New Zealand Consumers Price Index:
Retrospective superlative index and impact of alternative housing weights
Overview

This paper presents:

• results of a retrospective superlative CPI index between the June 2002 and 2006 quarters
• a retrospective superlative index with alternative housing weights
• analytical all groups with alternative housing weights
• reaction from users to the superlative index and alternative housing weights.
The indexes calculated

- Laspeyres – base weights in an earlier period
- Paasche – base weights in a later period
- Fisher – the geometric mean of the Laspeyres and Paasche index
- Tornqvist-Theil and Walsh also calculated.
Why calculate a superlative index?

- Households tend to substitute towards goods and services showing lower relative price change
  - Laspeyres index may overstate price change
- Comparing between the Laspeyres and Fisher indexes gives an indication of the effect of substitution on the fixed weight CPI
- Publication of results recommended by the recent CPI Revision Advisory Committee.
Summary of results

All groups CPI (June 2002 to June 2006 quarters)

• Laspeyres increased 11.1 percent
• Fisher increased 9.9 percent

Annual average increase:
• Laspeyres - 2.7 percent
• Fisher - 2.4 percent
Analytical Seasonally Unadjusted CPI Indexes

Quarterly indexes

Base: June 2002 quarter (=1000)
## Consumers Price Index

*Analytical seasonally unadjusted all groups – index numbers*

Base: June 2002 quarter (=1000)

<table>
<thead>
<tr>
<th>June quarter</th>
<th>Laspeyres</th>
<th>Paasche</th>
<th>Fisher</th>
<th>Index points difference (Laspeyres minus Fisher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>0</td>
</tr>
<tr>
<td>2003</td>
<td>1015</td>
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<td>1012</td>
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<td>2005</td>
<td>1068</td>
<td>1049</td>
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<tr>
<td>2006</td>
<td>1111</td>
<td>1088</td>
<td>1099</td>
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</tr>
</tbody>
</table>
Results reflect:

- substitution by households
- volume adjustments beyond the 2003/04 weight reference period
- changes and improvements in the methods and data sources used to derive the 2006 expenditure weights.
Groups level differences

- Communications group, 21 index points difference
- Recreation and culture group, 32 index points difference
  - Audio-visual equipment class
- Housing and household utilities group, 11 index points difference
  - Purchase of housing class (weight in June 2002 quarter 8.47 percent, 4.66 in June 2006 quarter).
The acquisitions of new housing

June 2006 quarter weight reflects:

• acquisition of newly constructed dwellings for occupation
• alterations and additions to owner-occupied dwellings
• demolition of established owner-occupied dwellings
• sale of established owner-occupied dwellings to landlords, small businesses, developers or government
• acquisition of established dwellings (for owner-occupation) from landlords, small businesses, developers or government.
Alternative weights for housing

• 2002 method did not reflect the fall in the home ownership rate

• The original 2002 weights were replaced with new weights based on the 2006 method.
The impact of alternative housing weights on the CPI

• To measure the impact of housing weight, the 2006 housing weights method was used to construct the 2002 weights.

• Purchase and construction of new dwellings:
  • initially 8.48 percent
  • alternative weight 4.60 percent.

• Rented dwellings:
  • initially 5.48 percent
  • alternative weight 6.62 percent.
Analytical Seasonally Unadjusted CPI Indexes with Alternative Housing Weights

Quarterly indexes

Base: June 2002 quarter (=1000)
Use of the alternative 2002 housing weights substantially reduced the gap between the Fisher and Laspeyres.

## Consumers Price Index

Analytical seasonally unadjusted all groups with alternative housing weights – index numbers

Base: June 2002 quarter (=1000)

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<tr>
<th>June quarter</th>
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</table>
Differences

- Over the four years there were 12 index points difference

- The difference falls to 7 index points when methodology change to housing accounted for

- The remaining 7 index points reflects substitution and remaining methodological changes
  - Housing 1 down from 11

- The difference between the Laspeyres and Fisher is broadly consistent with international studies.
Housing and rental markets

• Recent experiences in purchase of new housing prices and rentals
• Between June 2002 quarter and June 2006 quarter, prices for the purchase of new housing rose 30.0 percent,
• Rents only rose 11.7 over the same period.
Consumers Price Index
Purchase and construction of new dwellings, and rented dwellings
Annual percentage change

Percent

Purchase and construction of new dwellings
Rented dwellings
Implications for key users

- The Reserve Bank of New Zealand (RBNZ) is charged with maintaining price stability.
- Price stability is defined as keeping the annual change in the CPI between 1 and 3 percent.
- Alternative weights for housing do not impact on the interpretation by the RBNZ.
Consumers Price Index All Groups

Quarterly indexes

Base: June 1999 quarter (=1000)
<table>
<thead>
<tr>
<th>June quarter</th>
<th>All groups (published)</th>
<th>All groups (with alternative housing weights)</th>
<th>Index points difference</th>
</tr>
</thead>
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<td>2006</td>
<td>1202</td>
<td>1194</td>
<td>8</td>
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</table>
Consumers Price Index Housing Group

Quarterly indexes

Base: June 1999 quarter (=1000)
Results from alternative housing weights

• If the 2006 method for calculating the housing weights had been used in 2002 the CPI would have tracked 8 index points lower.

• The effect on the housing group is larger. There are 22 index points between the two series.

• Differences in annual movements at the all groups level were small.
**Consumers Price Index**

*Housing group and housing group with alternative weights – index numbers*

Base: June 1999 quarter (=1000)

<table>
<thead>
<tr>
<th>June quarter</th>
<th>Housing group (published)</th>
<th>Housing group (with alternative weights)</th>
<th>Index points difference</th>
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<tr>
<td>2006</td>
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</tbody>
</table>
Related upcoming work

- A retrospective superlative index between June 2006 and June 2008.
- Use of transaction data to update lower-level weights between reweights.
- Retail trade survey deflators.
Reaction from users

- Signalled by CPI RAC
- Large interest in the fall in weight for housing, and CPI calculated using alternative housing weights
- Well received at NZ Association of Economists Conference
- Openness and transparency appreciated by users.