The Real Estate Boom:
[Ir]rational Exuberance?

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Residential property has risen in value by $20 trillion in developed countries in the *last 3 years*—twice the rise in stock prices witnessed during the "tech bubble." Will real estate prices follow a similar path to that of technology stocks in the late 90's?

Presentation Outline

- What is a speculative Bubble?
- Impacts on the Economy
- Nature of Real Estate
- Arguments for and against the "Real estate bubble"
- Analysis of Historical Data
- Conclusion

What is a speculative bubble?

- A self-perpetuating rise in prices
- Shiller: "an unsustainable increase in prices brought on by investors' buying behavior rather than by genuine, fundamental information about value"

Image: www.bubbletoy.com/ Blaster%20giant%20bubble.jpg

Dutch Tulip Bubble

- Tulips introduced to Europe in mid-sixteenth century
- Became prized possessions
- Began trading on stock exchanges, prices soared
- Prices dropped 10x in 1 year when the bubble "burst".
- Record: 100,000 florins
  - 670x average yearly income
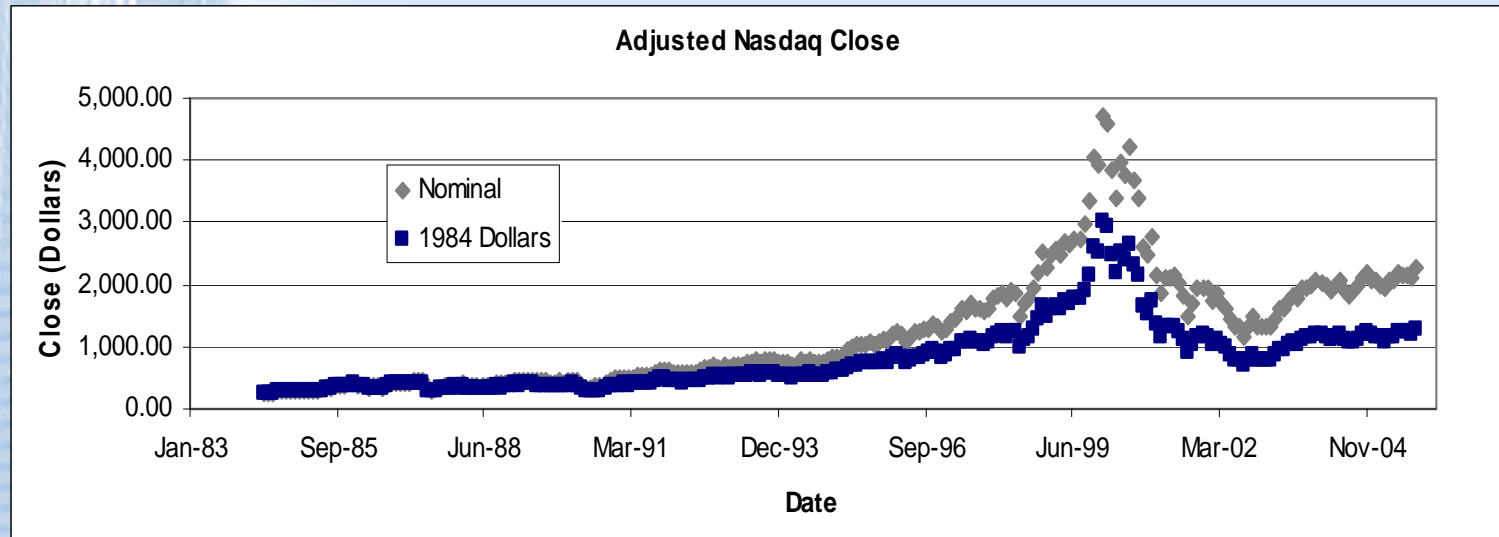- What would you pay for a tulip bulb?

One tulip transaction

- 2 lasts of wheat
- 4 lasts of rye
- 4 fat oxen
- 8 fat swine
- 12 fat sheep
- 2 hogshead wine
- Four tons beer
- 2 tons butter
- 1000 Lbs cheese
- 1 complete bed
- a silver drinking cup

Source: Charles MacKay, *Extraordinary Popular Delusions and the Madness of Crowds, 1841.*

The Dot-com Bubble

Adjusted Nasdaq Close

- Famous speculative bubble, dropped by 2/3 afterwards.
- Fueled by "irrational exuberance" - (Alan Greenspan)
- Where was the fundamental analysis?
- Evidence of heavy "trend following"

The Dot-com Bubble

- DJIA tripled while fundamental Economic indicators rose ~1/2
- Robert Shiller: Bubble due to
  - Technological progress
  - Expansion of demand for stocks
  - Increase in trade volume
  - Cultural changes
- Published before bust, and predicted the fall perfectly.
- Now, Shiller is predicting a real estate bust.

Impacts on the economy

- Real estate is an enormous fraction of national and global wealth.

- It is a huge fraction of families' net worths.

- Real estate is leveraged.
  - 20% down payment ➔ volatility multiplied by **5**

Impacts on Economy

- Drops in net worth cause huge losses, and in turn affect willingness to spend
- Can cause business relocation, and local job loss.
- Can trigger recessions
- High real estate prices can force poor families out of housing

Image: http://www.stewarts.us/pics/

The Nature of Real Estate

- Somewhat like stocks and bonds
- House price to Rent ratio, and of House price to Household Income, are like P/E ratios
- Can be used for speculation
  - Especially second homes

The Nature of Real Estate

- Very different from stocks and bonds
- Huge transaction costs (~6%)
- Bought to live in, not for profit
- High upkeep (property taxes, maintenance)
- Illiquid
  - Can take years to sell
  - Many factors hard to replace, such as proximity to downtown, access to good schooling

Are we in a Real Estate Bubble? "Yes."

- Alan Greenspan
  - Value of residential homes
    - 1995: $8 trillion
    - 2005: $18 trillion
  - "Signs of froth" evident in certain areas
  - Interest-only and Negative amortization loans
- Robert Shiller
  - Housing price appreciation >> interest rates

Image: http://www.jackboulware.com/images/greenspan0225.l.jpg

Are we in a Real Estate Bubble? "No."

- Home pricing is sustainable
  - Immigration
  - Burgeoning economy
  - Second home ownership
- Low interest rates have, justifiably, raise home prices.

Are we in a Real Estate Bubble? "No."

- Alan Greenspan:
  - LTVs are not high
  - LTVs are especially low in areas with high home prices
  - Large equity cushion
- NAR:
  - Since the Great Depression, the national median home price never declined.
    - Weathered wars, stock market crashes
  - Tax benefits are not included in many fundamental analyses

Image: http://www.corante.com/mooreslore/archives/images/Alan_Greenspan.jpg

What can trigger a fall?

- Reversal of trends that caused the boom:
  - Employment
  - Personal income
  - Population growth
  - Demographic change
  - Taxes
  - Interest rates
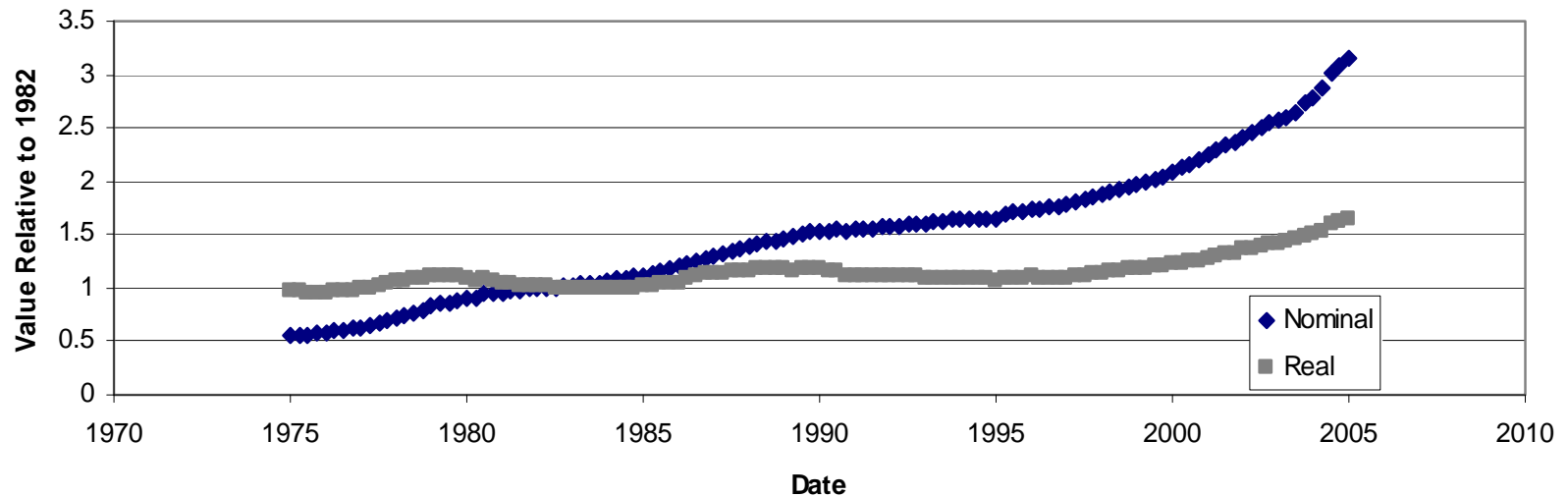- Luckily, more mortgages are fixed rate than in past busts.

Housing Price Index (HPI)

- Available for U.S. as a whole, every state, many Metropolitan Statistical Areas (MSAs)
- Based on resale of individual homes
- Many advantages over median home price
- Inflation indexed using CPI less shelter
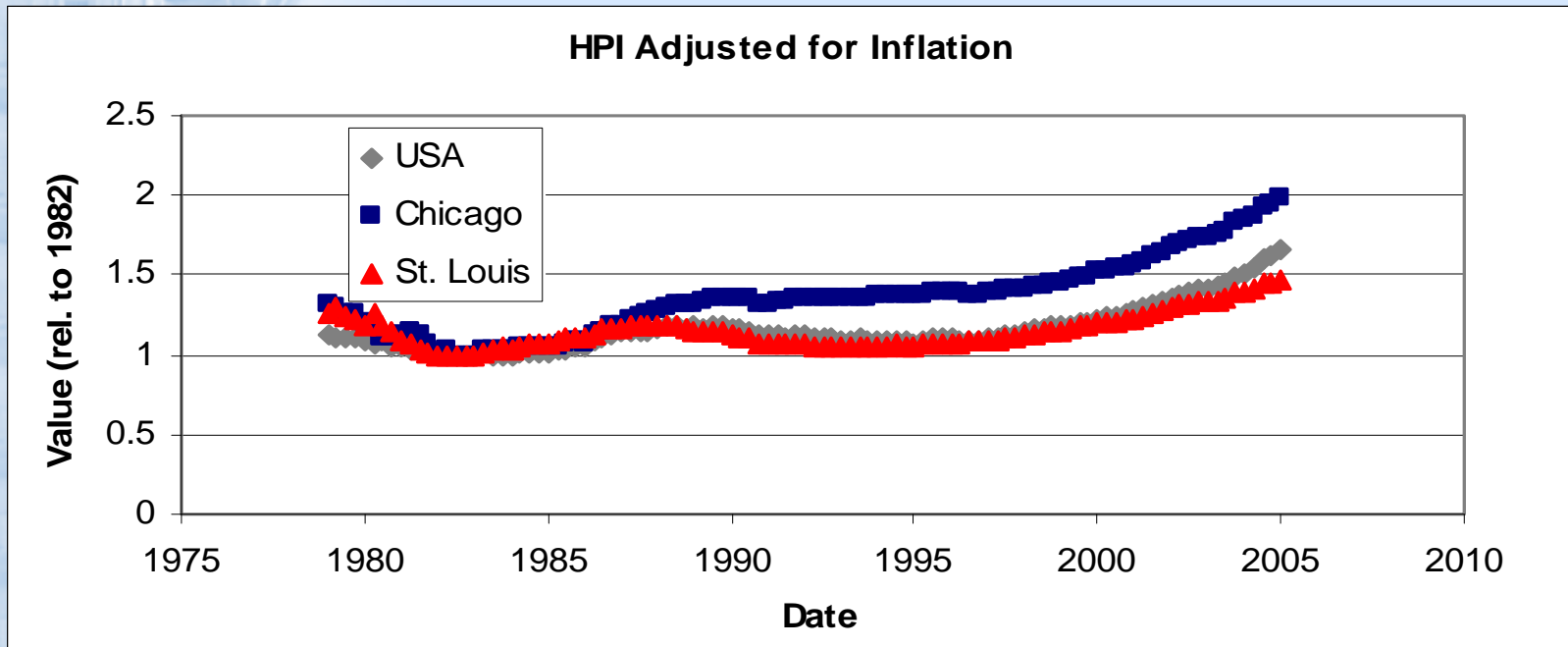
National Prices

Housing Price Index (US)

- Huge nominal gains; 100% since 1990.
- Moderate real gains: 50%.
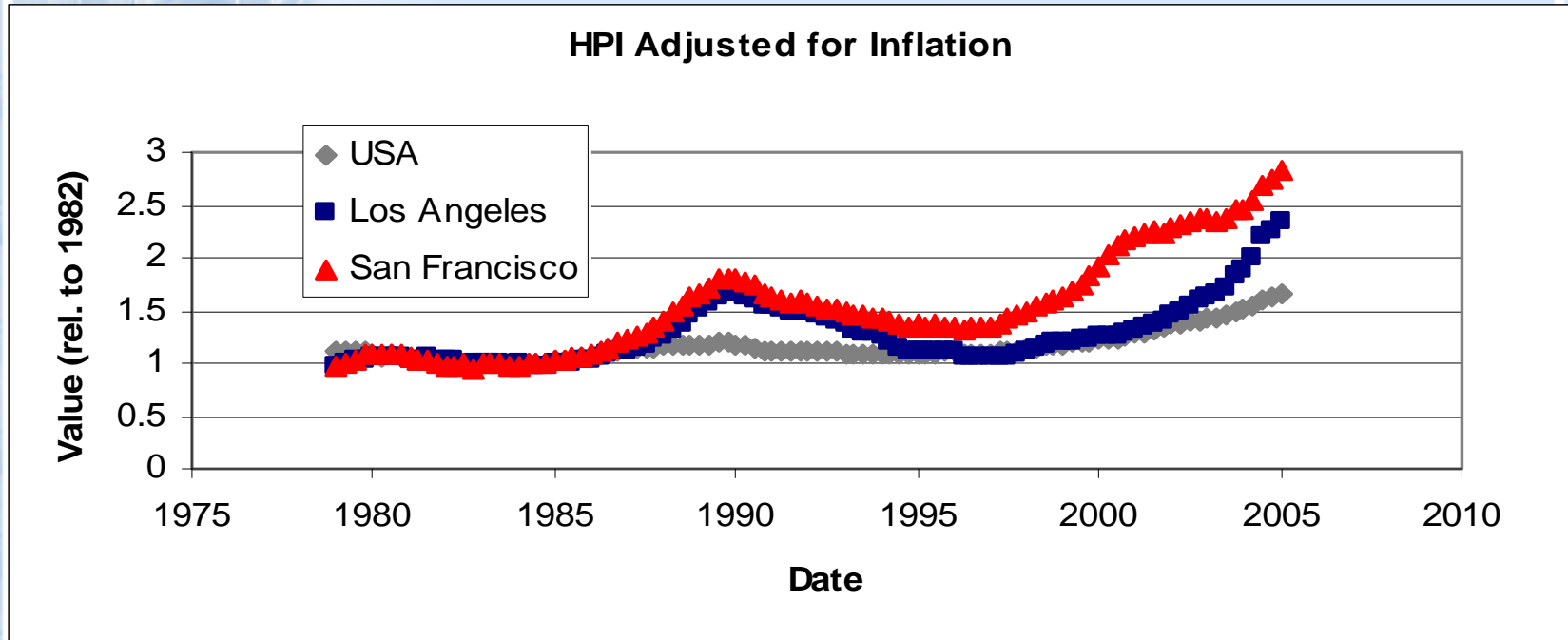 - Justifiable? (economy , land shortage, increased demand)

Prices in Lower-Volatility Areas

HPI Adjusted for Inflation

- The vast majority of U.S. homes are not in unusually high-volatility areas
- Roughly keep pace with U.S.; some cities show temporary or gradual deviations.

Prices in High-Volatility Areas

HPI Adjusted for Inflation

- Certain areas experience far more volatility than the U.S. as a whole
  - Los Angeles   - San Francisco
  - San Diego   - Boston

High-Volatility Areas

- Seem to have 2 components
  - Deviations in national average are amplified several times, and sometimes phase shifted
  - Local variations, often due to economic factors
- Why? Possibilities:
  - Zoning laws
  - Lack of unoccupied land
  - Suburban sprawl
  - Centers of progress
  - Reputation

Is this Speculation?

- The image of these high-volatility cities is unique:
  - Vibrant
  - Progressive
  - Wealthy
  - Desirable
- Do home owners expect that prices will escalate, simply because of their perceptions of the cities?
- If so, then this is speculation.

Conclusion

- The national real estate market
  - Possibly inflated
  - Not beyond the range of generous fundamental analysis
- Certain cities (West Coast, Boston, etc.)
  - Anomalous real estate prices
  - Rate of increase is wholly unsustainable
  - Likely due to speculation
  - History of boom and bust
    - ➔ may exhibit serious price declines.

Future Work

- Longer data sets
  - Identify previous cycles
- Regression, 3 components
  - Linear regression on nat'l data
  - Residuals of regression
  - Price of NASDAQ
  - Do a best-fit superposition of these three signals, and compare to real estate prices in San Francisco

Questions?