Panel Discussion on Housing Prices

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Conference on Prices, Productivity and Growth
Madrid, October 17, 2003
Housing Prices: Basic Philosophy

- U. S. CPI was distorted pre-1983
  - Most serious bias was housing
  - Crazy measure, we can forget the details
  - But it started a discussion
  - Fixed by CPI-RS and CPI-U-X1

- Why we don’t want a user cost measure for owner-occupied housing
  - Excess sensitivity to interest rates, owner-occupiers are paying a long-term cost
  - Insuperable problem of dealing with capital gains, not part of GDP and should not be in price indexes

- People my age? Our wealth is partly housing, it has been cost-free for decades
But we have to put SOMETHING into the CPI and GDP deflator

- Why it is sensible to use a shelter rent index as a proxy for owner-occupied housing (in CPI and GDP deflator)
  - Rent is the outcome of a market process
  - Landlord is affected by everything that impacts owner-occupiers, starting with supply and demand
    - Capital gains
    - Property taxes
    - Maintenance expenses
Thinking about Rent Deflation, back to the Boskin Commission

- The Boskin Commission found upward CPI bias under every lamp post
- Rental shelter is the single largest component of the CPI
- We now understand why the historic bias in the U. S. CPI for rental shelter must have been DOWNWARDS not UPWARDS
Why Upward CPI Bias Can’t be Extrapolated Back Forever

- Hulten as discussant of Nordhaus (1997)
- 1.4 percent upward bias forever?
  - 1.3 lbs of potatoes per day in 1800, nothing else
  - 0.8 ounces of potatoes per day in 1569, compare to those Bruegel paintings
- Solution? Consumer durables always upward bias, but other parts of CPI perhaps downward bias.
Circumstantial Evidence

- 1999/1925 CPI for Shelter: 5.1
- Nominal contract rent: 19.6
- Selling price existing single-family houses in Washington DC: 22.5
- Nominal net residential capital stock: 22.1
- Sheer amazement factor: My father sold a house in Berkeley CA in 1941 for $6K, bought another in 1945 for $14K (kicked himself). Now worth at least $1 million.
CPI Shelter? What a Great Topic!

- Not just the circumstantial evidence, but:
- By far the largest weight in the CPI
- Less quality heterogeneity in rental units than owner-occupied units
- Less of a “glamour city” effect in rents than in selling prices of houses
- Conceptually simpler. A rent is a rent. No need to consider issues of tax-deductability or capital gains.
My New Paper on a Century of Shelter Rental Prices

- Long historical horizon back to 1914
- Uses AHS data 1975-2001
- New regressions for Census microdata 1960-90 (750,000 observations!)
- Interpretation of Weston 1930-70
- Three new pieces of evidence pre-1930
CPI vs. Alternatives

- Differences CPI minus alternative growth rates equal or exceed 2.0 percent per year for all time periods including 1930-85.
  - Correlates to “circumstantial evidence”. 1999/1925 of 22 vs. 5 translates to 2.0 percent per year.
- Could quality have increased at 2.0% per year?
Good Reasons to Believe the CPI was Downward Biased before 1988

- Aging Bias
  - Randolph (1988)
  - Fixed by BLS
- Non-response bias
  - Analyzed by Crone-Nakamura
  - Their bias number is 1.4-1.6 percent for 1942-87.
  - Leaves very little room for quality change
Paper Goes Backward in Time, Starting with the 1975-2001 AHS

- Variables grouped
  - Quantitative
  - Region and Urban
  - Positive Quality
  - Negative Quality and Environment
  - Public Housing and subsidies

- In this sample hedonic ≠ quality
Gasping at the Richness of the Data

- Macro time-series economist
  - First paper, 1970, 64 quarters of data
  - Most recent paper, 2003, 195 quarters of data
- Here we are with 40,000 to 55,000 observations in a single regression
- Not to mention our Census results with 750,000 observations
- But data problems are a bucking bronco that must be tamed
AHS Regression Results, 1975-2001

- Double log specification
- All Variables Significant at <1 percent
- Cumulative price increase
  - 1975-2001 difference 1.23 percent per year.
  - 1975-87 difference 1.39 percent per year
  - 1987-2001 difference 1.10 percent per year
- Surprising in light of general belief that CPI downward bias has been fixed
Now It Gets Tougher, Guesstimates about Pre-1970 Quality Change

- Four big improvements in quality
  - Plumbing, in Weston
  - Central Heating, no more hauling of coal to room heaters
  - Electrification
  - Household Appliances. By 1973, refrigerator and stove were standard
    - Post-1960 central air conditioning and built-in dishwashers
Extracting Data from Clair Brown’s Amazing Book (1994)

- **Initial Surprises**
  - Decline in rooms from 5.3 in 1918 to 3.9 in 1960 (Census)
  - More than half (~55%) of renters lived in houses in 1918!
  - Far from our image of dark, dank tenements
  - The Rhapsody of Flight: Thinking of Chicago’s bungalow belt
    - Flying over, narrow lots but windows on all sides, garages, alleys, parkways, trees, telephone poles in back
  - Other Cities? Boston’s Triple-Deckers
Offsetting shift from houses to apartments and fewer rooms:

- 1918 characteristics
  - Only half of urban dwellings were electrified
  - Central heating virtually nil.
    - In rented units, only half of rooms heated at all
    - Coal stoves – dust, dirt, inconvenience
  - Bathrooms = about 2/3
  - Refrigerators didn’t exist

- Quality observations biased up
  - Farm, blacks
Our Wild Speculations about the Value of Quality Change

- Plumbing diffusion must have added about 0.75% pa during 1918-30
- Central heating? Start from post-1975 AC coefficient. Probably added 0.4% pa 1918-73
- Another 0.4% pa 1918 to 1950 for electricity
- Overall, 1.0% quality per year seems conservative, probably more 1918-30
A Brief Visit to Our Home Town

- Apartment Rent Index, 1925-99
- Look at How Many Variables are Controlled
  - Region
  - Urban vs. Rural
  - Location within Metro Area
- Quality: number of rooms, bathrooms, heat (type, whether incl in rent), AC, parking
- Age? Buildings get older but they are maintained and improved, esp. kitchens
Evanston Results

- CPI Strange 1925-50, -2.05%
- Plausible Difference 1950-75, -0.94%
  - Compatible with other results, quality and CPI bias split the 2% difference, 1% vs. 1%
- 1975-99 difference down to -0.67%
- Remaining Research:
  - How to tell whether Evanston is typical or unusual?
Conclusions

- CPI for shelter grew roughly 2% pa less than mean contract rent, 1930-87
- Wide variety of information suggests quality change over this period = 1% pa
  - AHS regressions, esp. controlling for age
  - Census regressions for 1960-70
  - Interpreting CES expenditure data as compiled by Brown
  - Evanston rent index
Bottom Line

- Downward bias in CPI for shelter of roughly 1% 1930-85, less before 1930 and after 1985
- Pending results on apparel, food, and consumer durables, implication of possible upward bias in NIPA measures of economic growth, 1930-85
- Will this project decapitate the “big wave” of productivity growth, 1913-72? Stay tuned, to be continued...