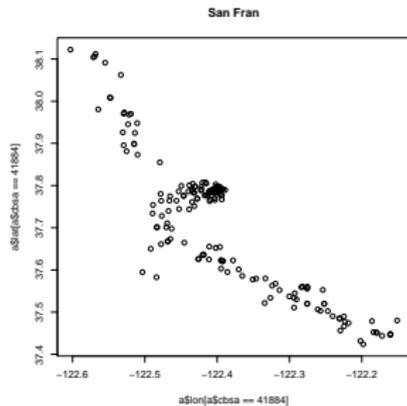
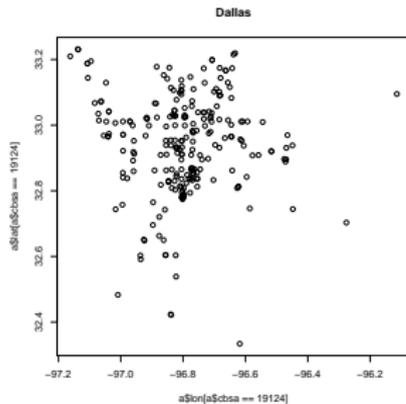
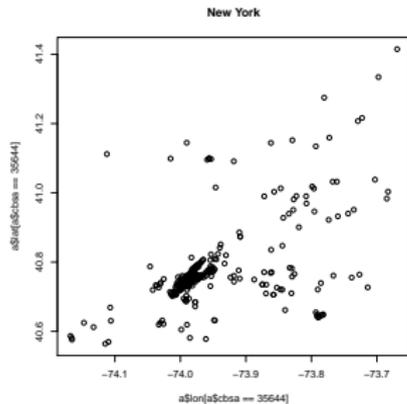
Elasticity/bubble relationship is a black eye for profession

Krugman "That Hissing Sound" NYT 2005

And he was one of the few correct Cassandras

In Flatland, which occupies the middle of the country, it's easy to build houses. When the demand for houses rises, Flatland metropolitan areas, which don't really have traditional downtowns, just sprawl some more. As a result, housing prices are basically determined by the cost of construction. In Flatland, a housing bubble can't even get started.

Sprawl as measured by Starbucks



Extreme supply inelasticity gets too much attention relative to what we can prove

Hard to Learn Much About Supply's Role in Price Formation

Exercise: match each Top 10 inelastic w/ most similar bottom 10

Top 10	Bottom 10
Miami	Wichita
Los Angeles	Ft. Wayne
Ft. Lauderdale	Indianapolis
San Francisco	Dayton
San Diego	McAllen, TX
Oakland	Omaha
Salt Lake City	Tulsa
Ventura	Oklahoma City
New York	Kansas City
San Jose	Greensboro, SC

My understanding of paper

- ▶ In order, the best ways to bet on home prices are:
 1. Buy land
 - ▶ Directly
 - ▶ Through an optimistic builder
 2. Buy rental housing
 3. Buy a bigger owner house
- ▶ Don't bet on land prices if infinitely elastic LR supply of land
 - ▶ So Orlando, Omaha, etc. don't get cycles
- ▶ San Francisco has limited speculative potential
 - ▶ No raw land
 - ▶ Orinda/Marin would be particularly bad - no MF
 - ▶ Antioch/Brentwood are awesome for spec
 - ▶ Push this! "Drive to qualify" bubble
- ▶ Optimists can drive prices because no short selling

Great strength of paper is homebuilder cycle

Something I've wondered about for a long time

Why did market see homebuilder problem,
but not mortgage problem



Las Vegas

- ▶ fn 3 is my favorite part of paper: 1 firm won all BLM auctions
- ▶ NB: Vegas is not a competitive land market: Howard Hughes
→ Rouse owns a huge fraction of buildable lots based on random sampling.

Debt

- ▶ Not much about role of debt in paper
- ▶ Clearly played a role in cycle
- ▶ Did borrowing to buy land get easier in the 2000s?
- ▶ Land is a pure bet on land vs house is impure
- ▶ But land gamble per \$ given leverage differences?

Developer Game

A fun, but I am guessing wrong, model of the bubble

- ▶ Large N ranchers (small N big builders?)
- ▶ If no one builds prices rise
- ▶ Once everyone builds, $p = mc$ or less
- ▶ What's the optimal stopping time?
- ▶ My (highly limited) understanding of the literature (Back/Paulsen)
 - ▶ Perfect competition is an eqm (NZ pick this one?)
 - ▶ Wait for +NPV might be, hard to rule in or out
- ▶ I think there's an exogenous elasticity in this NZ
 - ▶ Profit from homebuilding is zero? Why?
 - ▶ Pick T to make π big?
 - ▶ Aren't the guys who own land optimists?

This paper does nice primary research

We need more like this. Here's my own attempt

Me: Most people in my profession would think of Bakersfield as 'elastically supplied.' There seems to be a lot of developable land around the built up parts of town and I would not guess that there is a major premium for single family homes to be close to the center of town. If those assumptions are close to right, then prices shouldn't be able to rise too far above the agricultural value of a quarter acre of land plus the construction cost to build a home. But prices seem to have risen far above that level between about 2005 and 2007.

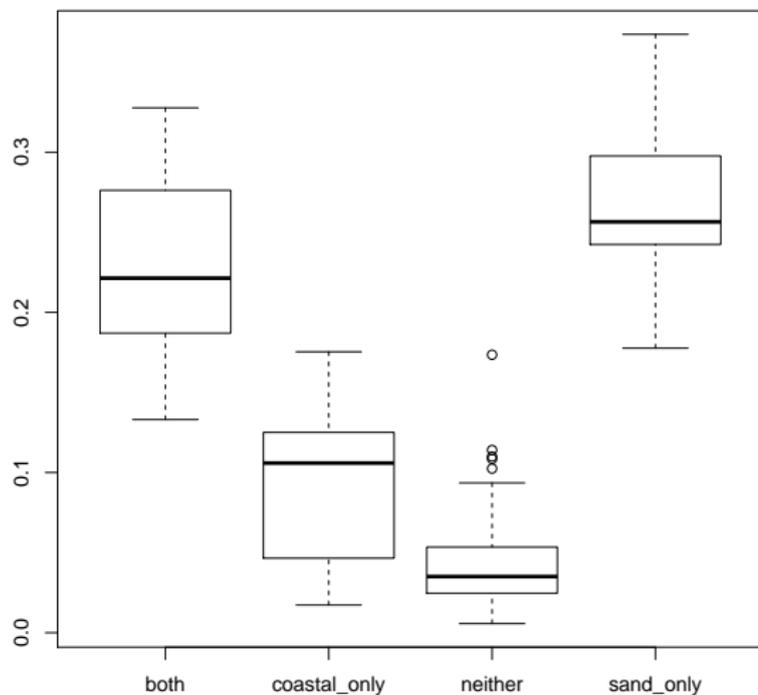
Bakersfield Realtor: If I understand your inquiry correctly the increase in prices from 2005 to 2007 was not because of a shortage of inventory but as you mentioned the ease of obtaining subprime loans.

Short Selling Constraints

- ▶ Important to model: many may have seen Phoenix as a bubble
- ▶ ... but not easy to sell short
- ▶ So there didn't have to be mass delusion
- ▶ Reverse mortgages have a generous put option component
- ▶ Pay 6%, get strike price of $\approx .7e^{.04T}$ in '06.
- ▶ *Relatively* many in Sand, but *absolutely* small
 - ▶ And borrowers show little evidence of ruthless intent
- ▶ *If* seniors valued HECM put, they put low weight on crash

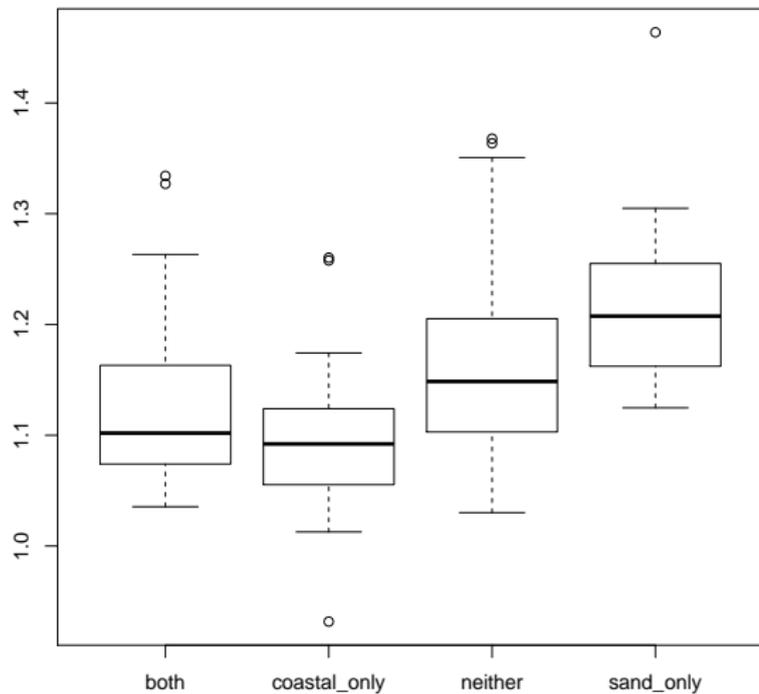
Must Explain the Sand States

Amplitude of 2000s housing price cycle



It's not inelastic supply

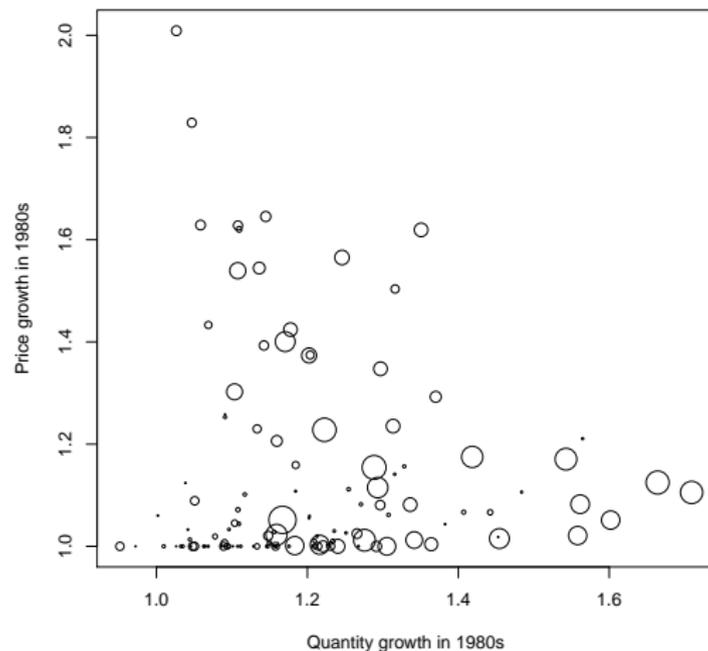
Supply growth in the 2000s



Common Demand shock is wrong

Distribution of cycle looks like *demand* chasing

Bubbles proportional to “bubbles”



The regression I want to see

$\text{Cycle} = a + b * \text{Sand State} + c * \text{Nearly out of land} + \text{error}$

- ▶ Maybe interact out of land with historical demand growth

Alternative story

One response to these three puzzles is that the Anomalous Cities simply experienced much larger demand shocks than the rest of the nation during the boom. Although differential demand shocks surely explain part of the cross-section, they cannot account for all aspects of the Anomalous Cities just documented. These cities had been experiencing abnormally large demand shocks for years before 2000. Figure 2(b) shows that they were some of the fastest growing cities in the United States. Yet the surging demand to live in these areas did not increase prices. The departure from this pattern after 2000 requires a more nuanced theory than the hypothesis that housing demand increased particularly strongly in the Anomalous cities during the boom.

Response: Yeah, but banks weren't handing out free call options until 2004.

The boom in rental neighborhoods

- ▶ This is about low income getting to own
- ▶ And I suspect minority more than that
- ▶ I think net flow was rental → condo, not consistent with model
- ▶ First data I found online on topic
- ▶ **Ripped from the NYT Headlines:** *FERGUSON* had a major league cycle
 - ▶ Claim: no one thinks St. Louis is running out of slums
 - ▶ NZ: Minority neighborhoods are inelastically supplied!?

Condominium conversions

Units per year; 5-unit and larger properties
Prepared June 24, 2007

County	2000	2001	2002	2003	2004	2005	2006	2007p
King	873	171	236	722	1,002	3,088	4,920	2,094
Pierce	98	18	45		249	78	371	348
Snohomish			24	213	417	852	1,497	401
Total	971	189	305	935	1,668	4,018	6,788	2,843

Source: Dupre + Scott Apartment Advisors www.dsaa.com Condominium Conversion List

Zillow Zip Index Bust Relative to metro

	(1)	(2)	(3)	(4)	(5)	(6)
constant	0.0177 (0.0395)	0.5722** (0.2174)	0.1474 (0.1911)	-0.1913 (0.209)	0.9556* (0.4663)	-0.0135 (0.1861)
<u>Originations 2004-2007</u> Eligible HH 2010	2.9648** (0.446)	1.5044** (0.5602)	0.8006* (0.4466)	0.6361 (0.5385)	0.4246 (0.68)	0.1956 (0.4945)
Single Family %	0.0148 (0.0348)	0.0053 (0.0335)	0.0074 (0.0323)	0.0081 (0.02)	-0.0253 (0.0275)	0.0152 (0.0305)
Log owners 65+, 2000	0.0077 (0.0095)	-0.0163* (0.0099)	-0.0051 (0.0101)	0.0229 (0.0188)	0.0478 (0.036)	-0.0021 (0.0094)
Log owners 65+, 2010	-0.047** (0.0119)	-0.0017 (0.0121)	-0.0076 (0.0121)	-0.018 (0.0203)	0.011 (0.0251)	-0.0103 (0.0115)
Log owners 2000	0.0154 (0.0105)	0.0269** (0.0097)	0.0224** (0.0094)			0.0274** (0.0094)
Log owners 2010	0.0321** (0.0098)	-6e-04 (0.0099)	-0.0015 (0.0101)			-0.0044 (0.0085)
minority		0.193** (0.0374)	0.1798** (0.0464)	0.6614 (0.4785)	0.1169* (0.0563)	0.2071** (0.0447)
Log 25th%ile home value		-0.0447* (0.0193)	-0.0063 (0.0179)	0.02 (0.0167)	-0.0748* (0.0417)	0.0011 (0.0179)
Sand State * minority			0.0873 (0.0645)	0.0243 (0.0397)	-0.0388 (0.0697)	0.0476 (0.0647)
Sand State * log 25th%ile			-0.1542** (0.0301)	-0.0028 (0.0128)	-0.0102 (0.0198)	-0.1279** (0.0294)
Log Zillow Zip price 2006/2002						0.3877** (0.0454)
Adj. R-sq.	0.84	0.85	0.86	0.83	0.86	0.88
degrees of freedom	6537	6535	6533	1186	1187	6532
Minority subsample	No	No	No	Low	High	No

Drive to qualify or driving while black/Hispanic?

Within metro Zillow Zip index factors across time

Year	(1) 2000	(2) 2003	(3) 2007	(4) 2013
constant	8.2372** (0.1494)	8.367** (0.1515)	8.9694** (0.145)	8.287** (0.1711)
starbucks	0.0676** (0.0029)	0.0722** (0.0029)	0.0616** (0.0027)	0.0775** (0.0032)
minority	-0.5181** (0.0256)	-0.51** (0.0257)	-0.4248** (0.0241)	-0.6572** (0.0284)
lmedinc	0.2924** (0.0096)	0.2874** (0.0095)	0.2806** (0.009)	0.3217** (0.0107)
Adj. R-sq.	0.65	0.71	0.77	0.66
degrees.freedom	9204	9687	10173	10165

Summary

- ▶ Elegant model
- ▶ Provides insights into certain markets
- ▶ Not sure we've solved the major Sand State puzzle
 - ▶ Some empirics would be nice
- ▶ MF neighborhood boom was probably “subprime” /idiosyncratic minority stuff
 - ▶ Maybe some speculation, too, e.g. Sand States
 - ▶ I doubt Ferguson is spec investors
 - ▶ Compare white suburbs to white MF 'hoods
 - ▶ If there is such a thing