



The Dirty Bubble

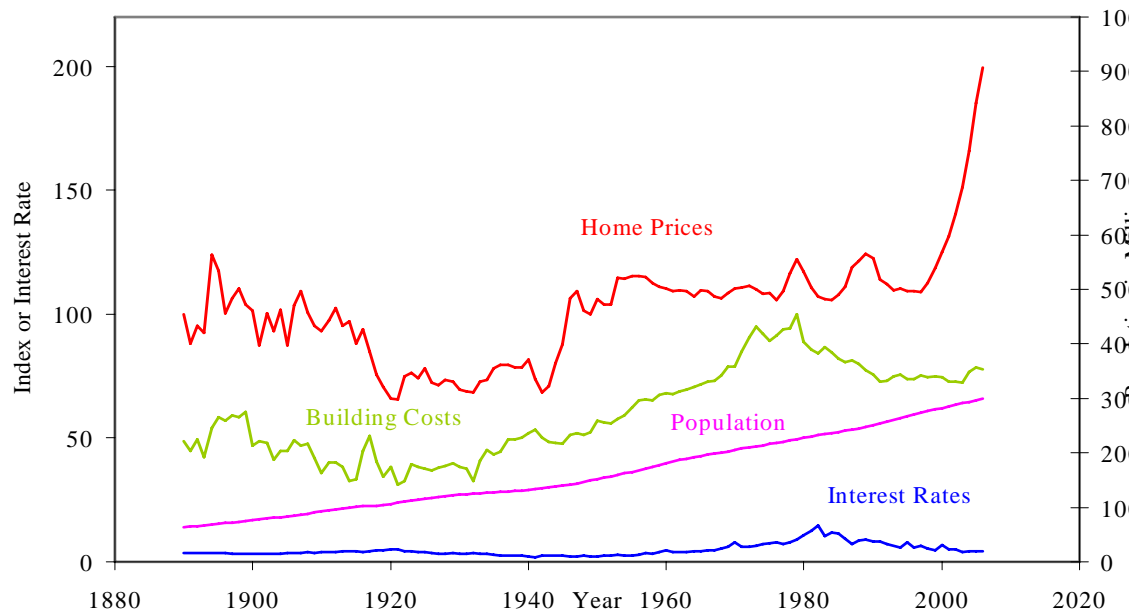
Understanding Home Price Appreciation Patterns in New Jersey

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MPP AFE Presentation, Fall 2006**

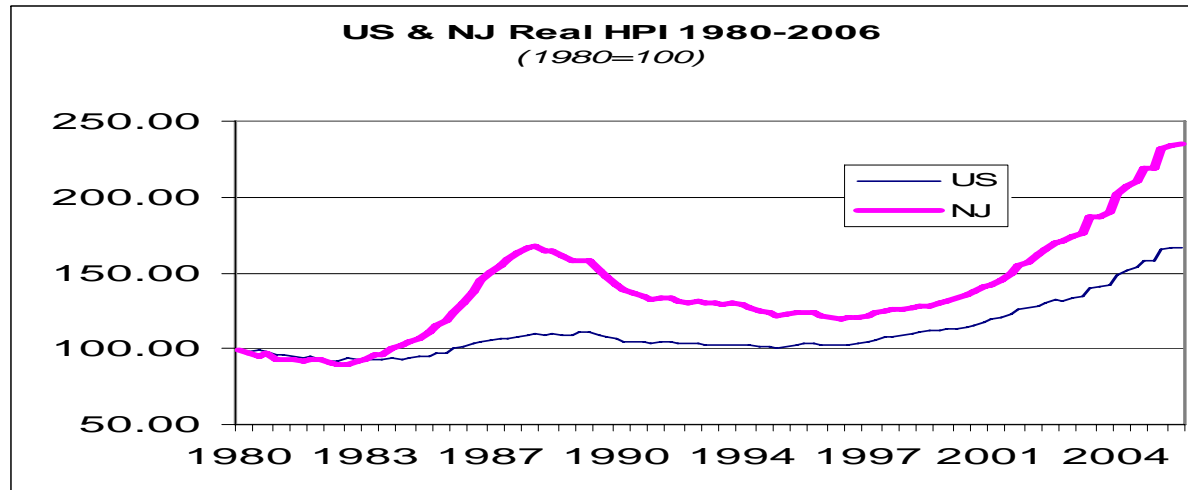
Asset Price Bubble Model

- Chart Based- Price Volatility Over Time (P Up, P Down)
- Kindleberger/Shiller- Mania, Panic & Crash / Irrational Exuberance.
 - Prices are bid up to unsustainable levels, above explanatory power of fundamental supply & demand variables, due to *speculative fervor* among increasing numbers of investors with unrealistic expectations of capital gains.
 - Top of Market- Rush to liquidation forces prices to fall precipitously.

Irrational Exuberance?



Home Price Index Patterns In US & NJ

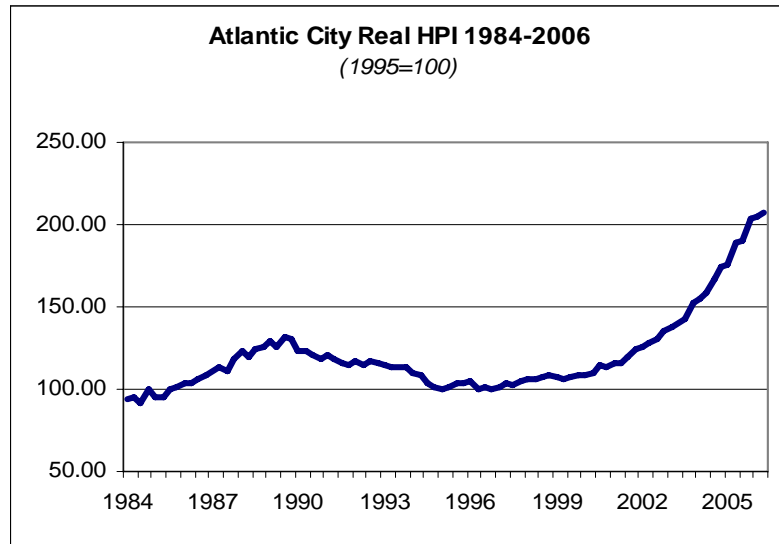
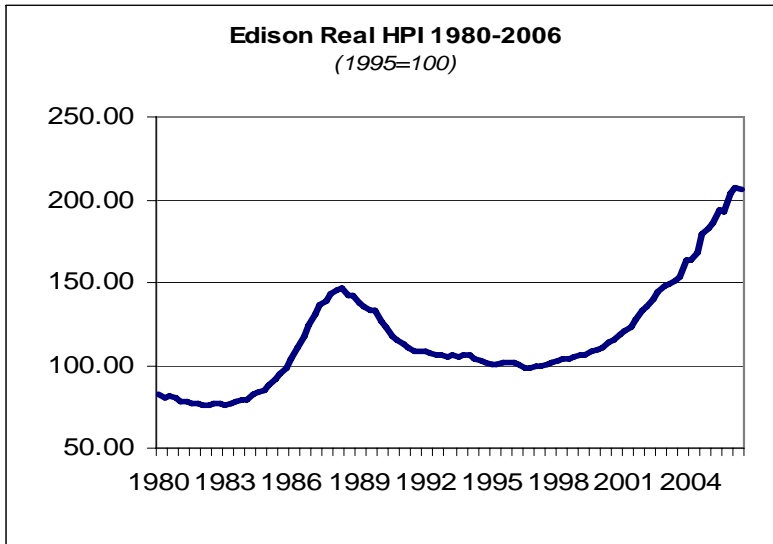


	<u>Quarter/Year</u>		<u>Index</u>	<u>Period</u>	<u>Total %</u>	<u>Compound Annual Rate %</u>
New Jersey	3Q 1983	<i>I</i>	92.68			
	2Q 1988	<i>P</i>	168.05	83-88	81.3	13.3
	4Q 1996	<i>T</i>	120	88-96	-28.6	-3.9
	4Q 2002	<i>PP</i>	170.2	96-02	41.8	6.0
	2Q 2006	<i>CE</i>	234.62	02--06	37.8	9.6
United States	3Q 1983	<i>I</i>	92.68			
	4Q 1989	<i>P</i>	111.04	83-89	19.8	2.9
	1Q 1995	<i>T</i>	100.5	89-95	-9.5	-1.9
	2Q 1999	<i>PP</i>	111.62	95-99	11.1	2.5
	2Q 2006	<i>CE</i>	166.06	99-06	48.8	5.8

I=Initial Price Run Up; P=Peak; T=Trough; PP=Previous Peak Overtaken; CE=Current Estimate

Source: OFHEO, BLS

Home Price Index Patterns In Select NJ MSAs



MSA/MSAD

(Counties included)

	<u>Quarter/Year</u>		<u>Index</u>	<u>Period</u>	<u>Total %</u>	<u>Compound Annual Rate %</u>
<u>Edison</u> (Middlesex, Ocean) (Monmouth, Somerset)	1Q 1984	<i>I</i>	78.9			
	2Q 1988	<i>P</i>	147.01	84-88	86.32	15.77
	3Q 1996	<i>T</i>	98.74	88-96	-32.83	-4.71
	4Q 2002	<i>PP</i>	148.22	96-02	50.11	6.72
	2Q 2006	<i>CE</i>	206.42	02--06	39.27	9.93
<u>Atlantic City</u> (Atlantic)	1Q 1984	<i>I</i>	93.51			
	3Q 1989	<i>P</i>	131.69	84-89	40.83	6.42
	2Q 1996	<i>T</i>	99.6	89-96	-24.37	-4.05
	4Q 2002	<i>PP</i>	134.99	96-02	35.53	3.64
	2Q 2006	<i>CE</i>	207.82	02--06	53.95	13.12

I=Initial Price Run Up; *P*=Peak; *T*=Trough; *PP*=Previous Peak Overtaken; *CE*=Current Estimate

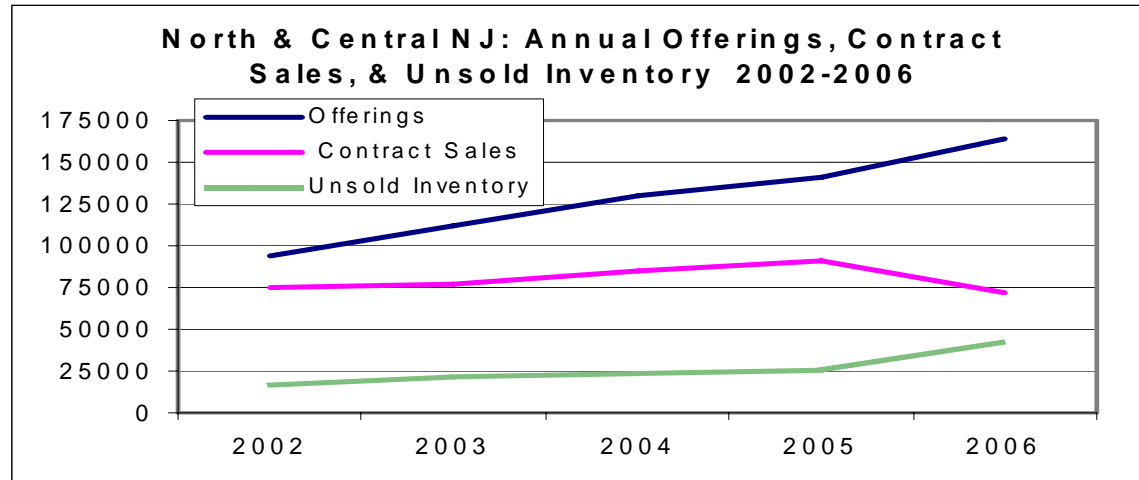
Source: OFHEO, BLS

Housing's Contribution to the Economy & Bubble Indicators

- In 80's cycle, housing dropped with stock market.
 - Regional recession longer and deeper than national.
- In 00/01, housing propped up the economy after stock market crash.
 - Recession was shorter and less severe.
- Consumer spending buttressed by home appreciation in 00 to 05:
 - Homeowners cash out \$964 billion at refinances & sales.
 - Homeowners extract \$505 billion in home equity loans.
- Housing sector accounts for 1% of 3.5% GDP growth in 2005.
- Mortgage products changing to sustain demand growth:
 - ARMs account for 31% of all loan originations in 2005.
 - Interest Only, Payment Option, & Sub-Prime all growing.
- Investor share of loan originations up from 5% to 10% from 00 to 05

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2006: The Market in Transition

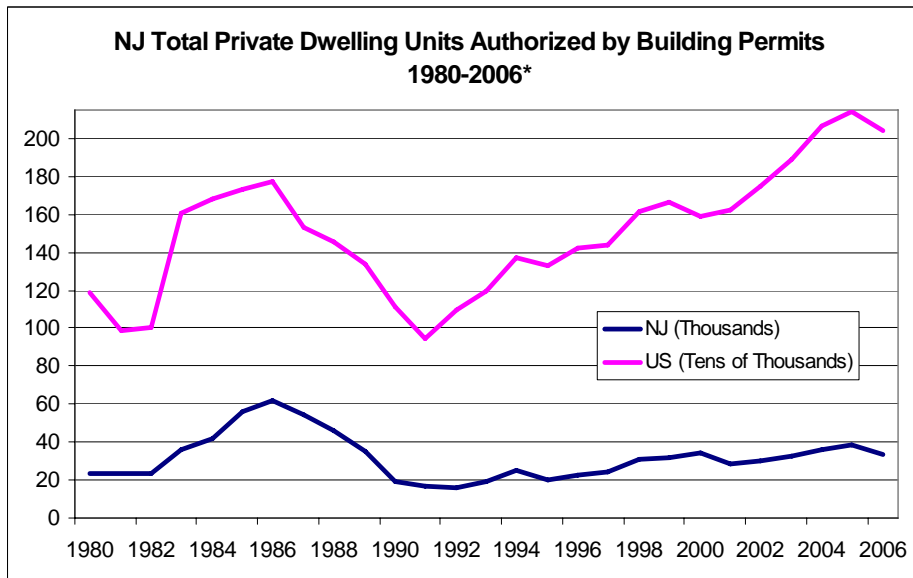


New Jersey Counties: Demand/Supply Ratios & Total Market Inventory (Months)

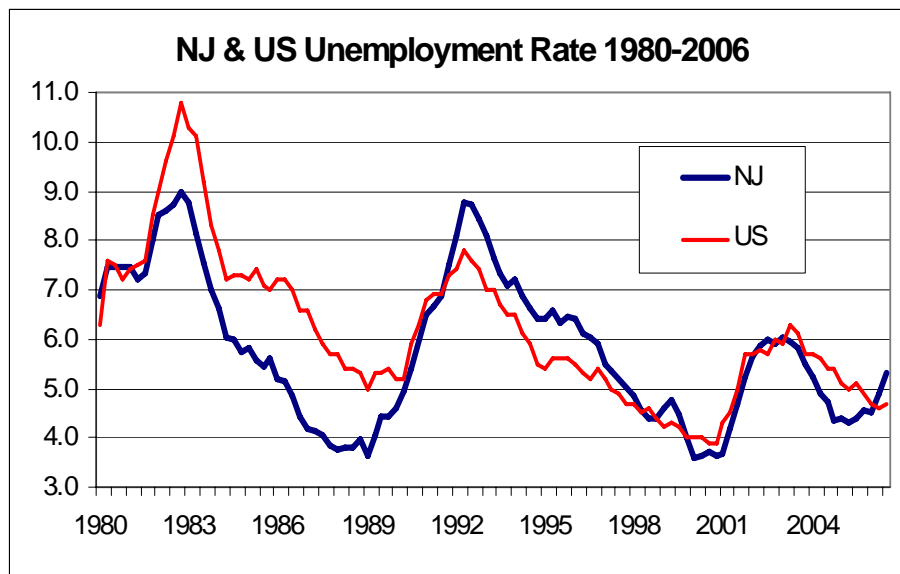
	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Atlantic	-	-	-	-	41% (11)
Burlington	82% (2)	76% (2)	67% (3)	68% (3)	48% (6)
Essex	75% (3)	70% (3)	71% (3)	70% (3)	53% (5)
Hunterdon	71% (4)	56% (5)	64% (4)	60% (4)	43% (9)
Mercer	70% (3)	62% (3)	68% (3)	55% (4)	40% (8)
Middlesex	108% (2)	79% (3)	69% (3)	77% (2)	49% (6)
Monmouth	75% (3)	63% (4)	60% (4)	57% (5)	38% (9)
Morris	73% (3)	66% (3)	63% (3)	63% (3)	43% (7)
Ocean	77% (3)	66% (4)	61% (4)	61% (4)	39% (9)
Passaic	81% (3)	72% (3)	68% (4)	71% (3)	47% (7)
Somerset	71% (3)	75% (3)	67% (3)	63% (3)	46% (6)
Sussex	78% (4)	65% (4)	61% (5)	64% (5)	40% (11)
Union	80% (2)	71% (3)	69% (3)	67% (3)	45% (6)
Warren	75% (3)	65% (4)	70% (4)	66% (4)	44% (8)
New Jersey	-	-	-	-	46% (8)

Source: The Otteau Appraisal Group. "The Otteau Report." 2nd Quarter 2006.

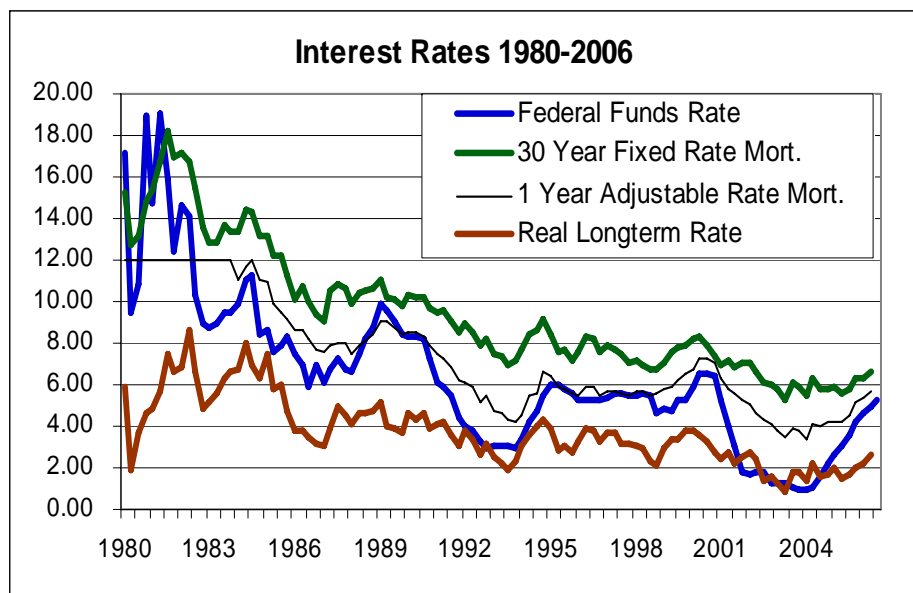
Supply & Demand Fundamentals



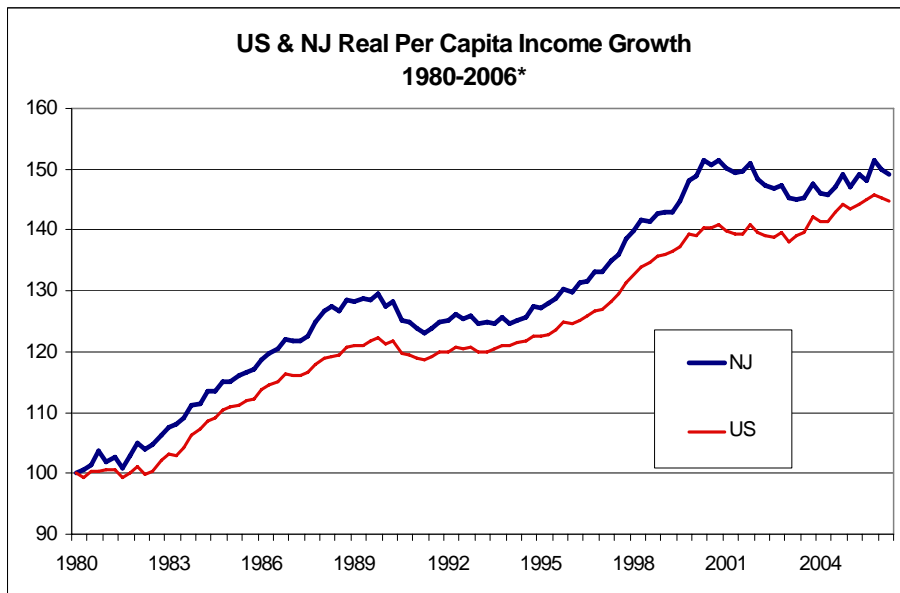
Source: Bureau of the Census



Source: BLS



Source: Federal Reserve, Freddie Mac.



Source: BEA, BLS

Academic Attempts to Test for Bubbles

Case & Shiller (03)- Brookings

- Used Price/Income Ratios & Regression Analysis to demonstrate that fundamentals justify price increases in 42 of 50 states.
 - The “Volatile 8” (NJ, NY, CA, HI, MA, NH, CT, RI).
 - Lower R Squares & Higher P/I ratios suggest a bubble.
- Survey attitudes of recent buyers in several “hot” markets. Find evidence of “expectations” & “feedback” motivating buyer decisions.

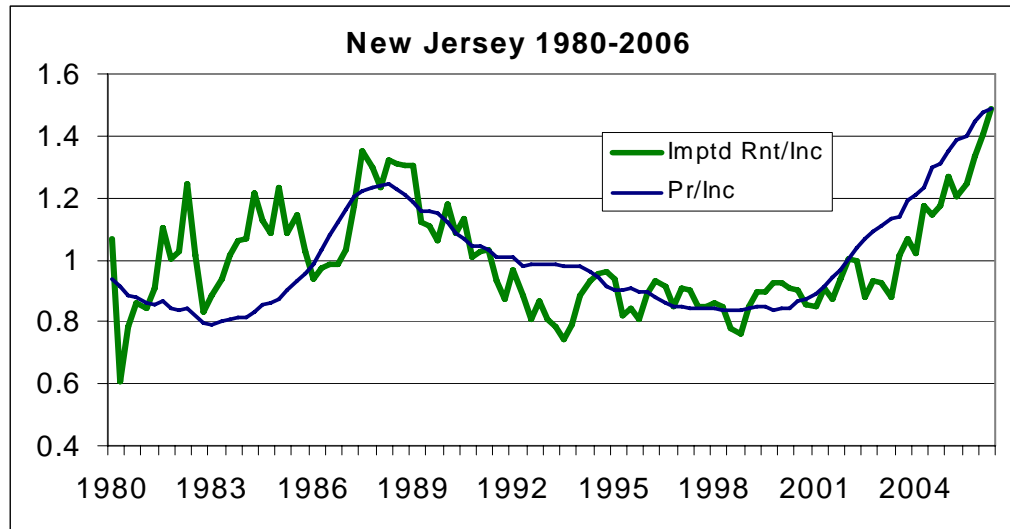
Himmelberg, Mayer & Sinai (04)- NBER

- Argue that Price/Income ratios wrong metric because price is not as comprehensive as the annual cost of ownership (*the imputed rent*).
- Computed Imputed Rent to Income ratios for 46 MSAs (not NJ)
- High P/I ratios show a bubbles in many of the “hot” markets.
- Imputed Rent to Income ratios show that virtually all MSAs are at or below their historical averages, even the “hot” markets.

Imputed Rent Formula

- $\text{Imputed Rent} = \text{Price} * \text{User Cost}$
- $\text{User Cost} = \text{Risk Free Interest Rate} + \text{Property Tax Rate} - ((\text{Marginal Income Tax Rate} * (\text{Property Tax Rate} + 30 \text{ Year Fixed Mortgage Rate})/2) - \text{Maintenance Costs} + \text{Expected Appreciation Rate} + \text{Risk Premium}$
- Collected quarterly data for NJ & all 10 MSAs from 1980 to 2006 to match OFHEO HPI data.
- Calculated Imputed Rent to Per Cap Income & Price to Per Cap Income Ratios for NJ & 10 MSAs.
- Income is the most important fundamental. In the long run neither home prices or imputed rents can outstrip affordability, though imputed rent is the more comprehensive metric.

Imputed Rent/Income & Price/Income Ratios NJ & MSAs



Historical Average = 1.0

