Recitation 8

Topics: midterm solutions (not posted online), price indices

1 Price Indices

1.1 Definitions

The formula for the Laspeyres price index is given by:

$$\frac{\sum_{i=1}^{n} P_{i,LastPeriod} Q_{i,FirstPeriod}}{\sum_{i=1}^{n} P_{i,FirstPeriod} Q_{i,FirstPeriod}}$$

The formula for the Paasche price index is given by:

$$\frac{\sum_{i=1}^{n} P_{i,LastPeriod} Q_{i,LastPeriod}}{\sum_{i=1}^{n} P_{i,FirstPeriod} Q_{i,LastPeriod}}$$

The difference is that the Laspeyres price index uses the basket of goods that the consumer was buying in the first period. The Paasche price index uses the basket of goods that the consumer was buying in the final period.

Both indices are subject to substitution bias. The weighting of the Laspeyres price index will favour goods that were bought in the first period even if people no longer buy them today. What type of goods are people likely to buy more in the past? Goods that used to be cheap but have become more expensive. Therefore, Laspeyres overweights goods that have become more expensive and thus the susbtitution bias in Laspeyres tends to mean it overestimates the change in prices.

The weighting of the Paasche index will favour goods that were bought in the last period even if people didn't used to buy them in the past. What type of goods are people likely to buy more today? Goods that have become cheaper. Therefore, Paasche overweights goods that have become cheaper and thus the substitution bias in Paasche tends to mean it underestimates the change in prices.

Since Laspeyres underweights the change and Paasche overweights the change, one way to get a measure of the change in prices is to combine the two indices. We can do this with the Fisher index:

$$\sqrt{Laspeyres * Paasche}$$

1.2 Example

See the spreadsheet for the computations.

We see that the price of bananas increases and the quantity purchased falls whilst the price of computers decreases and the quantity purchased increases. Laspeyres overweights bananas

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in its index so we can see that it suggests there has been a large increase in prices. Paasche overweights computers in its index so we can see that it suggests there has been a large decrease in prices.