Discussion of "Who faces Higher Prices: an Empirical Analysis based on Japanese Homescan Data"

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Homescan Data from Intage

- Data cover about 12000 married households from all over Japan who scan in barcodes of everything they buy except random weight items

- Demographics generally close to Census data for this population, though older households are slightly under-represented and families with 2 or more children are slightly over-represented

- In age range 35-54 wife more likely to be working (albeit part time)

- Household characteristics updated each year, so analysis of effects of time variation in income and age for same household is possible

Indexes used as variables

- Index of average price paid by each household relative to region's average price paid constructed as a Paasche index, then normalized to average to 1.

- Household's quantity indicator uses simple sum for all kinds of items

- Index of average store quality that reflects whether higher priced varieties or lower priced varieties are overweighed its sales mix

- Household quality index also measures price impact of variety mix

- Measure of percent of purchases during times of bargain prices

Unlike in US, average price paid rises with age

Figure 2: Life-Cycle Profile of the Price Index
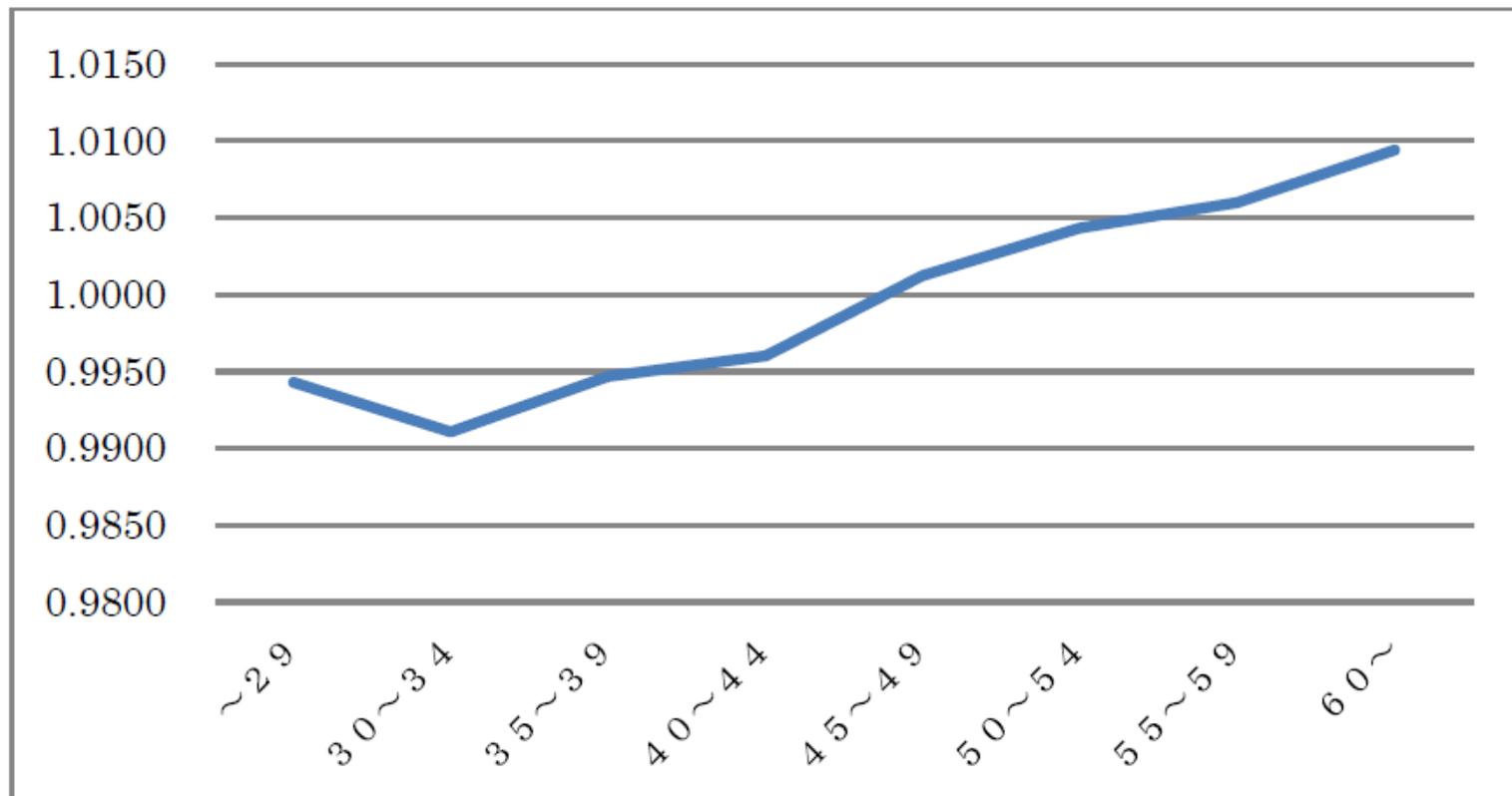
Other patterns that emerge

- Prices paid by household rise with income (though slope not high)
- Shopping behavior (more trips, more stores visited) lowers price paid in the cross-section, but effects not large
- Households that prefer "luxury" stores and "luxury" varieties pay higher prices for identical items
- Buying at sale (bargain) prices has large effect on average price paid
- Store choice (i.e. type of store) can partially explain higher prices paid by elderly

Questions and comments

- Is mass point at 0 for bargain purchases there because bargains are timed to occur when some households find it hard to get to the store?

- Can items that consumers regard as the same product have different JAN/Intage codes? Analysis of sensitivity to pooling of similar codes would be interesting.

- A bit more discussion of data reliability/collection process would be helpful

- Including *Percent purchased during bargains* as one of the explanatory variables muddies the interpretation of the other coefficients.

Suggestions for the author

- Use the Geary-Khamis system of spatial indexes

- Calculate GK indexes for age group-income group-zone cells and use them to analyze age and income effects

- Can also analyze store choice, and preference for quality in this framework by substituting in hypothetical prices

- Also decompose by commodity category – for which goods in particular do the elderly pay more

How to calculate Geary-Khamis indexes

- Denote household h's quantity share for item i by $\hat{q}_{hi} = q_{hi} / \sum_h q_{hi}$

- $\bar{p}_i(\mathbf{I}) = \sum_h (p_{hi}/I_h) \hat{q}_{hi}$

- $I_h(\bar{\mathbf{p}}) = \dfrac{\sum_i p_{hi} q_{hi}}{\sum_i \bar{p}_i q_{hi}}$

- $\bar{\hat{q}}_h = \sum_i \bar{p}_i q_{hi} / \sum_h \sum_i p_{hi} q_{hi} = \sum_i \bar{p}_i q_{hi} / \sum_h \sum_i \bar{p}_i q_{hi}$

- $I_G^* = \sum_{h \in G} \bar{\hat{q}}_h I_h$ which equals 1 if G is the whole population

Contribution to deviation from population mean

- "Contributions to change" c_{hi} for various categories of commodities can show whether particular kinds of goods that are causing the elderly to pay higher prices on average

- Let w_{hi} be item i's share in $\sum_i \bar{p}_i q_{hi}$

- $c_{hi} = w_{hi}(\frac{p_{hi}}{\bar{p}_i} - 1)$

- Can add up contributions over item categories and types of households, such as age groups