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# Using Engel curves to estimate CPI bias in a small, open, inflation-targeting economy

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## Abstract

The Consumer Price Index (CPI) bias for New Zealand is calculated by estimating the food Engel curves for demographically similar households with the same level of CPI-deflated incomes at different points in time. For the 17 years from 1984 to 2001 the bias in the New Zealand CPI as a cost-of-living index averaged over 1% annually. This bias is similar to estimates for the US when the same method is used over a similar era. Thus, the claim of some statistical agencies that bias in their own CPI is less than the widely discussed bias in the US may not be supported. The estimated CPI bias justifies the initial choice of inflation target for the Reserve Bank of New Zealand but not the recent raising of the target.

# Notes

[1] Examples include Australia (Edwards, 1997), France (Lequiller, 1997) and the United Kingdom (Fenwick, 1997). Similarly, the New Zealand Government Statistician claimed that ‘The CPI in the United States is not updated as frequently as in New Zealand. … I do not believe that the level of bias estimated in the Boskin report for the US. CPI is relevant to New Zealand’ (Morris, 1997, p. 50). Similarly, the Reserve Bank of New Zealand note ‘Statistics New Zealand appears to be more thorough than many foreign statistical bureaus in trying to account for these biases’ (Ebert, 1994, p. 25).

[2] A chronology of New Zealand's financial market reforms is given by Boyle and Eckhold (1997).

[3] The Boskin Commission estimated commodity substitution bias of 0.15 percentage points out of a total annual bias of 1.1 points. This was comparable to the outlet bias of 0.1 points and smaller than the formula bias of 0.25 points and the bias due to quality change and new products of 0.6 points.

[4] Here the CPI failed to capture rising costs of housing services in a credit-financed house price boom.

[5] This provides the basis of the Almost Ideal Demand System (AIDS) of Deaton and Muellbauer (1980). Results when a quadratic in log income is used are also described in the following.

[6] New Zealand does not have a spatial price index, so a model which relies on cross-sectional variation in relative food prices could not be utilized.

[7] These years are henceforth referred to by the latter year, i.e. 1983/1984 becomes 1984. The 2001 survey was on a June year basis while all previous surveys were on a March year basis. The survey has only been carried out twice since 2001 and micro data from these years are not yet available.

[8] The Gross Domestic Product (GDP) estimates are used rather than GNP, with real per capita GDP averaging $23 500 between 1984 and 2001 (in 1995 prices) and the GDP deflator being 422.6 in 1995 and 40.5 in 1970. Combining this information with an exchange rate in 1970 of US$1.12 per NZ$, gives an estimate of X = 2500.