

Revision and Rebasing of the Consumer Price Index (Base Year 2004 = 100)

*By
Miss Ng Mei Khee and Mrs Phang Ee Li
Consumer Prices Section
Singapore Department of Statistics*

Introduction

The Singapore Department of Statistics has completed the revision and rebasing of the Consumer Price Index (CPI). The new CPI series with base year 2004=100 was compiled based on the results of the eighth Household Expenditure Survey (HES) conducted between October 2002 and September 2003.

Coverage of CPI

The CPI measures the change in the price of a fixed basket of goods and services commonly purchased by the majority of households over time. The types and specifications of the goods and services in the CPI basket as well as their quantities are kept constant at the base period. This ensures that any changes in the index reflect solely price changes over time.

Non-consumption expenditure such as transfers, income and property taxes, as well as purchase of house, shares or other financial assets are outside the scope of CPI.

Source Data for Updating CPI Weighting Pattern

The weighting pattern of the CPI shows the relative importance of each item in the basket of goods and services. Consumers change their consumption patterns in response to a myriad of factors, including relative price changes, changes in real income and consumer preferences, availability of new items and outlets, etc. To reflect these changes, the CPI weighting pattern is updated once every five years based on the results of the quinquennial HES. The HES collects up-to-date data on the detailed consumption expenditure of private households.

Of the 6,069 households with two or more persons who were covered in the 2002/03 HES, the records of some 5,460 households were used to derive the weighting pattern for the 2004-based CPI. These households constituted the middle 90 per cent of all households by expenditure distribution. The remaining 10 per cent of the households in the two extreme ends were excluded as their consumption patterns differed significantly from the general households.

The 2004-Based CPI Weighting Pattern

The 2004-based CPI weighting pattern was compiled using the 2002/03 HES expenditure values and further updated to 2004 on account of price changes. Chart 1 shows the 1997/98-based and the 2004-based CPI weighting pattern.

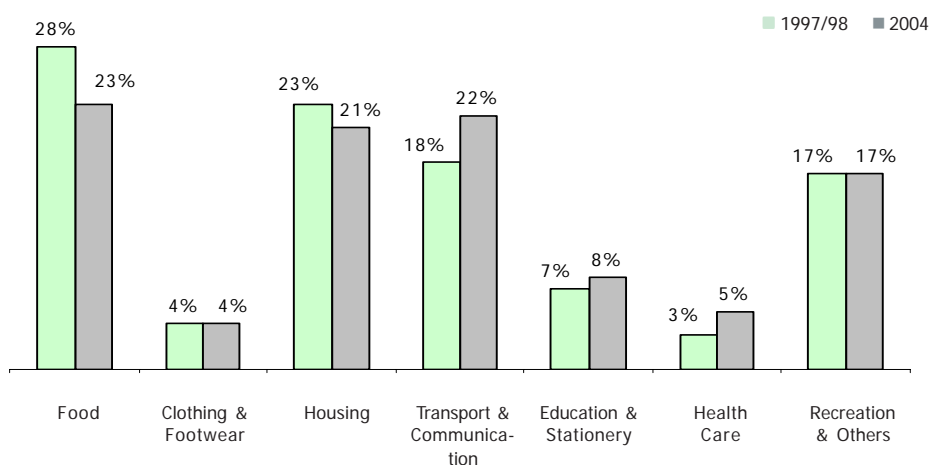
There were significant changes in the weighting pattern. The weight for food fell by 5 percentage points, from 28 per cent in 1998 to 23 per cent in 2004. Nevertheless, it still accounted for the largest proportion of the total household expenditure.

Transport and communication overtook housing to become the second most important group, with its

weight rising from 18 per cent in 1998 to 22 per cent in 2004. The higher share of transport and communication was due to greater spending on cars, petrol, MRT, bus and taxi fares (partly due to fare increases during the same period), mobile phone sets and call charges as well as internet subscriptions.

Housing ranked third, accounting for 21 per cent in 2004 compared with 23 per cent in 1998. The decline in its percentage share was attributed to lower expenditure on owner-occupied housing and household durables. Despite a significant shift to better housing among households, expenditure on owner-occupied housing declined as a result of lower imputed rentals for private housing. Prices of most consumer durables dropped, averaging some 8 per cent during 1998–2004.

CHART 1 WEIGHTING PATTERN BY MAIN GROUP, 1998–2004



Households spent relatively more on health care and education and stationery in 2004. The weight for health care rose by 2 percentage points to 5 per cent on account of greater spending on hospitalisation fees, specialized medical treatment and proprietary medicines. Specifically, the increased expenditure on specialised medical treatment reflected higher charges, as well as the rise in the outpatient attendance at public specialist outpatient clinics and the surge in the number of day surgeries during 1998–2003.

Education and stationery accounted for 8 per cent of the total share in 2004, slightly higher than the 7 per cent registered in 1998. The rise reflected an overall increase in the student enrolment and higher school fees at local educational institutions during the same period.

Recreation and others¹, and clothing and footwear retained their shares at 17 per cent and 4 per cent respectively in the 2004-based CPI basket.

New Items/Outlets Included in the CPI Basket

To reflect current consumption pattern, the CPI basket of goods and services and the sample of outlets have also been reviewed and updated. Items with relatively high weights and are representative as price indicators for similar items in the same category are included. For those items which are not

selected, their weights have been distributed to the selected akin items accordingly.

For the 2004-based CPI basket, the number of items selected for pricing has been expanded to 5,170, from 4,940 in the 1997/98-based CPI basket. New items in the CPI basket include health screening packages, aromatherapy products, slimming products, spa treatment, medical insurance packages, festive goodies, electronic games, Personal Digital Assistant (PDA) etc. Correspondingly, obsolete items such as pager, car cassette player and rental of video tapes have been excluded.

The outlets selected for regular pricing are those commonly patronised by shoppers. The total number of outlets selected for regular pricing has been increased to 3,000 as compared with 2,410 for the 1997/98-based CPI. Some of the new outlets include private specialist clinics, cyber cafes, pubs and day rehabilitation centres.

Methodological Improvements/Issues

Use of Geometric Mean Formula

For the 2004-based CPI, DOS has adopted the geometric mean (GM) formula in the computation of elementary aggregate price indices, wherever applicable, in place of the arithmetic mean (AM). For higher levels of aggregation, the current

¹ Recreation and others include recreation and entertainment, alcoholic drinks and tobacco, personal care, domestic services, holiday expenses, etc.

Laspeyres AM formula is retained. The GM formula is one of the latest recommendations adopted by the 17th International Conference of Labour Statisticians (ICLS) in 2003.

The GM formula is mainly applied to those elementary items without specific weights. As this methodology takes into account the substitution effect between outlets and items for a particular good/service, it enhances the accuracy of the CPI. Countries such as the United States, Canada and Australia have also used this approach to combine selected individual price quotations at lower levels of aggregation. The adoption of the GM formula brings DOS in line with the latest international best-practice guidelines on the compilation of CPI.

Treatment of Owner-Occupied Accommodation in the CPI

The treatment of owner-occupied accommodation is one of the most difficult issues faced by compilers of CPI. The purchase of a house is generally regarded as a capital investment rather than a consumption expenditure. As such, it would be more appropriate to measure the cost to the homeowner of utilising the flow of services provided by their homes. That is, the opportunity cost of occupying a dwelling instead of renting out.

Since 1977/78, DOS has adopted the internationally accepted rental equivalence method for the computation of owner-occupied accommodation index in the housing group. This method measures the shelter cost in terms of the expected rental the

owner would have to pay if he were a tenant of the premise. This value is termed as imputed rental. In Singapore's CPI, the Annual Assessed Value (AAV) which is defined as the annual equivalent of the gross rent at which the house is let out to the occupier, is used to track the imputed rental over time.

Linking of Historical Series

To facilitate comparison of price changes over time, the historical CPI data series were linked to the 2004-based CPI data series at the new reference period (year 2004), ie a link factor was derived independently for each index series by taking the new index for the reference period (year 2004) divided by the corresponding index based on the 1997/98 base period. This allows for the recompilation of continuous historical data series associated with the new reference period while preserving the growth rates associated with previous base periods. However, the preservation of the growth rates for the component data series would result in a loss of additivity prior to the link period, that is, the weighted components of the linked data series prior to the link period would not necessarily add up to the total.

Comparison between 1997/98-Based and 2004-Based CPI

A comparison of the CPI for January 2005 based on the 2004 weighting pattern with that based on the 1997/98 CPI basket is presented in Table 1.

TABLE 1 PER CENT CHANGE IN CPI, JANUARY 2005
(Over Same Period of Previous Year)

| Main Group | 1997/98-Based | 2004-Based |
|---------------------------|---------------|------------|
| All Items | 0.9 | 0.4 |
| Food | 1.7 | 1.6 |
| <i>Non-Cooked Food</i> | 2.5 | 2.8 |
| <i>Cooked Food</i> | 1.1 | 0.7 |
| Clothing & Footwear | -0.2 | -0.9 |
| Housing | 0.8 | 0.6 |
| Transport & Communication | -0.1 | -1.8 |
| <i>Transport</i> | -0.1 | -2.2 |
| <i>Communication</i> | -0.2 | -0.3 |
| Education & Stationery | 2.6 | 2.4 |
| Health Care | 1.1 | 0.4 |
| Recreation & Others | 0.1 | 0.6 |

Compared with a year ago, the 2004-based CPI for January 2005 rose by 0.4 per cent, lower than the corresponding 0.9 per cent for the 1997/98-based CPI. The lower growth rate in the 2004-based CPI is the result of significant changes in compositions of items between and within the expenditure groups and the associated price changes. Prices of many new items such as info-communication products and services, clothing and health care services experienced significant price decreases during the period.

Conclusion

The 2004-based CPI series reflects the updated consumption pattern of private households, thus enhancing the relevance of the CPI as a measurement of consumer price changes. This new CPI series, commencing from January 2004, has been released in March 2005. The linked historical series are also made available to facilitate comparisons.

More details on the rebasing of the CPI are available in the Information Paper on "Revision and Rebasing of the Consumer Price Index (Base Year 2004 = 100)" posted at the Department's website at

<http://www.singstat.gov.sg/papers/op/ip-e28.pdf>.