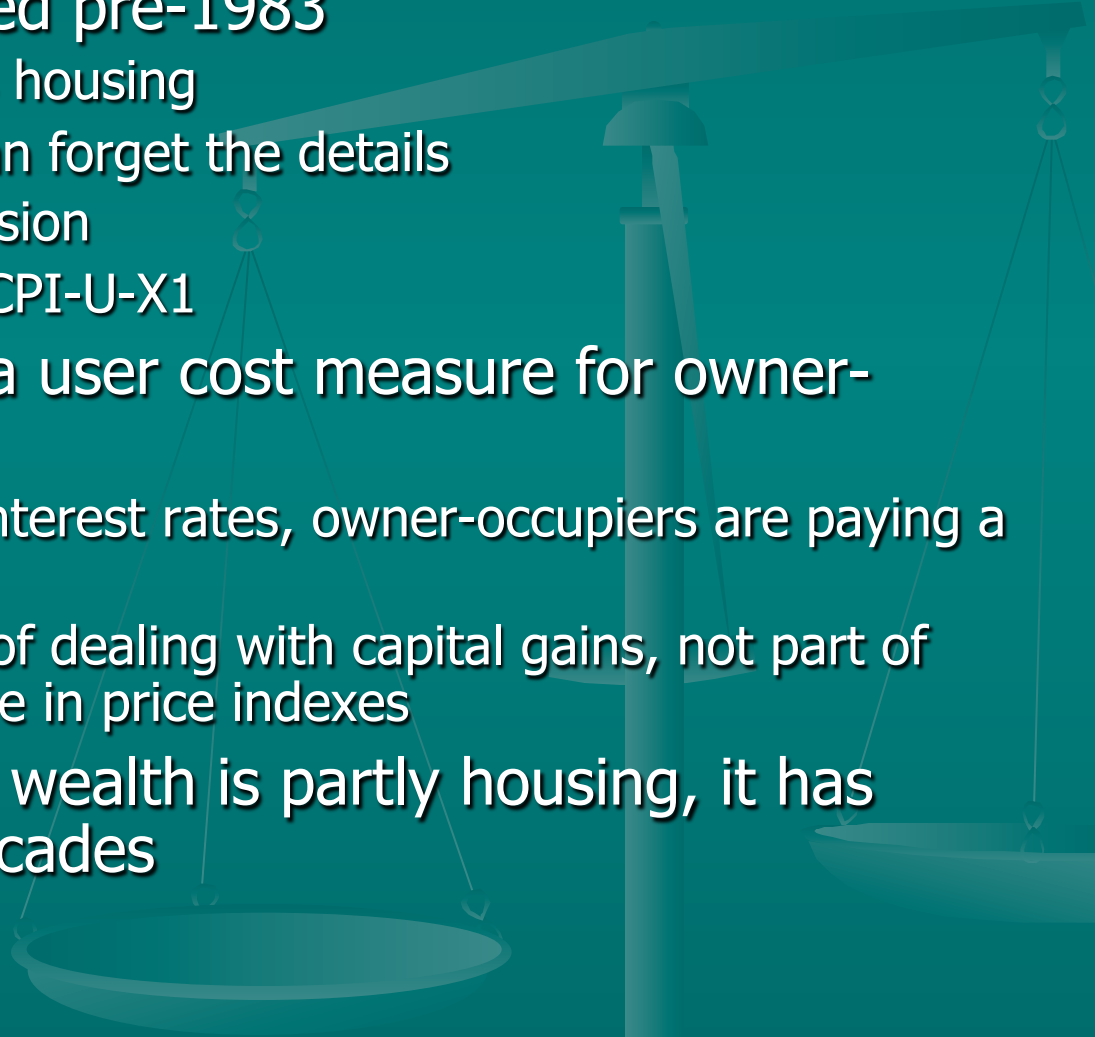


Panel Discussion on Housing Prices



Robert J. Gordon
Northwestern University and CEPR
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
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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**

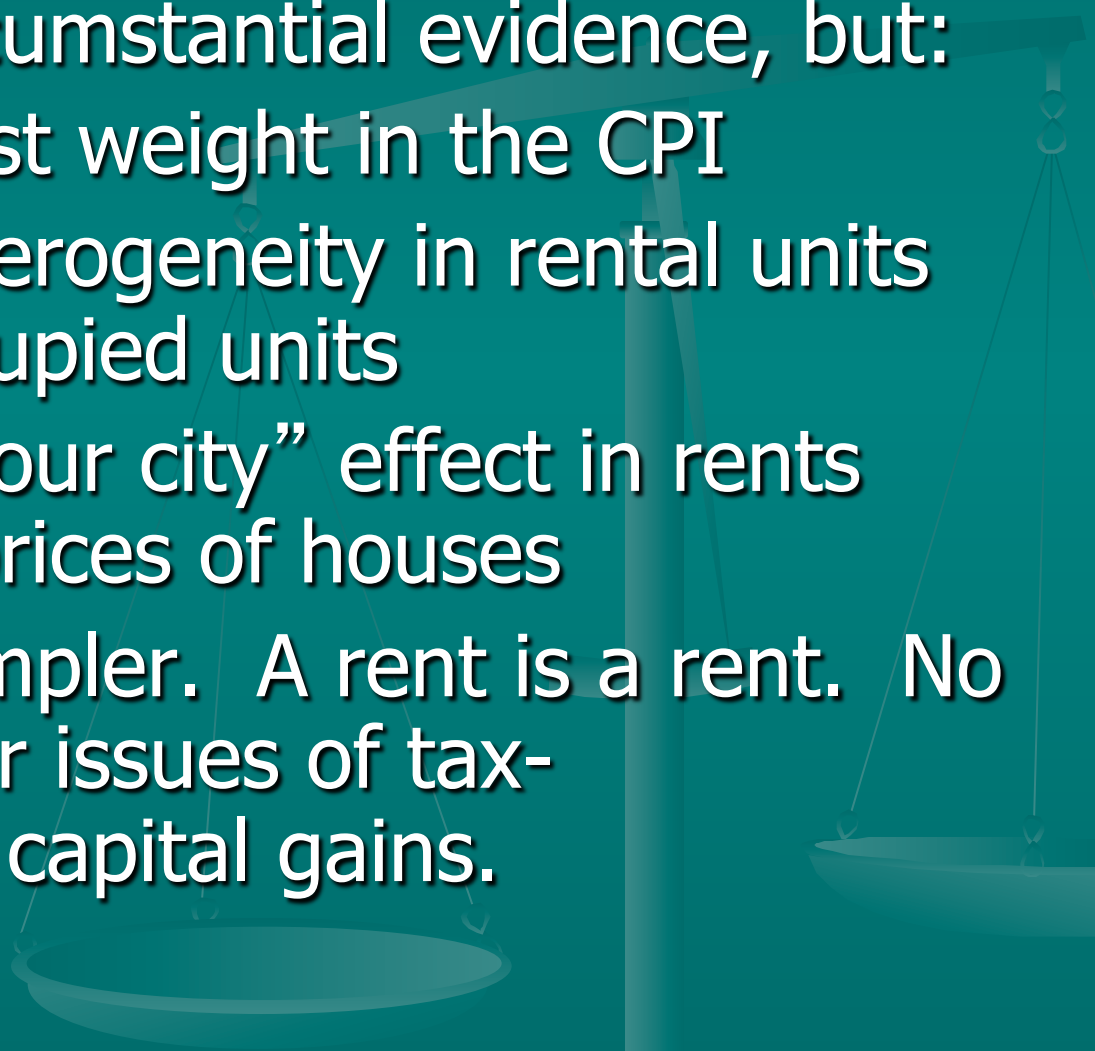
Why Upward CPI Bias Can't be Extrapolated Back Forever

- 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.

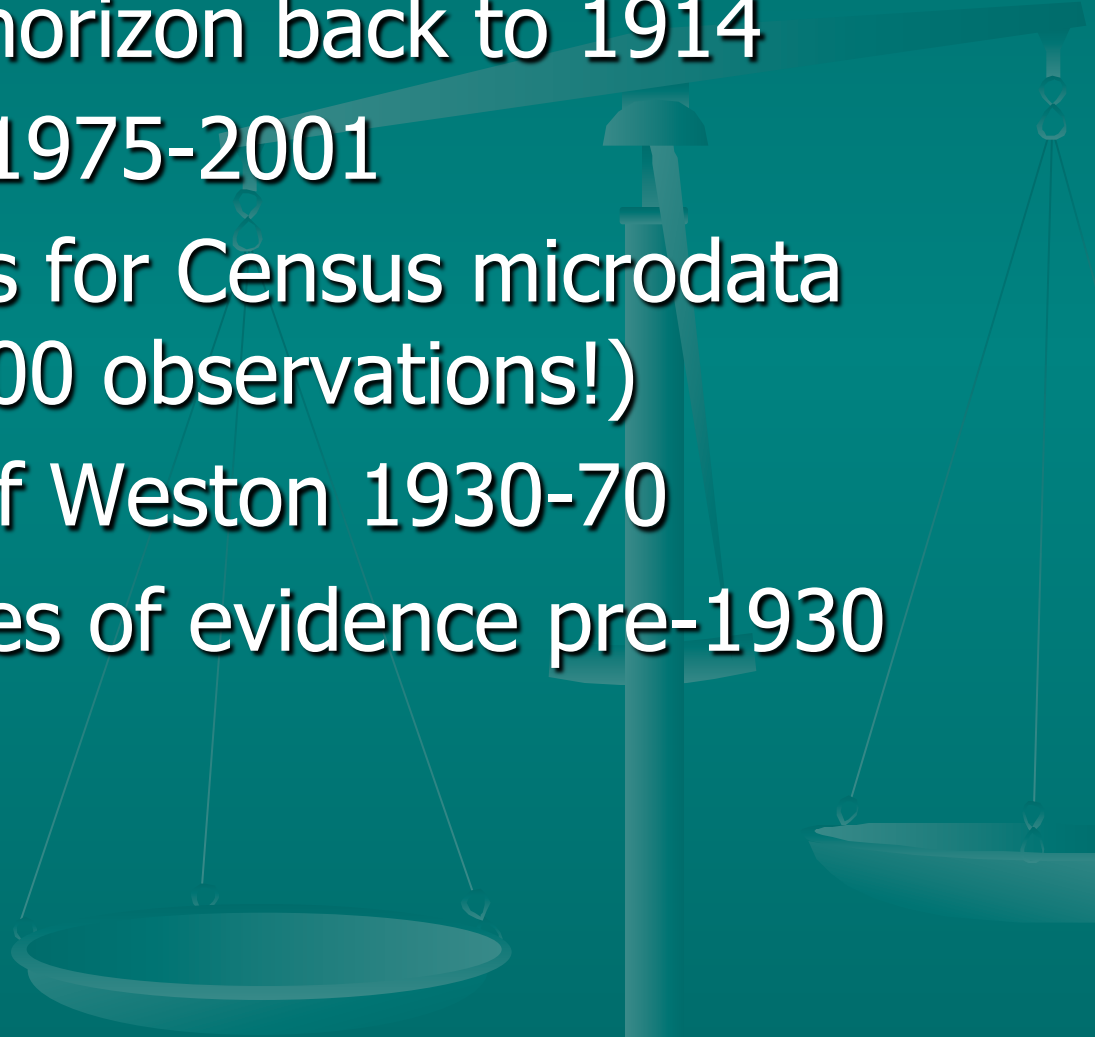
Circumstantial Evidence

- 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.
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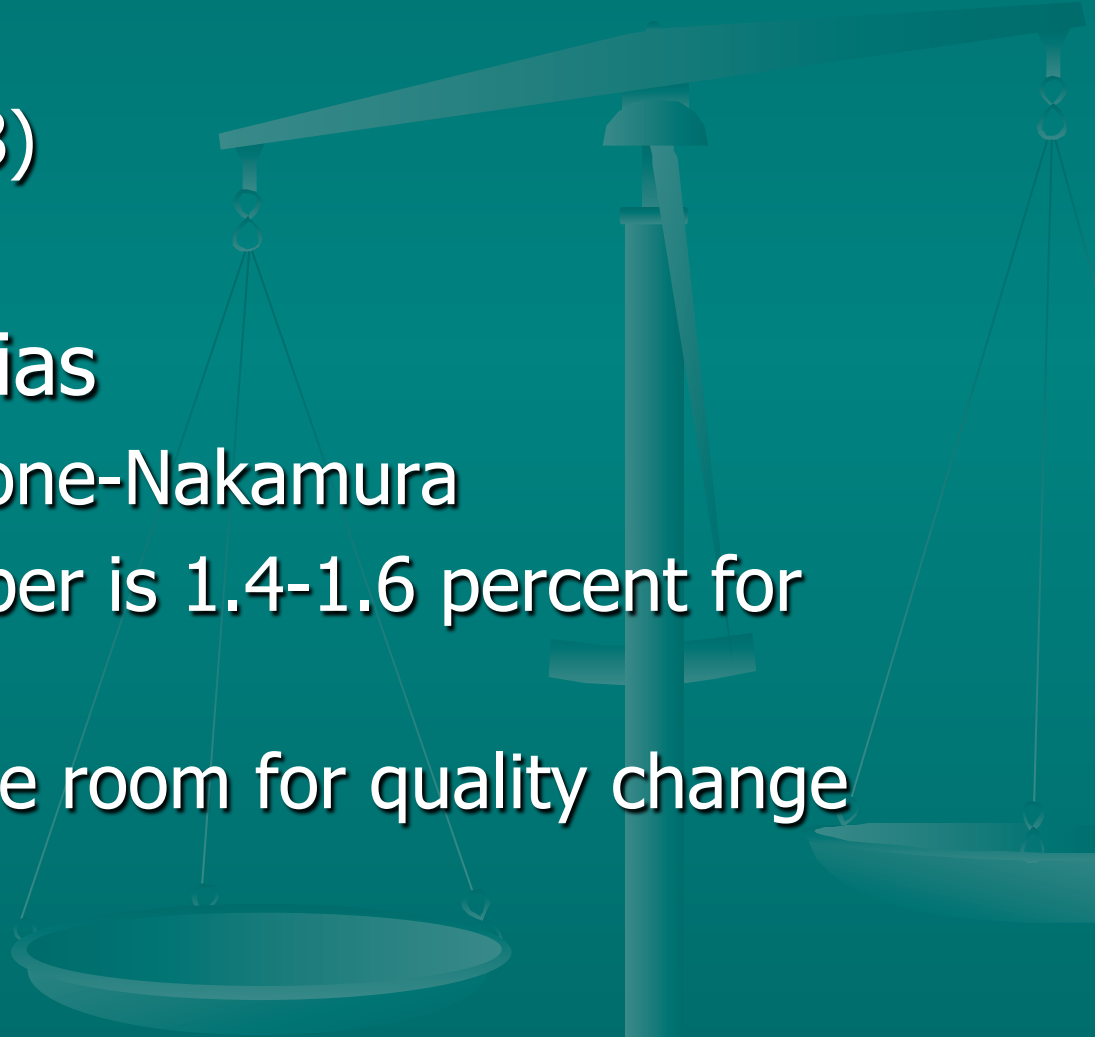
My New Paper on a Century of Shelter Rental Prices

- 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
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CPI vs. Alternatives

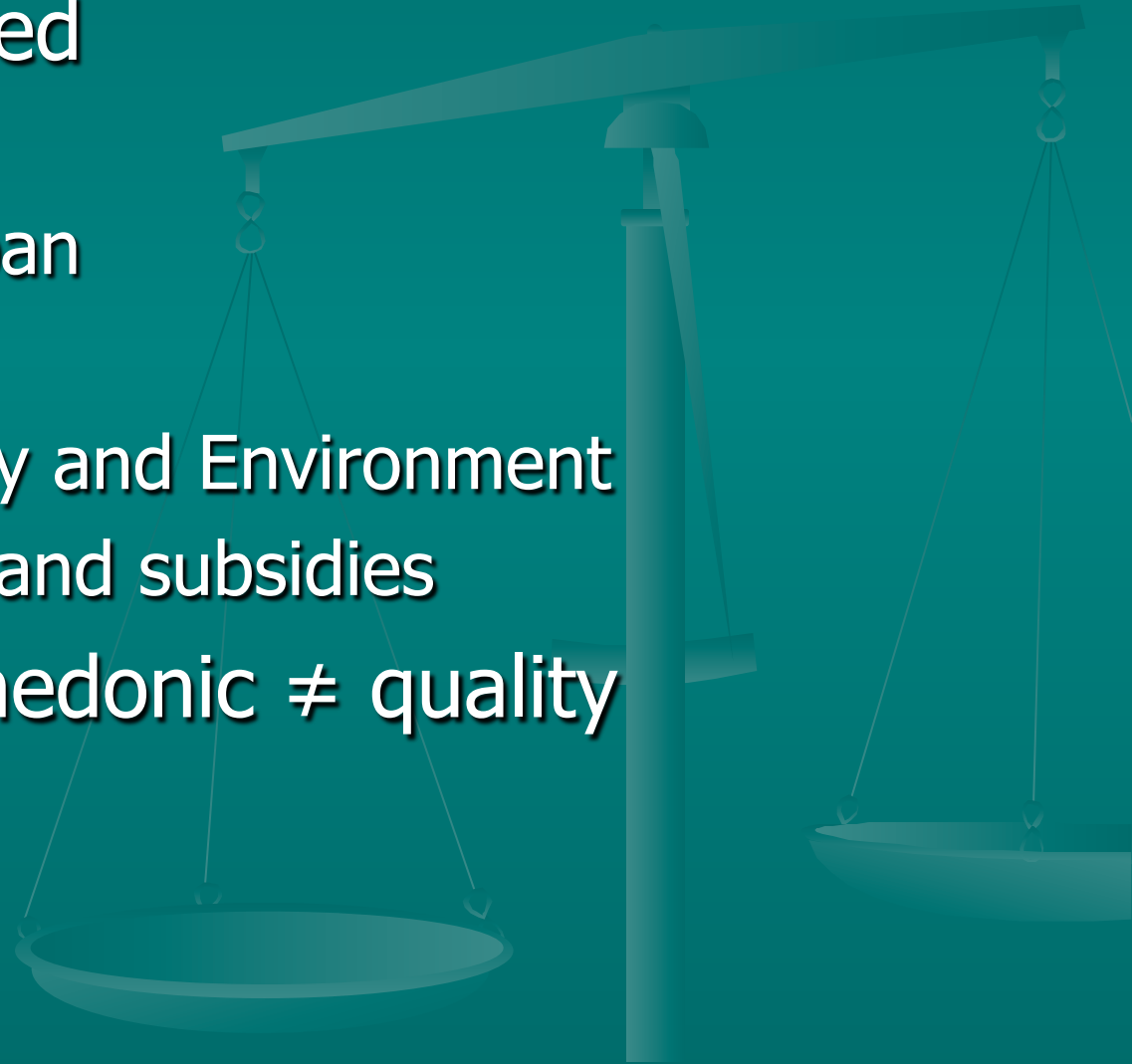
- Differences CPI minus alternative growth rates equal or exceed 2.0 percent per year for all time periods including 1930-85.
 - Corresponds to “circumstantial evidence”.
1999/1925 of 22 vs. 5 translates to 2.0 percent per year.
- Could quality have increased at 2.0% per year?

Good Reasons to Believe the CPI was Downward Biased before 1988

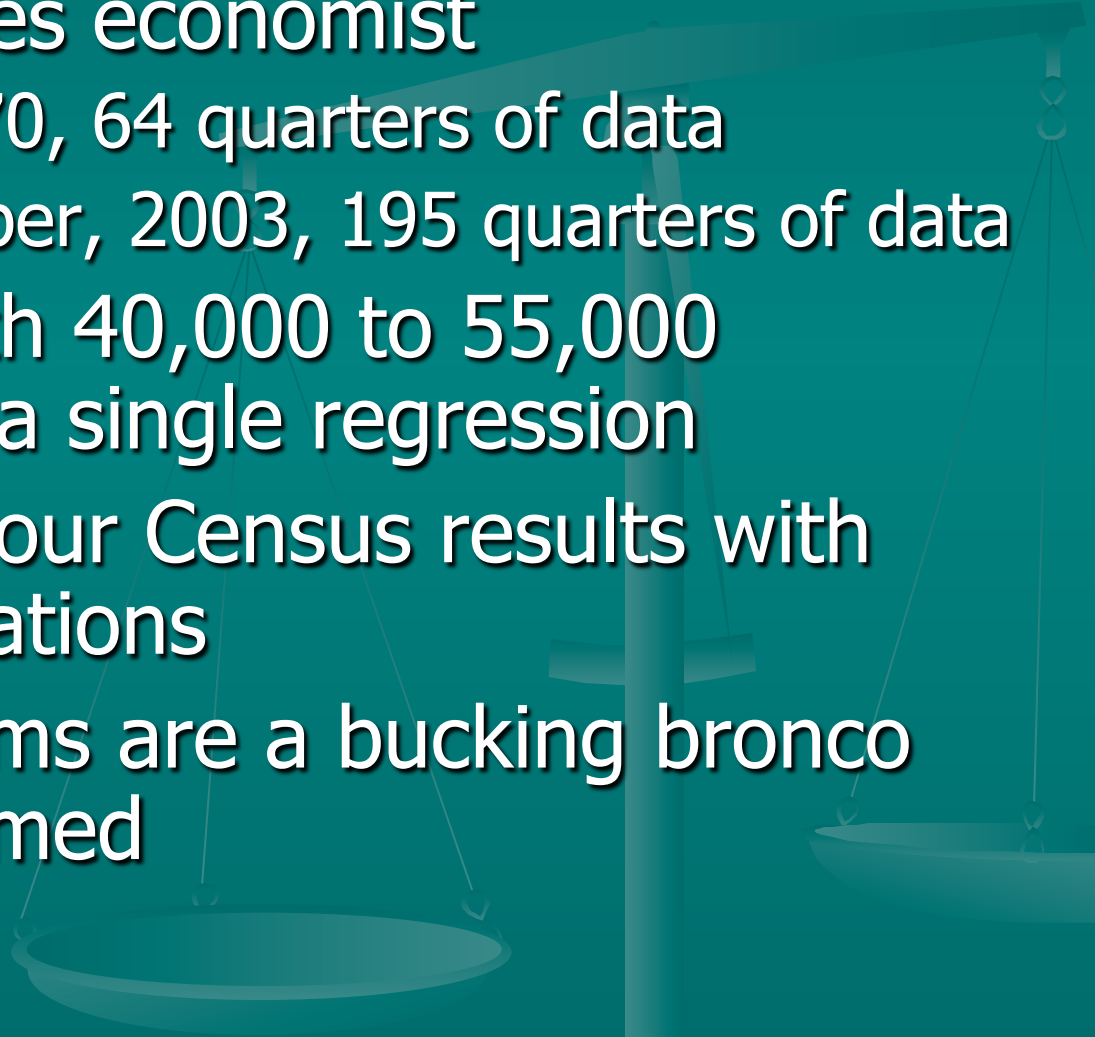
- Aging Bias
 - Randolph (1988)
 - Fixed by BLS
 - Non-response bias
 - Analyzed by Crone-Nakamura
 - Their bias number is 1.4-1.6 percent for 1942-87.
 - Leaves very little room for quality change
- 

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 \neq quality



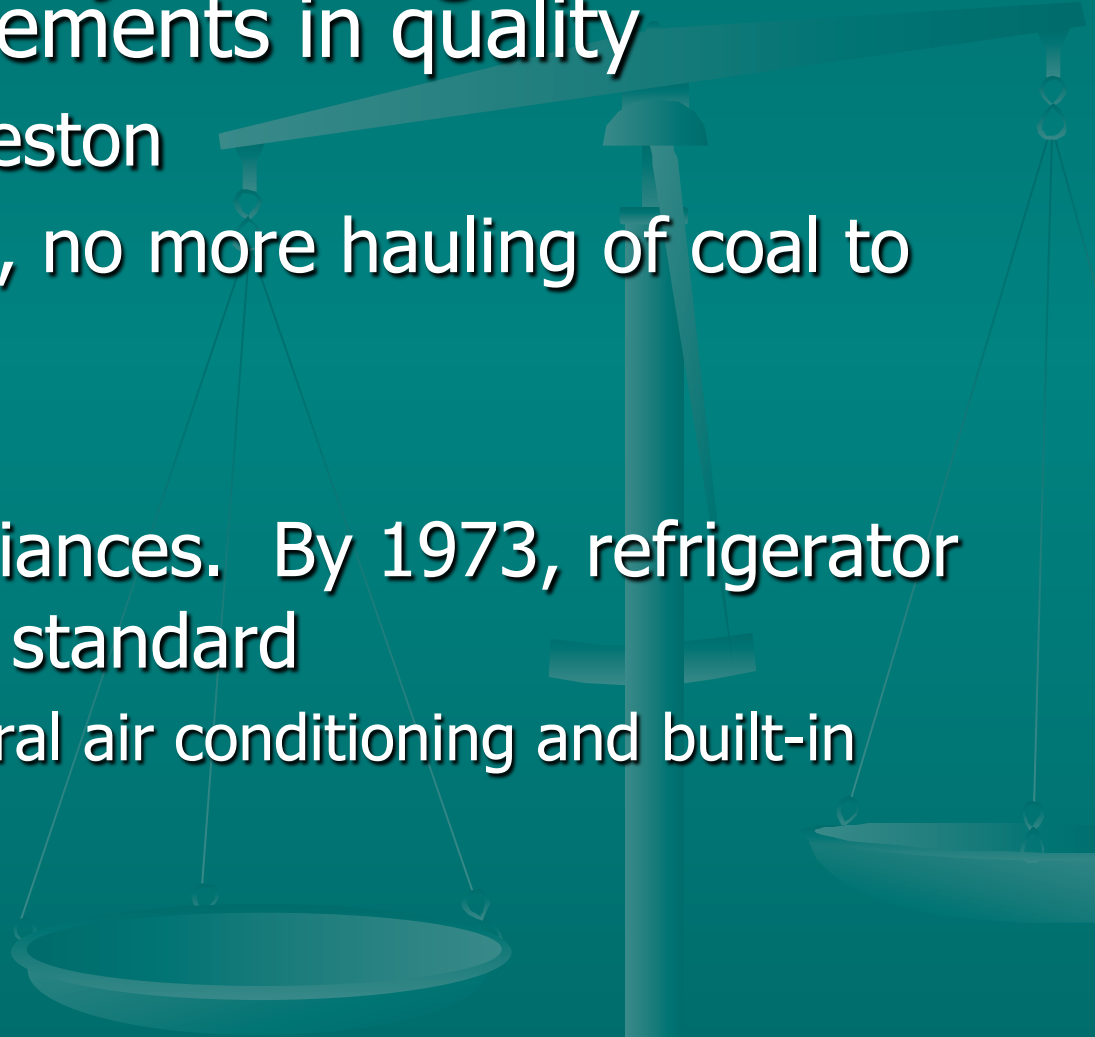
Gasping at the Richness of the Data

- 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
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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

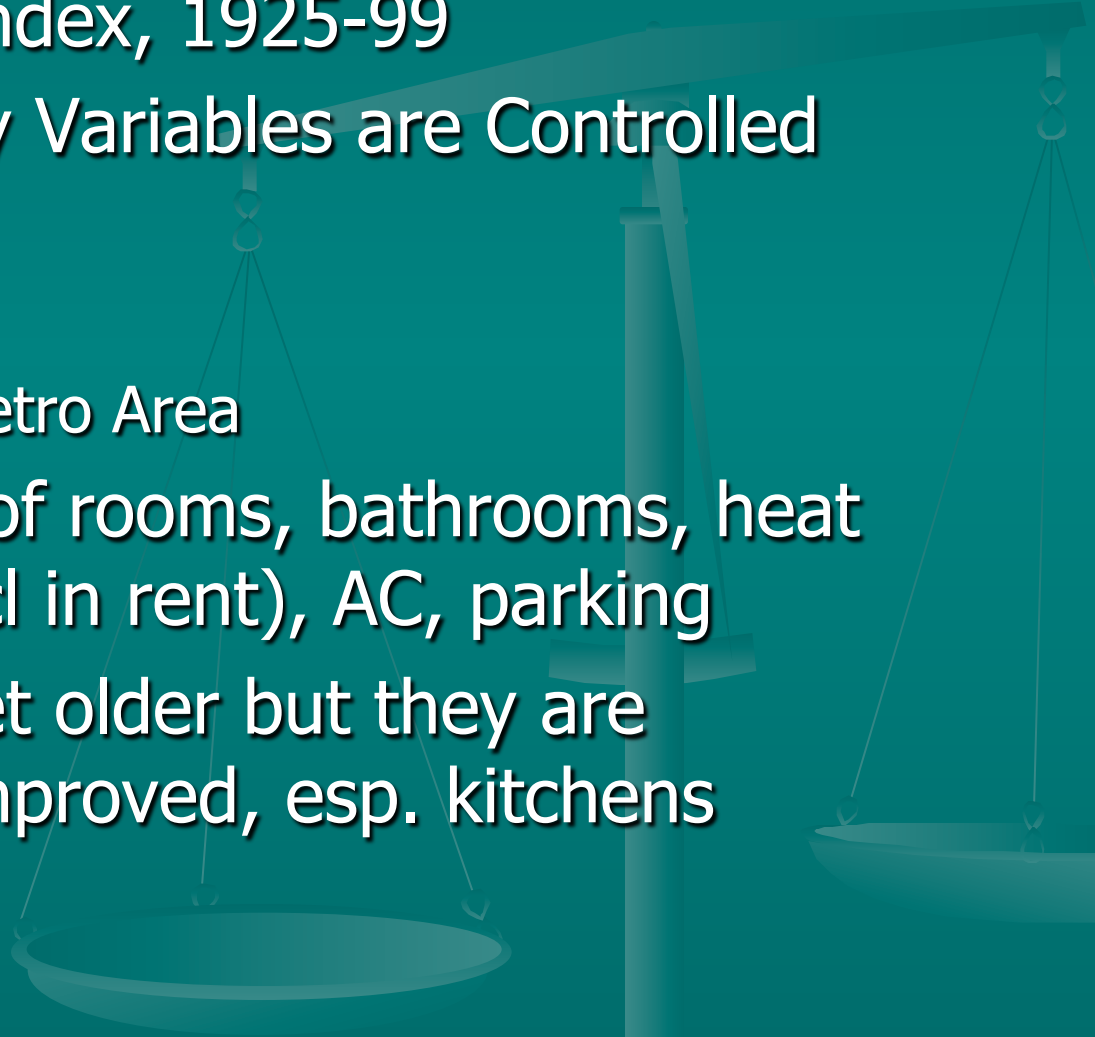
Offsetting shift from houses to apartments and fewer rooms:

- 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. . . .