Price elasticity of demand and rising house prices

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Why do house prices rise faster than incomes?

- Key problem in housing economics. Income elasticity of order 0.3 to 0.5 – higher income people should spend less on housing. Yet house prices rise much faster than incomes.

- Hoyt real estate cycle of 16-18 years

- Answer finally discovered. "Canonical equation" shows prices rise according to relationship between three key elasticities, as incomes rise

- Along the way we find out why "weaker hands" lose market share when house prices and incomes rise

Market clearing

- $H_S(p) = H_D(Y, p)$

where H_S and H_D are the supply and demand for housing

p is real price

Y is real income

- Taking first order differentials we have

$$dH = \partial H/\partial p \, dp = \partial H/\partial Y \, dY + \partial H/\partial p \, dp$$

Canonical equation

$$(\sigma_S - \sigma_D)\, dp/p = \sigma_Y\, dY/Y$$

where σ_S is the price elasticity of supply

σ_D is the price elasticity of demand

σ_Y is the income elasticity of demand.

if $(\sigma_S - \sigma_D) < \sigma_Y$, then prices will rise faster than incomes

Plain language

- if the combined response of supply and demand to higher prices is less than people's response to higher incomes (even if this income response is low) then prices will rise faster than incomes.

- Not normally an issue because supply response is almost immediate in most markets (supply elasticity large)

Holds for any clearing market

- Holds for both rental and real estate prices, though elasticities will be different

- Holds in both short and long terms though elasticities will be different

- Short term – little supply response, so (Meen)

$$dp/p = \sigma_Y/|\sigma_D| \, dY/Y.$$

In a long period of income rises, short term elasticities will tend to predominate, as prices are sticky on the downside
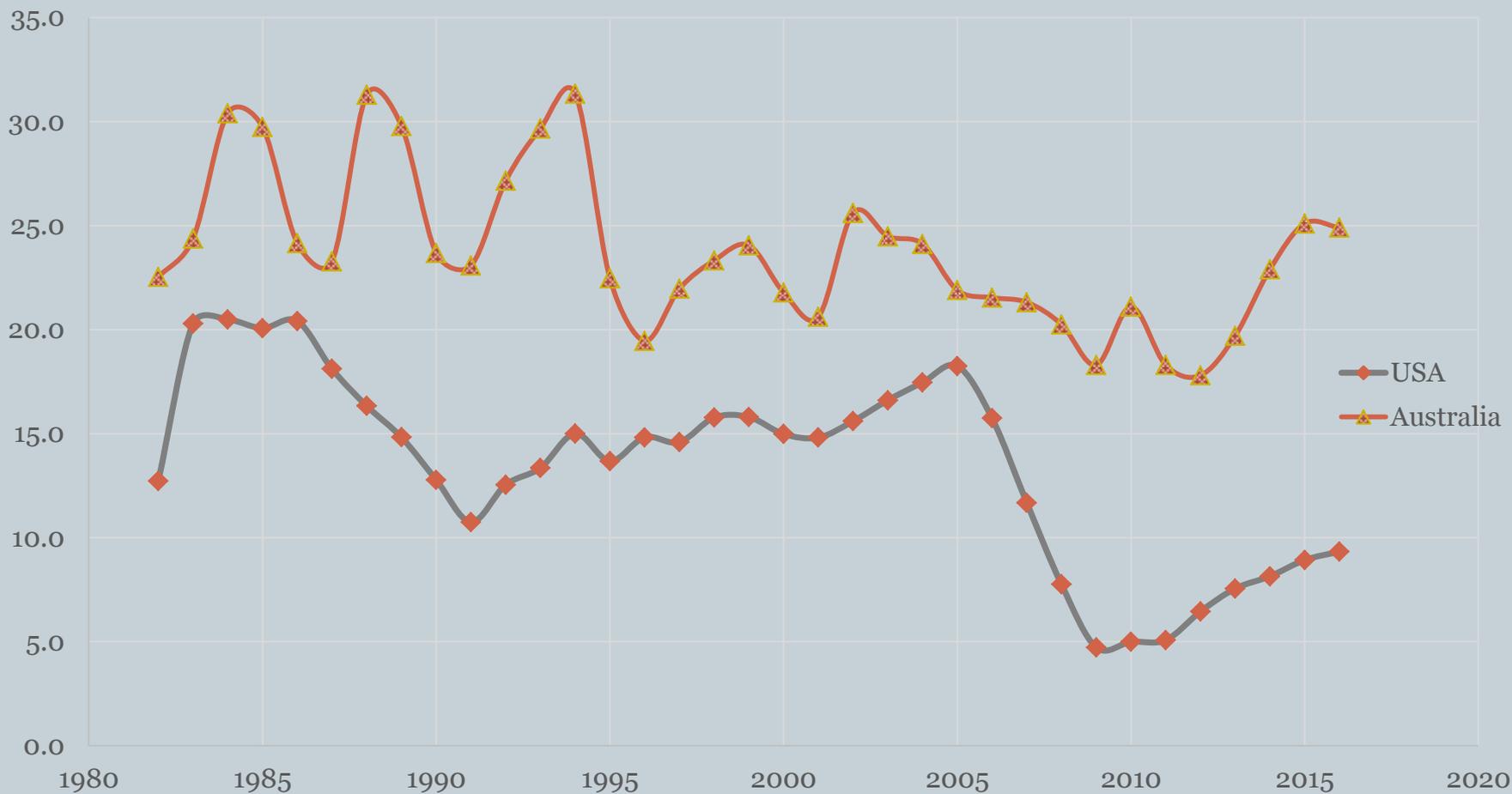
Supply response.
Construction starts per 000 hh Australia and USA

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Supply unrelated to price in Australia

- Australian res. building a basket case. Starts depend on business cycle (availability of business finance) – not on price

- Real estate price increase is actually land increase – increasing input costs to builders

- No spec building in Australia – built off plan and price is not intervening mechanism

- Owners increase alterations and additions as prices increase – but this is a wealth effect, not price.

Demand and price

- Rental market is quite price responsive – rents do not rise much relative to incomes as renters can withdraw

- Real estate – investors are actually attracted by rising prices. Home owners don't care or are pleased by it. Price response only by new entrants

- Massive price rises – prices rise by at least 80%, while real incomes lift by 28% over 10 yrs

In inner cities, house prices lift by factor of 5

Estimate of σ_D

- *log (HDIncome) = 1.71* log (House price)* plus other factors

(Abelson estimate for 1975-2003)

Price elasticity of demand must be at least

$$-0.5/1.71 = -0.175$$

(doubling of real estate prices, demand falls by only 17.5%)

Probably an overestimate.

Haves and Have nots

Two kinds of consumers with different demand

- $H_S(p) = r\, H_{D_1}(Y_1, p) + (1-r)\, H_{D_2}(Y_2, p)$ implies
- $(\sigma_S - \sigma_D)\, dp/p = \sigma_Y\, dY/Y$

Where $\sigma_D = (r\, H_{D_1}\sigma_{D_1} + (1-r)\, H_{D_2}\sigma_{D_2})\, /\, H$
is <u>housing-weighted mean demand elasticity</u>

$$\boldsymbol{dH_{D_1}/\, H_{D_1} = dp/p\, (\sigma_S + \sigma_{D_1} - \sigma_D)}$$

If demand elasticity is <u>greater in magnitude than mean</u>
housing share will be lost when incomes and prices rise

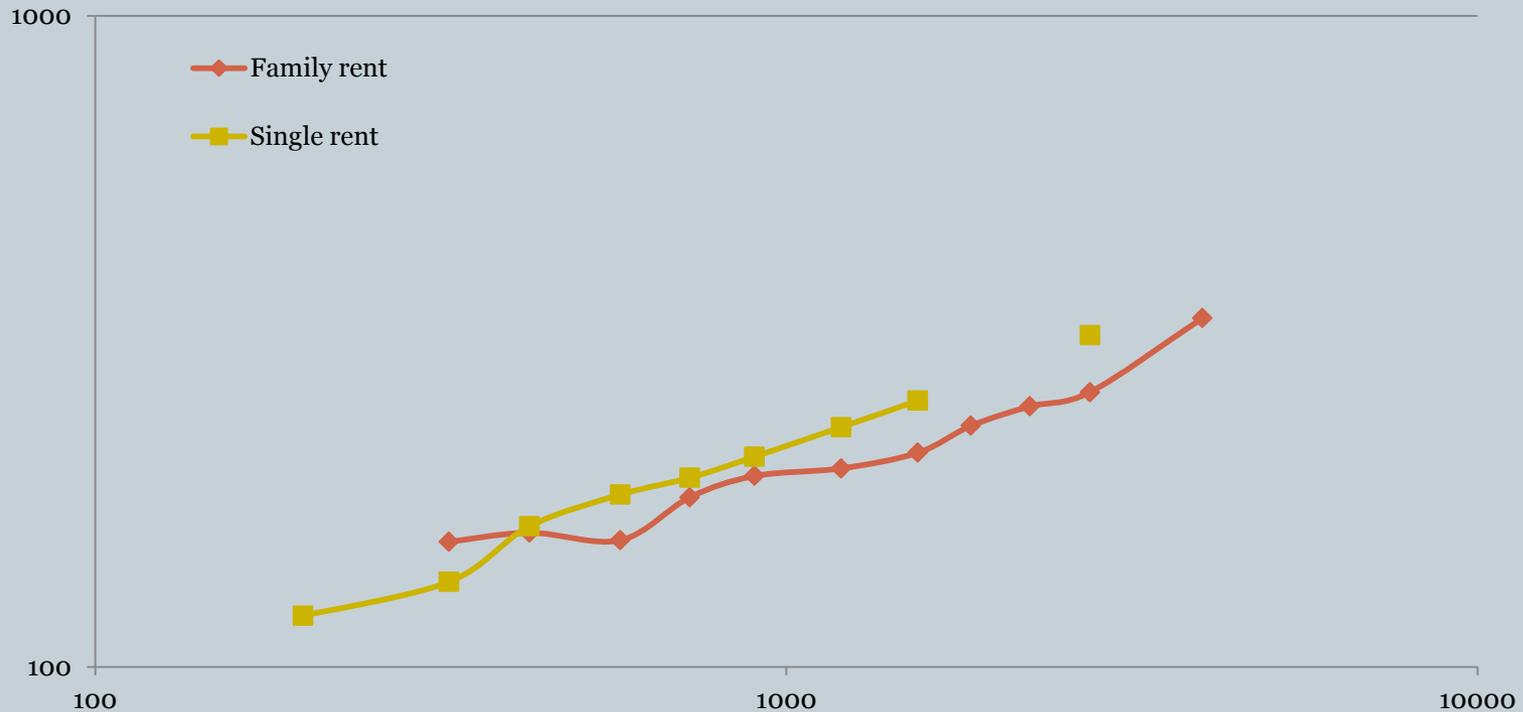# Slutsky equation and compensated demand

- $\sigma_D = \sigma_{D*} - k\sigma_Y$

  $\sigma_{D*}(Y^*, p)$ is the "compensated price elasticity" of the Marshallian demand function.

  k is proportion of income spent on good

- This says that the demand response becomes greater the higher the proportion of income spent on the good

- Housing Stress Matters

Income elasticity Melbourne

Low income earners spend more of their income on housing and are the "have nots"

Upper limit

- Declining affordability will eventually halt prise rises but we are a long way from that. More and more housing is forced into strong hands who are not very concerned about price rises.

- Eventually so much national resource is going into housing that incomes fall.

- Before that – finance caps come into play

- Expanding supply will not stop income bubbles – but it will lower the secular tendency of prices to rise, and will assist prices to fall during corrections

Policy

- Bubbles can be expected to continue with increasing severity, facilitating transfer of property to haves
- Governments should seek to improve the price responsiveness of real estate markets through taxation measures.
- Caps on finance may have to be reintroduced
- Supply measures will improve the secular situation
- Governments should NOT concern themselves with general affordability as it is the only current brake