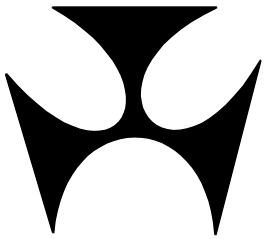
RESERVE BANK OF AUSTRALIA

SUBMISSION TO THE 13TH SERIES REVIEW OF THE CONSUMER PRICE INDEX



JUNE 1997

1. Overview

The Reserve Bank welcomes the opportunity to comment on desirable changes to the construction of the Australian CPI. This task is made easier by the quality and comprehensiveness of the Information Paper prepared by the ABS for the Review (ABS, 1997a).

The CPI has long played several important roles in the community: as a general measure of inflation, as an input to the income adjustment process, and for general indexation of public and private-sector contracts. The 12th series CPI review, conducted in 1992, concluded that although the range of uses for the CPI had been growing steadily, its principal purpose remained as an input to the income adjustment process, with its use as a general measure of inflation running second.

This submission argues that while the other uses of the CPI remain, the importance of the CPI as a general measure of inflation has continued to increase since 1992. Indeed, the use of the CPI for other purposes – such as income adjustment and the indexation of contracts – derives primarily from the fact that parties to industrial negotiations and contracts want a general measure of the way prices of goods and services are rising.

2. Principal Purpose of the CPI

The CPI has been designed to measure the general level of prices faced by households. As outlined in the ABS Information Paper, it has three main purposes:

- as a general measure of *inflation;*
- as an input to the *income adjustment* process; and
- for general indexation of public and private-sector *contracts.*

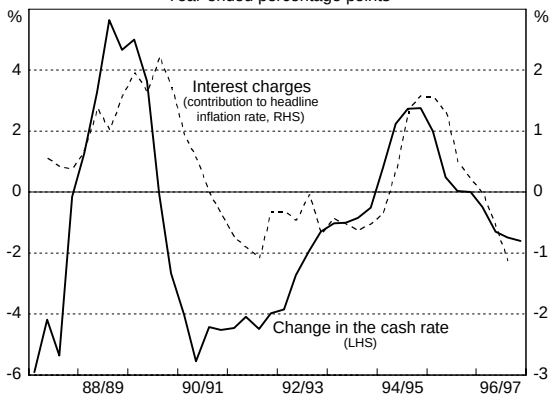
2.1 A general measure of inflation

The importance of having a good measure of inflation has increased since 1993, when the Bank introduced an inflation target. This target, which was subsequently endorsed by successive Federal governments, heightens the need for not only policy makers, but also financial markets, businesses, organised labour and the general public to have a good measure of inflation trends.

Unfortunately, the current CPI is inadequate for this purpose. The main reason is the way it treats interest charges, particularly mortgage interest charges. There are both conceptual and practical problems with the present treatment. The conceptual issue is that, in contrast to other components of the CPI, interest rates do not represent the current price of a good or service. Instead, they represent a *relative* price, namely that of consumption in the future as opposed to the present. It is therefore inappropriate to include interest rates in a measure of the general rate of inflation of goods and services prices.

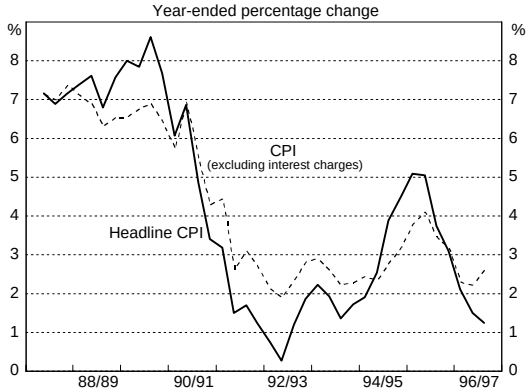
The practical problem is that the interest charges as measured tend to distort the signal offered by the CPI of inflationary trends, by incorporating the policy responses to those trends. At a time when inflationary pressures are increasing, interest rates are being increased to combat those pressures. The interest components of the CPI also rise, adding a short-term impulse to inflation as measured by the headline (or total) CPI. When inflation is falling, interest rates decline, imparting an additional downward impulse to measured inflation. These factors increase the measured variability of inflation over the course of the business cycle (Graphs 1 and 2). To the extent that these distorted signals affect wage and price setting, macroeconomic stability suffers.

Graph 1
Interest Charges and the Cash Rate
Year-ended percentage points

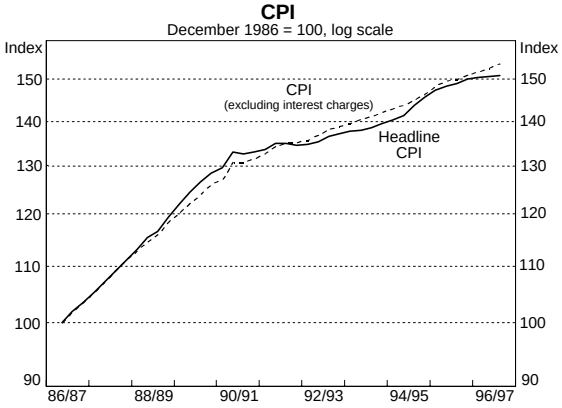


Nor is this problem fully alleviated by the policy authorities explicitly using (and targeting) a measure of underlying inflation, such as that designed in 1988 by the Treasury and now published by the ABS. In the Information Paper on An Analytical Framework for Price Indexes In Australia (ABS, 1997b), the ABS expresses the view that alternative price indexes can be developed which have more desirable statistical properties and clearer economic meaning than could be achieved by changes to the CPI. But the fact is that it is very difficult for underlying measures of inflation to gain widespread use and acceptance in a competition with the CPI given the latter's long history and recognition.

Graph 2
CPI
Year-ended percentage change



Graph 3
CPI
December 1986 = 100, log scale



Excluding interest charges would in no way distort the outcome over the long run. Over a run of years, the increase in the price level as measured by the headline CPI is very similar to that measured by the CPI excluding interest charges (Graph 3, Table 1). It is only over the short term that inflation as measured by the headline CPI differs significantly from inflation measured by the CPI excluding interest charges.

Table 1: The Effect of Interest Charges on the CPI

	Annualised Inflation Rates per cent (December 1986 - March 1997)		
	1 year	2 years	3 years
Headline CPI	3.3	3.7	3.9
CPI (excluding interest charges)	3.6	3.8	4.1
Average Difference*	-0.3	-0.2	-0.2
Average Absolute Difference	0.9	0.7	0.5

* Numbers may be affected by rounding.

2.2 Income adjustment

The Australian CPI was originally designed as an input into the income adjustment process. Wages in Australia have been formally indexed to prices, either wholly or partially, during significant parts of this century. Systems of wage indexation operated from 1921 to 1953, at various stages in the 1960s, and from 1975 to 1981. Indexation was also a feature of the Prices and Incomes Accords of the early 1980s. But this link ceased as long ago as 1986 with the completion of Accord Mark II, and the process of wage determination since then has evolved from the centralised awards system towards a more decentralised system of enterprise bargaining for a proportion of employees. Arbitrated decisions on award wages have become largely confined to the provision of "safety-net" adjustments.

Recent decisions on safety-net adjustments have taken into consideration a range of factors, including other wage and salary outcomes in the economy and inflation trends. An examination of the Industrial Relations Commission's decision in the recent Safety-Net Review suggests that the macroeconomic policy regime, specifically incorporating an inflation target, was also an important consideration. To the extent that the CPI remains important in the income-adjustment process, it is likely to be as a measure of general inflation.

It is argued later in this submission that the population coverage of the CPI should be expanded to include all private households in each of the capital cities. If this expansion in coverage were to be implemented, the role of the CPI in income adjustment for non-wage-and-salary earners would become relevant. In a wider view of the economy, there would be many groups whose standard of living is *raised* by an interest rate increase, making the present index an inappropriate basis for income adjustment.

2.3 Contracts

In the Information Paper, the ABS points out that the CPI is used to index a wide range of contracts. While no single index can be designed to suit all forms of contract adjustment, a CPI that measures the general rate of inflation of goods and services prices would in no way be inferior to one that measures the changing purchasing power of wage-and-salary-earners' income including the effects of mortgage and other interest charges. Indeed, it is likely that the cost of servicing a mortgage is not a particularly relevant factor for many contractual adjustments, so that a CPI excluding that item is arguably superior for this purpose. Even if that were not so, the fact that contract adjustments are required implies that contracts have reasonably long lives, in which case the long-run similarity of trends in the CPI with and without interest charges suggests that most contract parties will be indifferent between them.

3. Conceptual Framework

As outlined in the ABS Information Paper, there are three broad conceptual approaches to the measurement of a CPI, which assume that (somewhat) different baskets of goods and services are representative of purchases by households.

- The economic *cost-of-use* approach assumes the basket consists of all those consumer goods and services actually consumed (or used up) in the base period irrespective of when they were acquired or paid for.

- The actual *outlays* approach defines the basket in terms of the actual amounts paid out by households during the base period to gain access to consumer goods and services.

- The *acquisitions* approach defines the basket as consisting of all those consumer goods and services actually acquired by households during the base period.

While these conceptual distinctions are unimportant for most areas of household consumption, there are areas for which the distinction becomes important; the treatment of housing is a prime example.

The ABS argues that in the case of owner-occupied housing, an economic cost-of-use approach would raise significant practical problems for the construction of an Australian CPI. The weight to be assigned to the Housing group would need to be adjusted to recognise that all owner-occupier households are paying 'imputed' rents to themselves, resulting in a disproportionately large weight on housing in the CPI. There would also be difficulties associated with measuring the price of housing since private rental markets in Australia are "thin", and do not represent the full range and quality of owner-occupied housing. The Bank accepts these practical drawbacks of the economic cost-of-use approach and does not recommend that this approach be adopted.

An outlays approach has the important drawback that the value of the outlays made to purchase a home includes interest charges. The view of the Bank, expressed above, is that the principal purpose of the CPI is now as a general measure of inflation, implying that interest charges should not be included in the CPI. The Bank therefore would support the ABS changing from the actual outlays approach currently in use to an acquisitions approach, thereby excluding interest charges from the CPI.

3.1 The treatment of housing

The acquisition of a house is really an investment activity, rather than consumption. As such, the cost of acquiring a house should not be included as a component of the CPI. This treatment of housing follows a logic explained by Dr Ralph Turvey in the ABS Information Paper for the 12th Series Review of the CPI:

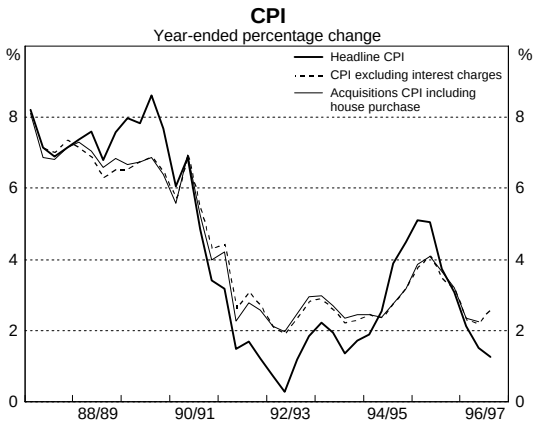
> It is generally agreed that, whether an acquisitions or outlays approach is followed, the acquisition of capital goods or, with the outlays approach, the repayment of loans used to finance such investment, should be excluded from the index, which is, after all, termed a 'Consumer' Price Index. It is further agreed that the 'investment' which is excluded should be limited to housing, leaving consumer durable goods in the index, even though both are bought in order to yield a flow of services over a considerable future period. The reason is the commonsense one that an existing house is generally regarded as an asset which forms part of a household's wealth, while partly worn carpets or used cars are not. A house is much more a liquid asset than these and may yield a capital gain when sold, has a higher value, is optional (since many households choose to rent), and is bought far less frequently. Thus in practice, the idea of excluding investment reduces to the idea of excluding owner-occupied houses from the index – though there is no question but that their owners' current expenses on rates, maintenance and so on should be included.
>
> ABS (1992, p. 17)

As pointed out by Dr Turvey, treating the acquisition of a house as an investment activity does not imply that all housing expenditure is excluded from the CPI. Rents are still included in the CPI, as are local government rates and charges, house repairs and maintenance, and house insurance. In this instance, however, the weight on housing would be substantially reduced.

If it were, nonetheless, desired to treat the acquisition of a house as a consumption activity, an acquisitions approach would include purchases of net additions to the housing stock in the CPI basket. It would be important that the price of these new

houses not include the value of land. In that case, asset price inflation associated with rising land values would not affect the CPI. A simple estimate of the CPI using an estimated weight on house acquisition of around 4 per cent, and using the price of project homes as a measure of the price of new additions to the housing stock, is shown in Graph 4. The resulting series is less volatile than the existing CPI.

Graph 4



3.2 Adding financial services to the CPI

The purchase of financial services is often a part of the purchase of other goods and services – for example, consumer durables, holidays, or education expenses. The cost of financial services should therefore form part of the consumer price index. Furthermore, since a given type of borrowing can finance a range of consumption activities, borrowing activity cannot be clearly associated with any specific expenditure class. Instead, it warrants a separate expenditure class. The Bank is therefore in favour of adding to the CPI a new expenditure class to measure the cost to consumers of financial services.

Recent developments estimating the value of financial services for the national accounts provide a potentially useful framework for developing a financial services expenditure class in the CPI.[1] Financial intermediation services indirectly measured (FISIM) is the value of financial services consumed by those who take out loans from financial intermediaries and those who have deposits with them. The value of financial services is then imputed by multiplying the stock of loans and deposits by a margin (or price) which is the difference between the effective interest rate for a given financial service and a reference interest rate:

FISIM = stock of loans*(effective interest on loans - reference rate) + stock of deposits*(reference rate - effective interest on deposits)

Maintaining the real value of financial services consumed in the base period requires them to be revalued in line with movements in the prices of all other items.[2] Consequently, an index of the price of financial services would be constructed as a product of indexes for the margin on financial services and the prices of all other

1 See ABS (1995,1996) and Hill (1996).

2 For simplicity, this analysis ignores complications arising from the age profile of the loans.

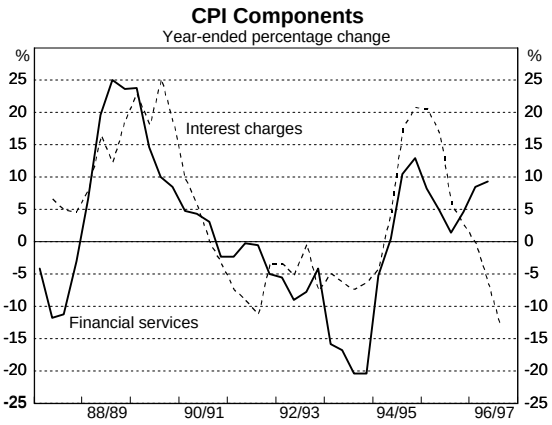
items. This is analogous to the current construction of price series for mortgage interest and credit charges, but differs in the important respect that an interest rate *margin* is used rather than a *gross* interest rate.

Inclusion of a category for financial services is conceptually appealing; there are, however, a number of practical considerations. The weight assigned to financial services will differ significantly depending on whether the purchase of a home is treated as a consumption activity (and so is included in the CPI) or as an investment activity (and is excluded from it). This, in turn, will determine whether home loans are included as part of the stock of loans outstanding for consumption.

This submission proceeds on the premise that, as argued above, the purchase of a home is an investment activity, and therefore disregards home loans as a financial service relevant to the CPI. On this basis, the value of financial services consumed by households is estimated to have a weight of about 2 per cent in the CPI basket; the corresponding price series is shown below.[3]

There is moderately close correlation between movements in the price of financial services and in the current series of interest charges (Graph 5). Although absolute changes in margins may be small, proportional changes appear sometimes to be large. Consequently, financial services have the potential to introduce some volatility into the CPI, but the effect is likely to be small given their weight.

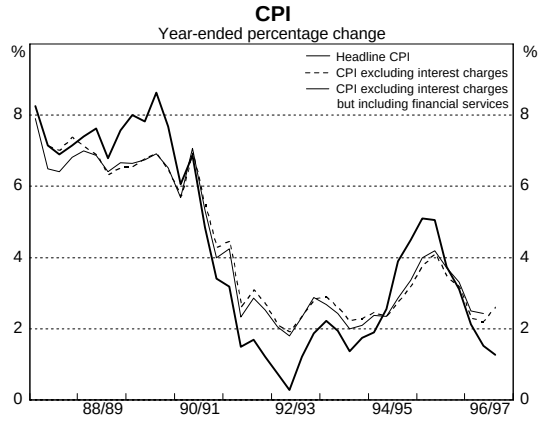
Graph 5



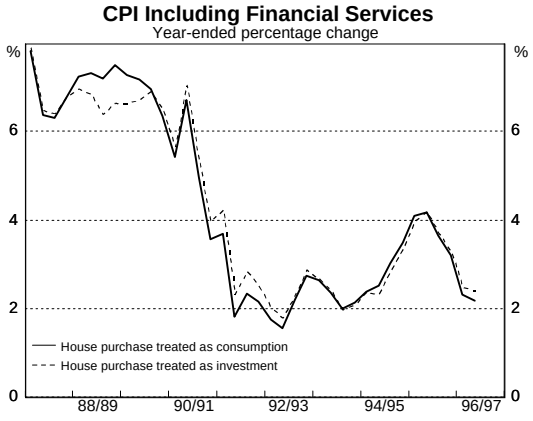
[3] The relevant stock of loans comprises personal credit and other personal loans to households, while the stock of deposits comprises the interest and non-interest bearing deposits of households. The effective interest rate for loans (deposits) is the weighted average of interest rates on each class of loans (deposits). To calculate margins, the mid-point between the effective lending and borrowing rates is used as the reference interest rate. Alternative reference rates have been proposed (the cash rate, specific bond yields, weighted averages of selected money market rates). However, these reference rates periodically lie outside the bounds created by the effective rates on deposits and loans (for example, due to implicit interest rate subsidies for some financial products) and generate negative FISIM, a problem that is avoided by using the mid-point between effective deposit and loan rates. A mid-point reference rate also results in a less volatile price series for financial services than one based on the cash rate.

A comparison of current CPI measures with the CPI excluding interest charges but including financial services is shown below (Graph 6). A CPI constructed using the acquisitions approach behaves similarly to the current CPI excluding interest charges. In fact, this appears to be the case whether house acquisition is treated as an investment or consumption activity (Graph 7).[4]

Graph 6



Graph 7



There is also a compelling argument for expanding the coverage of financial services to include fees and charges levied on financial products. While these charges presently comprise a small share of expenditure, they may increase in the future as the financial system moves away from charging for products implicitly via interest margins, towards explicit charges for transactions.

4. Frequency of CPI Compilation

The Australian CPI is compiled and published on a quarterly basis; the ABS is, however, examining the possibility of moving to a monthly CPI. The choice of the appropriate frequency of compilation and publication of the CPI involves a trade-off between the advantages of additional information and the costs of providing it.

The ABS currently collects prices continuously throughout each quarter. The ABS Information Paper describes two main approaches to the compilation of a monthly CPI and their cost implications. The first option is to employ the same methodology for compilation, but price all items monthly. With some change to price collection strategies, this should result in only a minimal loss of quality (arising from some quality changes being reflected in the index with a one month lag). This approach is estimated to raise the annual cost of producing the CPI by about 80 per cent.

[4] Assuming house acquisition is a consumption activity, housing loans must be included in the estimate of FISIM, increasing the weight of financial services in the CPI to about $3^{1}/_{2}$ per cent. In this case, the price series for additions to the housing stock (based on project home prices) is also included in the estimated CPI.

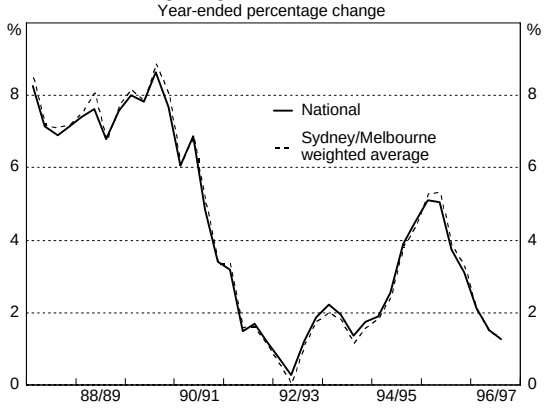
The second option is to use existing data by rearranging data collection schedules to allow for imputation of missing monthly price observations; this is estimated to raise the cost of producing the CPI by about 36 per cent. The resulting monthly index would be of lesser quality than the current quarterly index, although three-month averages should be of comparable quality.

Greater frequency may help to identify changes in underlying inflation trends more quickly. Recent work by Cecchetti (1996) shows that while there is considerable noise in the US monthly CPI series, this can be substantially reduced by examining three-month moving changes in the monthly index. For Australia, while a monthly CPI may well be a "noisy" series, moving three-month averages should give more timely information about changing trends in inflation than the current quarterly series. A monthly CPI would, therefore, seem desirable. To reduce cost, the CPI could perhaps be constructed on a different basis in the two months between quarterly CPI releases by restricting coverage in these months to Sydney and Melbourne. The behaviour of a weighted average of inflation in Sydney and Melbourne on a quarterly basis suggests that this series, if calculated monthly, could provide timely information on national trends in inflation (Graph 8). A monthly CPI would also be consistent with the Special Data Dissemination Standard of the IMF, which specifies that the CPI should be monthly to permit international comparisons of inflation performance on a consistent basis.

Graph 8

CPI: National and Weighted Average of Sydney and Melbourne

Year-ended percentage change



5. Bias

The CPI is a Laspeyres index which measures changes over time in the price of a fixed basket of goods and services. Changes in a fixed-weight CPI differ systematically from changes in consumers' true cost of living.[5] As pointed out in the ABS Information Paper, there are five major sources of bias in the CPI: item substitution bias, outlet substitution bias, new goods bias, quality adjustment bias and elementary aggregate formula bias. The first three of these sources of bias arise from the difference between an index based on a fixed-weight basket and an ideal cost of living index, while the latter two are potential sources of bias for all indexes.

[5] The discussion in this section abstracts from the issue of the appropriate treatment of interest charges, which was dealt with earlier.

The longer the period between rebasing of the CPI, the greater the extent of *fixed-weight biases*. At present, the CPI is rebased every five years. This may not be sufficiently frequent to capture economically significant changes in the consumption basket. For example, in the most recent five-year interval, there has been a significant increase in expenditure on imports and greater use of personal computers and other "high tech" appliances. Since these goods have fallen in price relative to other goods, failure to account for the increased spending on these goods biases the CPI upward.

While a superlative index formula would reduce fixed-weight biases, its data requirements make it impractical. More frequent chaining of the CPI would, however, reduce the disparity between a fixed-weight and superlative index. An assessment should be made of the possibility of more frequent chaining and the feasibility of exploiting additional sources of data between Household Expenditure Surveys.

Elementary aggregation bias can be reduced by changing the formula used for construction of price indexes. The existing approach does not allow for substitution between goods at the sub-expenditure class level, overstating price aggregates. The Bank commends the ABS for examining the possibility of using the alternative Jevons formula to construct price series, which allows for substitution between goods at the sub-expenditure class level.

Quality bias is more difficult to identify and correct. If the quality of a good changes, its price is not directly comparable between periods. The ABS employs a range of techniques to reduce quality bias. In particular, specific items and the outlets from which they are priced are not fixed for the duration of a CPI series, to reduce the possibility of bias arising at the price collection stage. Numerous quality adjustments are also made. These are outlined in principle in the Concepts Sources and Methods of the CPI, though more specific information published on how quality adjustments are actually made would be helpful.

Given ABS procedures, the extent of quality bias is likely to be smaller than estimate made by Boskin (1996) for the United States. Nonetheless, the ABS reports that 10 per cent of Australia's CPI basket is believed to be subject to significant quality change for which no satisfactory procedures are currently available. These are primarily for services that comprise a growing share of expenditure and are affected by rapid technological change. Prominent among these hard-to-measure areas are hospital and medical services.

Estimates made for the CPIs of other countries suggest that in aggregate, *all biases* can contribute in total between perhaps one-third and 2 per cent per annum to measured inflation.[6] For countries with comparable CPIs to Australia, the estimates are at the lower end of this range. The extent of overall bias in the Australian CPI may be small by international standards as a result of substantial efforts already

[6] See Gordon (1990), Fischer (1994), Cunningham (1996), Boskin (1996) and Moulton (1997).

made to avoid or adjust for the most significant biases. Nevertheless, the extent of bias might be economically significant, and these biases become more of an issue when inflation is very low. The ABS has already done very valuable work estimating and correcting the biases in the CPI. The Reserve Bank is strongly in favour of all steps the ABS can take to reduce further any systematic biases and to quantify any biases that remain. The results of these efforts should be made available to the public.

6. Imported and domestic components of the CPI

While movements in the imported and domestic components of the CPI have been useful for the assessment of sectoral price trends, there is merit in refining these series. As pointed out in the ABS Information Paper, the difficulty in determining whether some goods are 'imported' or 'domestic' renders these classifications less precise than for other components of the CPI. When items change category from quarter to quarter, changes in the imported and domestic components of the CPI can be due to compositional changes, not price changes.

As an alternative, the Reserve Bank would support the construction of tradeable and non-tradeable series to complement those experimental series that have been prepared at the wholesale level (see Johnson 1996). These series could employ the same method of index construction as the CPI but allow for expenditure classes to be reclassified as tradeable or non-tradeable during rebasing (or chaining) periods. This would capture the general concept of separating domestic components of the CPI from those significantly affected by international competition, while avoiding the problems of compositional change under the current approach.

7. Other Issues

7.1 Computers

Expenditure classes in the CPI are currently based on the 1988/89 Household Expenditure Survey, at which time household spending on computers was insufficient to warrant inclusion in the CPI. By the 1993/94 HES, however, household spending on computers had risen markedly and was sufficient for computers to be included in the CPI.

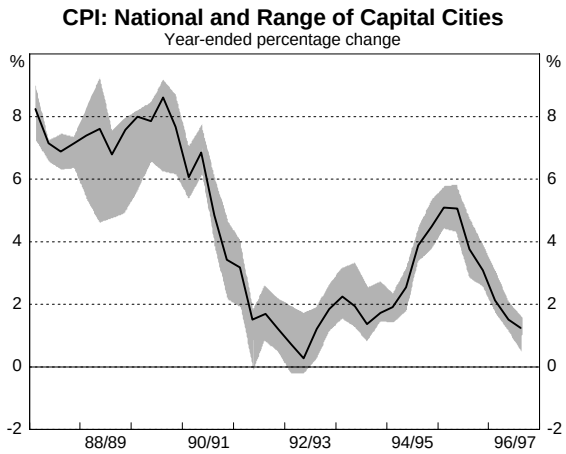
The sharp fall in computer prices suggests that the absence of computers in CPI basket has biased upwards measured inflation. Comparing a fixed-weight consumption deflator which includes computers with one which does not, however, suggests that the extent of this bias has so far been small. Nevertheless, as computers become progressively cheaper and their share of household spending continues to rise, their exclusion from the CPI may become economically important. The Reserve Bank is therefore in favour of including home computer equipment and software in the CPI basket.

7.2. Population Coverage

In the Information Paper, the ABS argues that expanding the population coverage of the CPI to include all private households in each of the eight capital cities would be a relatively straightforward exercise. The Reserve Bank supports this extension.

The ABS also argues that the costs associated with a move to broaden the geographical coverage of the CPI beyond the eight capital cities would be more substantial. The Bank doubts that expanding the geographical coverage would be worth the extra cost. The separate CPI indexes for the eight capital cities are constructed to a more or less uniform standard. This requires CPI price samples of approximately the same size in each city. For the Bank's purposes, there are only minimal advantages in having eight regional CPIs which usually move closely with the national CPI (Graph 9). By contrast, there are considerable advantages in designing the CPI so that the national index is as accurate as possible. The Bank would support changes to the design of the CPI which would optimise the accuracy of the national index.

Graph 9



8. Summary of Conclusions and Recommendations

This submission has argued that the CPI's main role is as a measure of inflation in prices of goods and services. As such, some changes to the way it is constructed are warranted. These are the Bank's conclusions and recommendations:

- The inclusion of interest charges in the current fashion is the major shortcoming in the use of the CPI as a general measure of inflation.
- The current measures of interest charges should be removed from the CPI and replaced by a series for the price of acquiring financial services.
- In constructing a series for the price of financial services, the interest rate margin is the relevant concept, rather than the gross interest rate. This series should ideally incorporate a measure of bank charges as well as intermediation margins.
- The acquisitions approach to the measurement of the CPI should be used.
- The acquisition of a house should be treated as an investment activity, and its cost should not be included in the CPI.

These are the most important views the Bank wishes to put. The submission also argues that:

- A monthly CPI is desirable.
- Further work should be undertaken estimating the extent of biases in the CPI, and this work should be made available to the public.
- The series on imported and domestic components of the CPI should be refined to overcome problems of compositional change.
- The population coverage of the CPI should be expanded to include all households, but the regional scope be confined to metropolitan areas on the grounds of cost. At the same time, the design of the CPI should be changed to maximise the accuracy of the national index.
- All relevant consumption items should be included in the CPI basket, including home computer equipment and software.

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