

## ***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

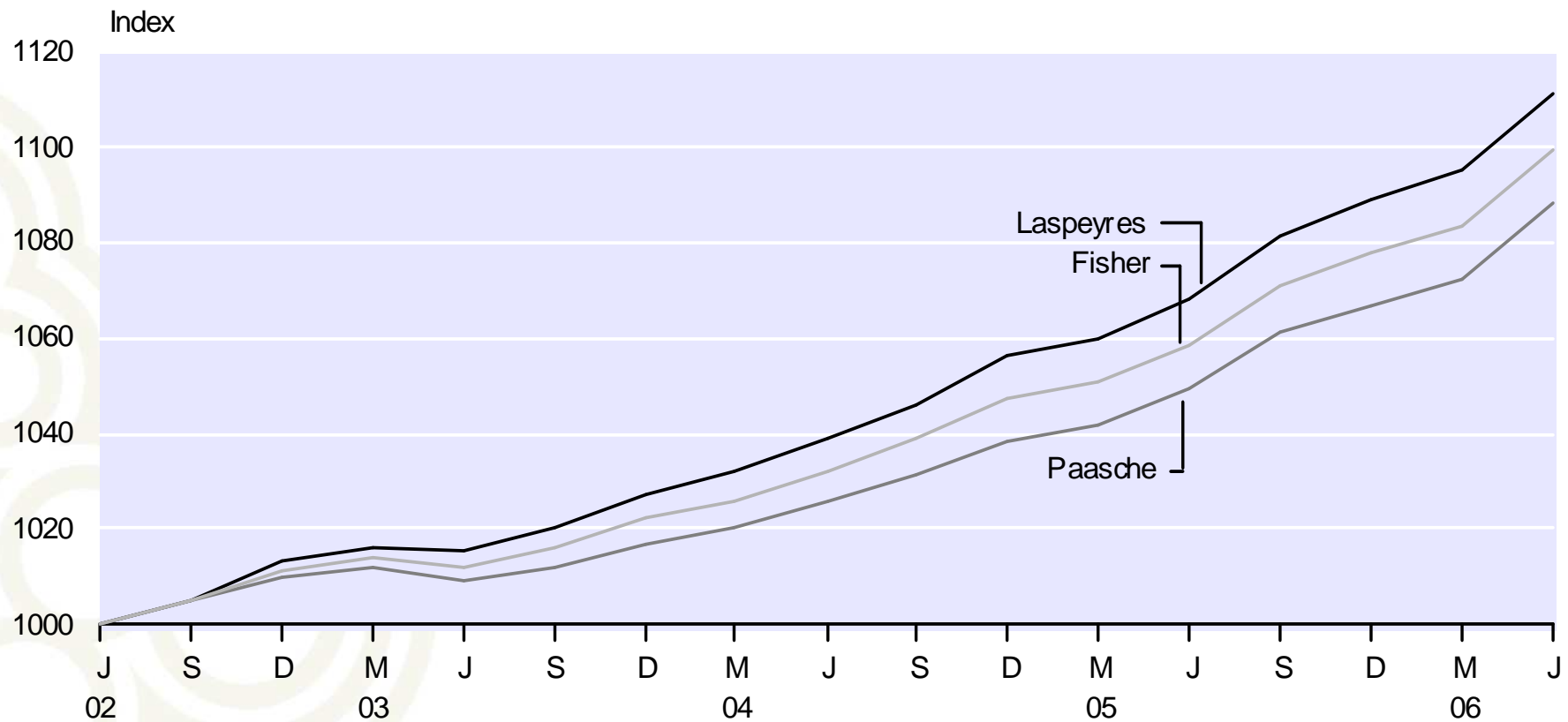
Annual average increase:

- 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)

June quarter	Laspeyres	Paasche	Fisher	Index points difference (Laspeyres minus Fisher)
2002	1000	1000	1000	0
2003	1015	1009	1012	3
2004	1039	1026	1032	7
2005	1068	1049	1058	10
2006	1111	1088	1099	12

## 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.

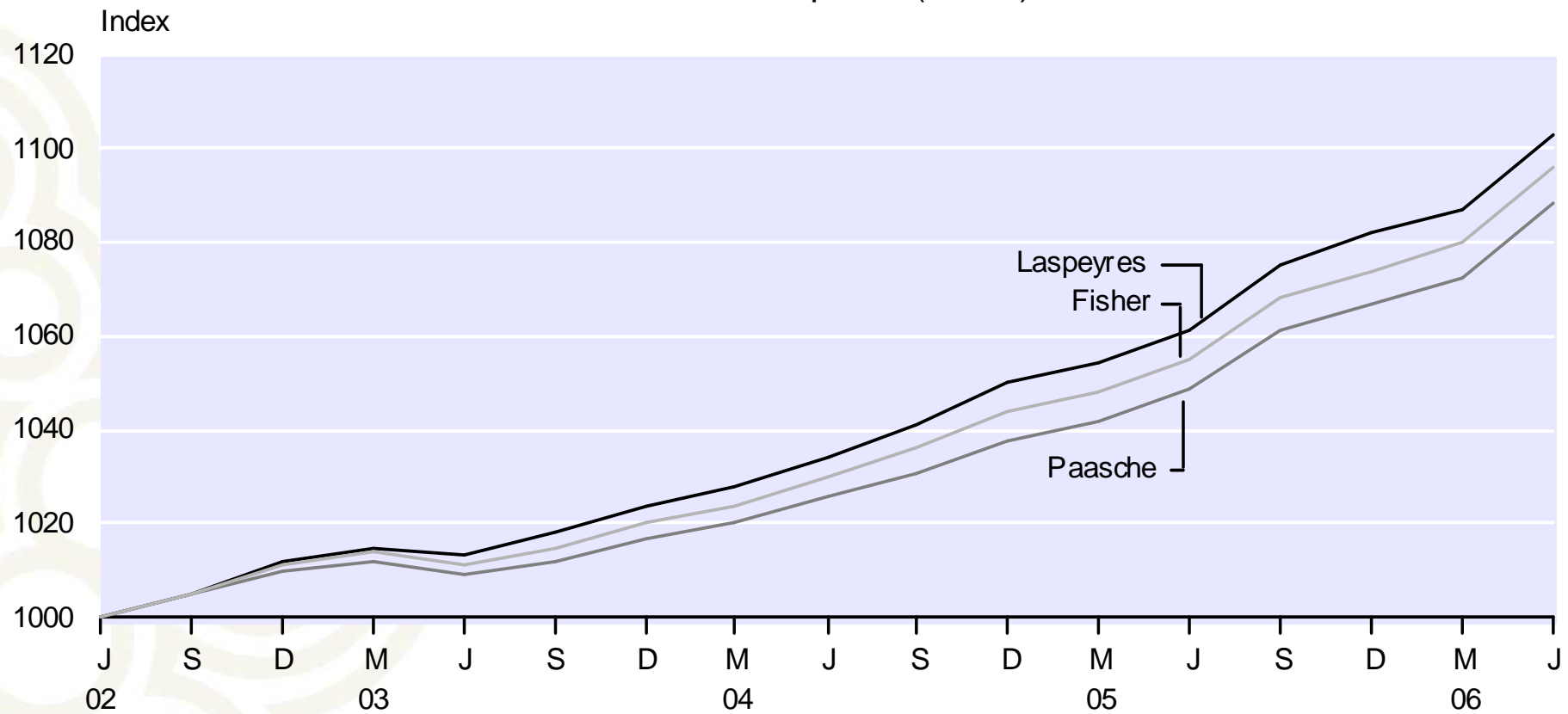
## The impact of alternative housing weights on the CPI

- 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)



## Consumers Price Index

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

Base: June 2002 quarter (=1000)

June quarter	Laspeyres	Paasche	Fisher	Index points difference (Laspeyres minus Fisher)
2002	1000	1000	1000	0
2003	1013	1009	1011	2
2004	1034	1026	1030	4
2005	1061	1049	1055	6
2006	1103	1088	1096	7

Use of the alternative 2002 housing weights substantially reduced the gap between the Fisher and Laspeyres.

## 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.

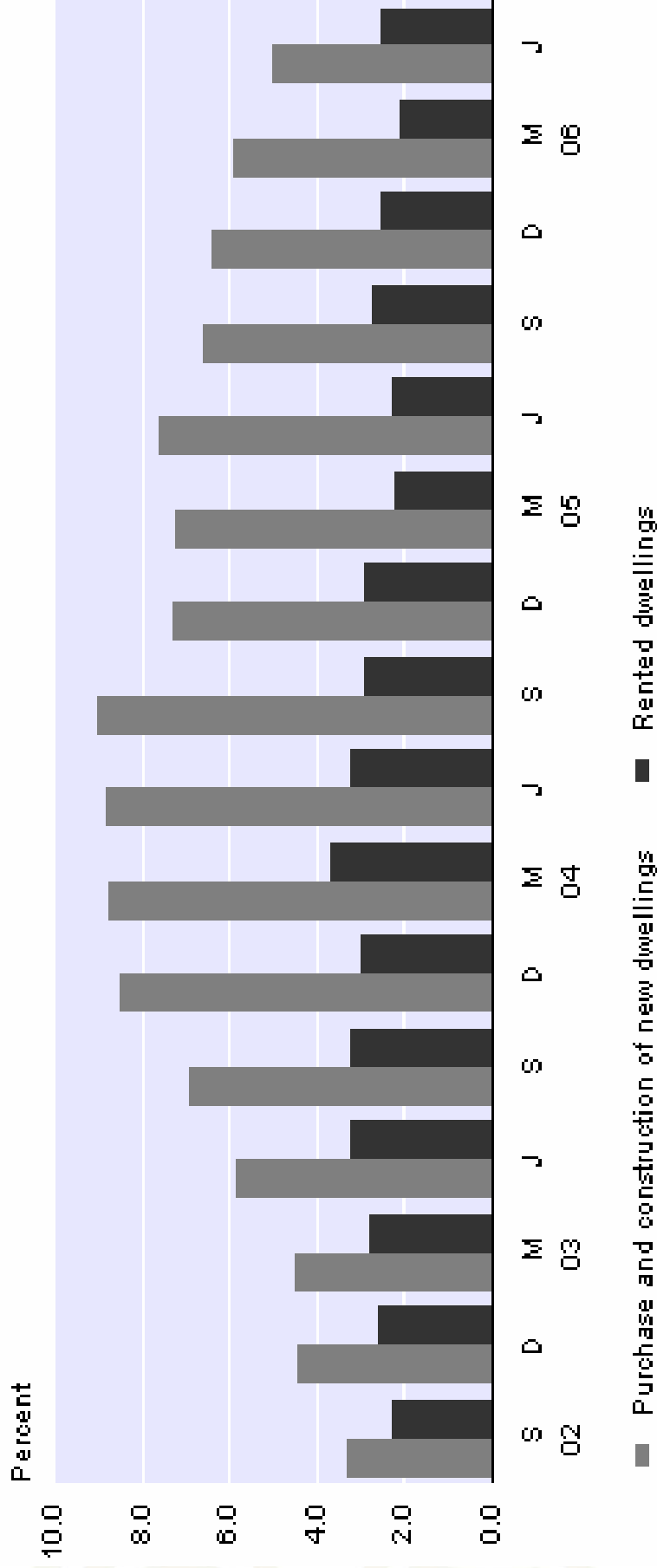
## Housing and rental markets

- 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



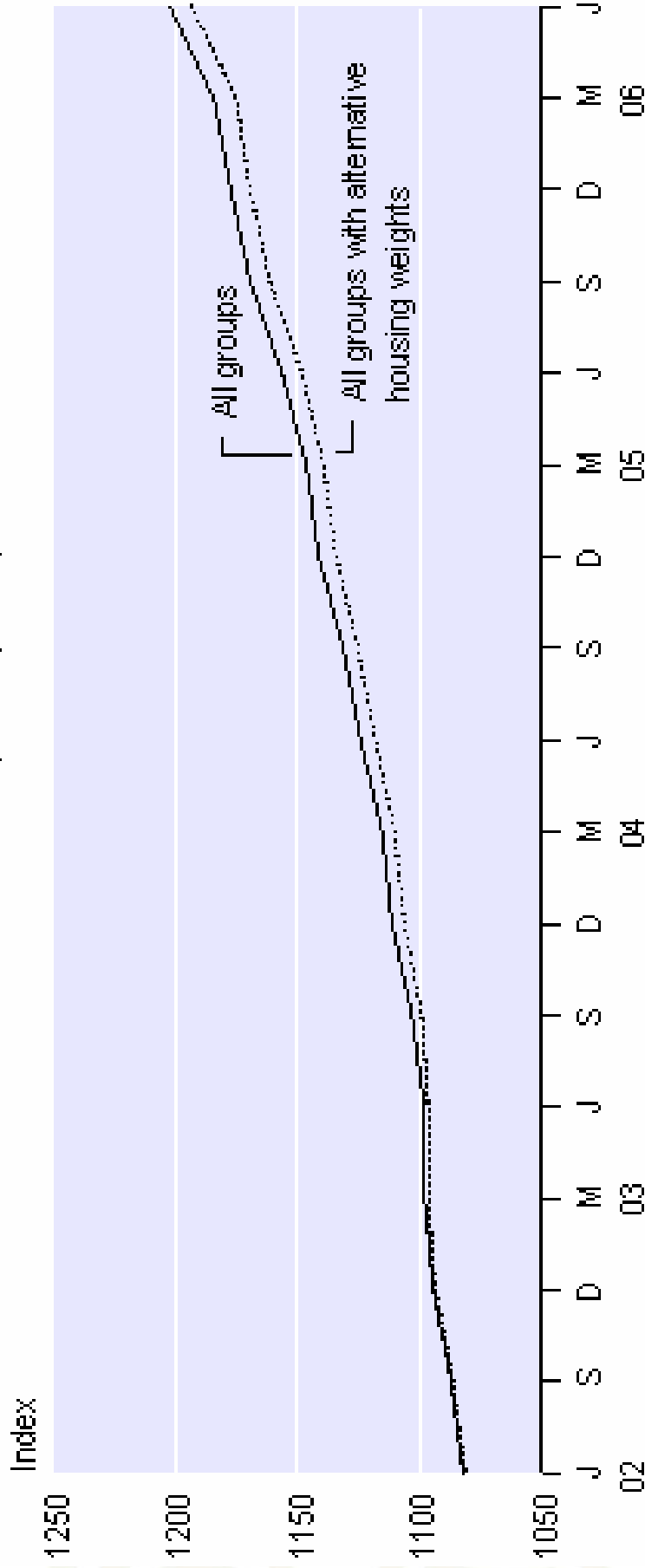
## Implications for key users

- 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 does not impact on the interpretation by the RBNZ

## Consumers Price Index All Groups

### Quarterly indexes

Base: June 1999 quarter (=1000)



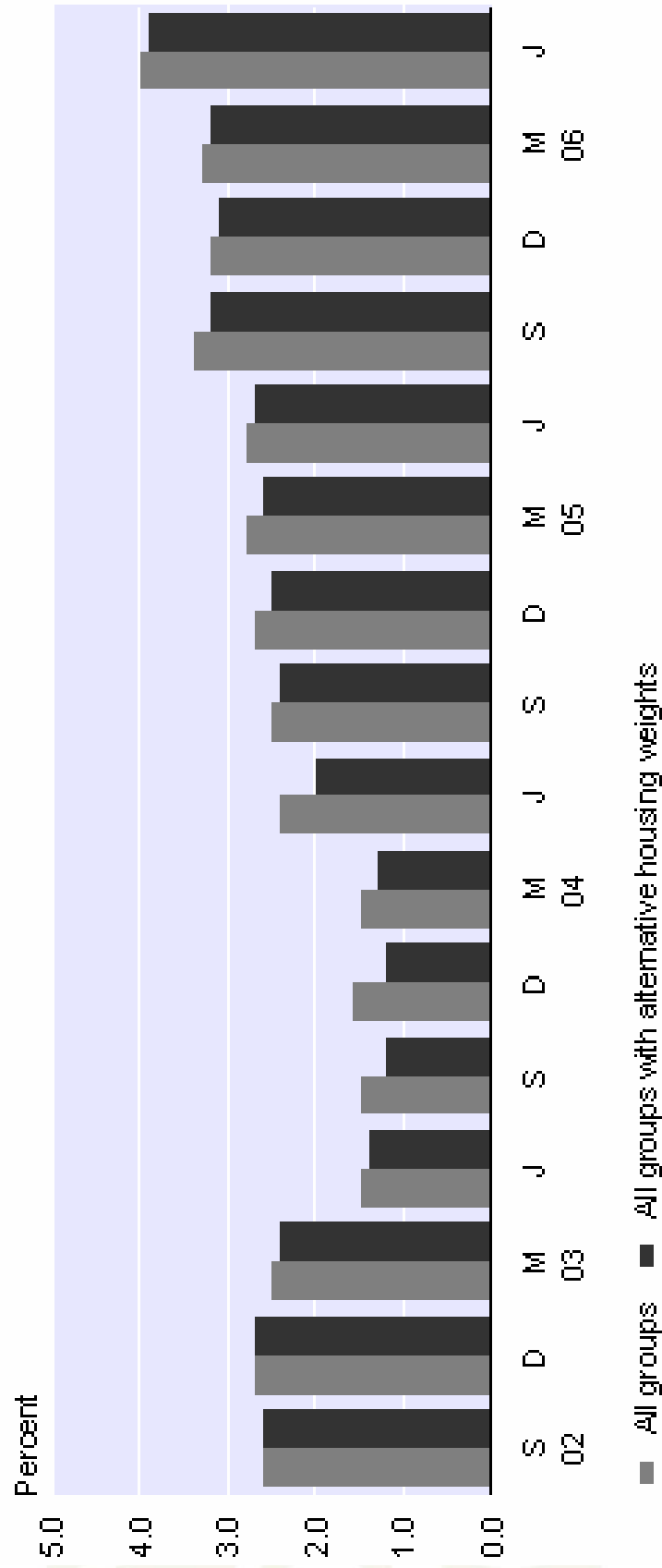
## Consumers Price Index

*All groups and all groups with alternative housing weights – index numbers*

Base: June 1999 quarter (=1000)

June quarter	All groups (published)	All groups (with alternative housing weights)	Index points difference
2002	1082	1082	0
2003	1098	1097	1
2004	1124	1119	5
2005	1156	1149	7
2006	1202	1194	8

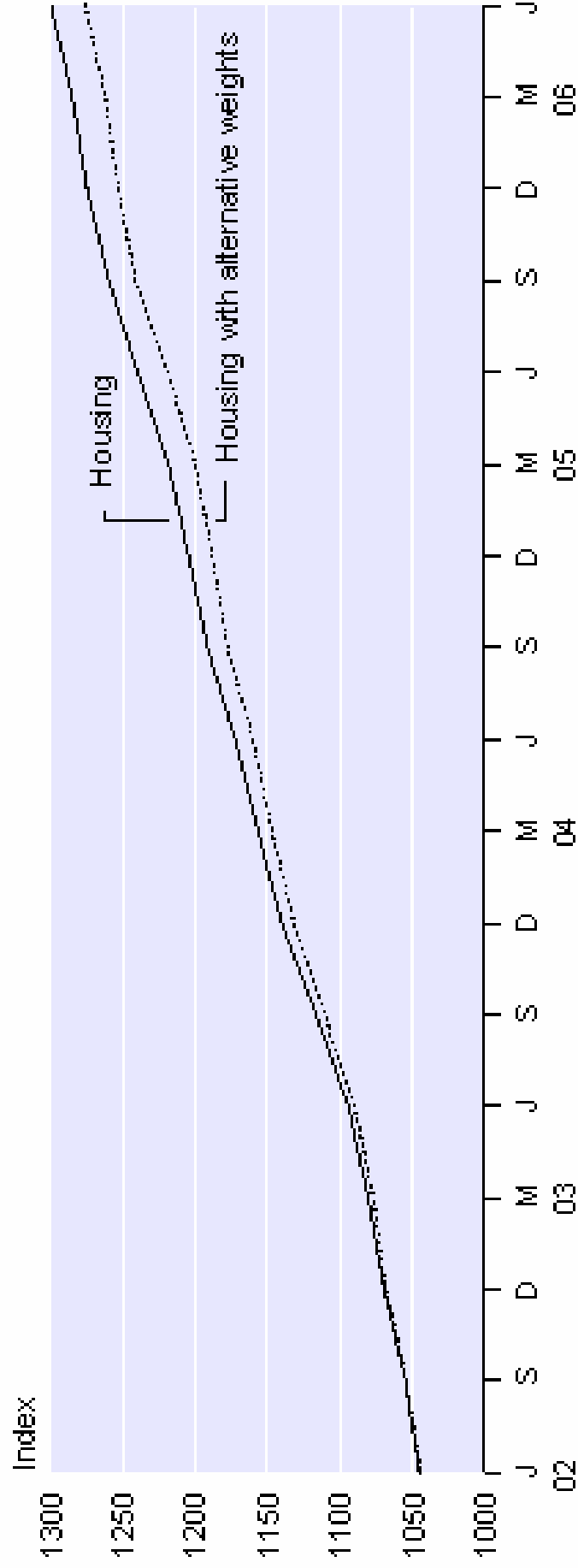
**Consumers Price Index**  
*All groups*  
 Annual percentage change



## 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)

June quarter	Housing group (published)	Housing group (with alternative weights)	Index points difference
2002	1045	1045	0
2003	1094	1091	3
2004	1172	1161	11
2005	1239	1220	19
2006	1299	1277	22



## 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.