EMBARGOED UNTIL 11.30 AM 9 MAY 1997

INFORMATION PAPER: ISSUES TO BE CONSIDERED DURING THE 13TH SERIES AUSTRALIAN CONSUMER PRICE INDEX REVIEW

W. McLennan
Australian Statistician

AUSTRALIAN BUREAU OF STATISTICS CATALOGUE NO. 6451.0

ABS Catalogue No. 6451.0
ISBN 0 642 25779 5

Printed and bound by Australian Government Publishing Service, Canberra

INQUIRIES

- For information about other ABS statistics and services, please refer to the back of this publication
- For further information about this information paper, contact Keith Woolford on Canberra (06) 252 6673.

CONTENTS

LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
COLI	Cost of Living Index
CPI	Consumer Price Index
EFTPOS	Electronic Funds Transfer Point of Sale
HECS	Higher Education Contribution Scheme
HES	Household Expenditure Survey
ILO	International Labour Organisation
OECD	Organisation for Economic Co-operation and Development
SDDS	Special Data Dissemination Standard
TCC	Technical Consultative Committee (to the 12th series CPI review)
. .	not applicable

PREFACE

The Australian Bureau of Statistics (ABS) has prepared this information paper (hereafter referred to as scoping paper) as a basis for user consultation regarding the 13th series Consumer Price Index (CPI) review.

Since 1960, when the CPI was first compiled, the ABS has maintained a program of periodic reviews of the CPI to ensure that it continues to meet community needs. While an important objective of these reviews is to update item weights, these formal reviews also provide an opportunity to reassess the scope and coverage of the index and other methodological issues. As the Australian CPI is now relatively 'mature' in terms of commodity coverage, the latter more complex issues now preoccupy CPI reviews. This paper contains information on each of the key issues the ABS is considering during the course of this review.

Although the CPI is one of the most well known statistics compiled by the ABS, the conceptual framework underpinning its construction is complex and not so widely understood. As a consequence, questions raised in respect of the CPI often do not have a simple answer. In an attempt to deal with this complexity, while continuing to reach as wide an audience as possible, this paper is structured in three parts. The summary provides an overview of the key issues while the subsequent chapters deal with each one in more detail. Wherever possible, the more technical issues have been relegated to the appendixes.

The ABS would welcome reactions from users to the issues covered in the paper. Comments should be provided, preferably in writing, by 20 June 1997 to: Keith Woolford, Director, Prices Development Section, by facsimile on Canberra (06) 252 8555 or mail to PO Box 10, Belconnen, ACT 2616.

It is also timely to note that, in the United States of America, the *Final Report to the Senate Finance Committee from the Advisory Commission to Study The Consumer Price Index* (referred to as the Boskin Report) was released in early December 1996. This report dealt extensively with the issue of possible bias in the United States' CPI and has resulted in similar concerns being raised by users of the Australian CPI. The ABS does not believe that the Australian CPI is subject to significant bias and is not seeking user input on this issue as part of this review. However, in recognition of the widespread interest in the subject, a discussion of bias in CPIs has been included in Appendix 2 to this paper.

W. McLennan
Australian Statistician

SUMMARY

ISSUES ON WHICH ABS SEEKS USER VIEWS

The CPI is an important economic indicator and actions related to movements in it have direct or indirect effects on all Australians. It is used by parties in wage and salary setting negotiations. The CPI is also used in the indexation of pension and superannuation payments and government taxes and charges (with over 100 references to the CPI in Commonwealth and State legislation). Many business contracts are also regularly adjusted to take account of changes in the CPI or in some components of it. It is also used as a general measure of inflation for purposes of macro-economic management.

This 13th series CPI review represents the most comprehensive undertaken by the ABS since the CPI's inception in 1960. As part of the review process, the ABS will consult widely, providing an opportunity for user involvement in the ongoing evolution of the CPI. Organisations or individuals are invited to make written submissions on any aspect of the review. The key issues being considered by the ABS are summarised below.

PURPOSE OF THE CPI (see Chapter 2)

The CPI is used for many purposes, including as an input to the wage and salary adjustment process, the indexation of pension and superannuation payments and government taxes and charges, the indexation of government bonds and business contracts, and as a general measure of inflation for macro-economic policy purposes.

The specific index requirements for these many uses range from a measure suitable for assessing changes in the purchasing power of household incomes through to a measure specially suited for the measure of price inflation for the household sector. Due to certain conceptual differences in these specific requirements, it is not possible to construct a single index capable of perfectly satisfying all these needs.

The key issue to be decided by this review is which of these requirements can be regarded as the principal purpose of the CPI.

User comments

User comments are invited on:

- how they currently use the CPI and how they expect to use it in the future; and
- what the CPI should primarily aim to measure.

FREQUENCY (see Chapter 3)

Of the Organisation for Economic Co-operation and Development (OECD) countries, only Australia and New Zealand compile and publish their CPIs on a quarterly basis; all other OECD (and some non-OECD) countries produce monthly CPIs.

The additional cost of compiling and publishing a monthly CPI would be considerable (at least $1.87 million per year). The strength of user views received to date has not been sufficient to justify this additional expenditure. Unless compelling arguments in favour of a monthly CPI emerge, the ABS is of the view that the CPI should continue to be compiled and published on a quarterly frequency.

User comments

User comments are invited on:

- the use they would make of a monthly CPI; and
- whether such uses justify the additional costs involved in a monthly CPI.

POPULATION COVERAGE (see Chapter 4)

The Australian CPI is constructed to reflect the expenditure patterns of wage and salary earner households in each of the eight capital cities. The choice of reference population group for which the CPI is constructed is tied most closely to the principal purpose served by the index. In the Australian case, the restriction to employee households reflects the traditional use of the CPI as an input to wage determination processes. The choice of geographical coverage of the CPI is largely linked to the cost of price collection.

The issue of appropriate population coverage for the Australian CPI is a difficult one. The ABS is aware of the many uses now made of the CPI. For particular applications there would be considerable merit in expanding the population group to cover as broad a cross-section of Australian households as possible. For other applications a strong case can be made for indexes which better target subgroups within the broader community.

If the reference population were expanded to cover all private households in the eight capital cities, the coverage would increase from 29 to 64% of Australian households (or from 34 to 68% of expenditure by Australian households).

The costs associated with a move to broaden the geographical coverage beyond the eight capital cities are more substantial.

Linked to the question of geographical coverage is the issue of the regional indexes to be compiled. Currently indexes are compiled for the eight capital cities and the weighted average of them (the latter is sometimes referred to as the 'headline CPI').

For those applications of the CPI which target particular household types, it would appear that specific indexes would be conceptually appropriate. However, the costs of compiling them are likely to be considerable.

User comments

User comments are invited on:

- extending the population coverage to all households in the eight capital cities;
- the benefits to be gained from extending the population coverage beyond the capital cities, recognising that the costs of doing so are likely to be significant;
- the regional indexes required; and
- any need for indexes for subgroups of the population.

COMMODITY CLASSIFICATION (see Chapter 5)

The commodity classification currently used for the CPI consists of eight broad groups of goods and services:

Food
Clothing
Housing
Household equipment and operation
Transportation
Tobacco and alcohol
Health and personal care
Recreation and education.

These groups are further broken down into a total of 35 subgroups which are in turn broken down into a total of 107 expenditure classes (see Appendix 4).

During the last review of the CPI, the Technical Consultative Committee (TCC) recommended that the ABS consider restructuring the commodity classification to create a ninth major group, 'Financial charges', which would include mortgage interest charges and consumer credit charges.

Over the last 10 years the range of financial services accessed by households as consumers has expanded greatly. The flexibility with which households can switch between alternative sources of finance has also increased markedly. Ready access to financial services and credit now significantly influence the consumption decisions of households and the charges for such services account for a significant proportion of household expenditure. The increased diversity of financial products has served to significantly weaken the relationships between specific sources of funds and the purchase of particular goods and services. For example, while it was once possible to relate the purchase of motor vehicles on credit to the use of hire purchase agreements, households may now utilise a range of financial instruments (including loans secured by mortgage) to fund the purchase of motor vehicles. Similarly, it is no longer possible to state that all borrowings secured by mortgage are for the purpose of house purchase.

If mortgage interest charges can no longer be deemed to relate only to the purchase of housing, then conceptually we should allow for two components — one relating to purchase of owner-occupied housing and one relating to other consumer purchases.

The creation of a ninth commodity group for Financial charges would seem to provide an appropriate means of gathering together financial charges incurred by households as consumers (including interest payable on amounts borrowed under the Higher Education Contribution Scheme (HECS)) thus facilitating their separate analysis. However, if mortgage interest charges relating to the purchase of owner-occupied housing were to be included in this new commodity group rather than in the Housing group, the index number series for the Housing group may be less useful than at present. The ABS would appreciate user views on this issue.

It would also seem sensible to take this opportunity to update other elements of the commodity classification.

User comments

User comments are invited on:

- the usefulness of creating a new ninth group for financial charges;
- whether mortgage interest charges for owner-occupied housing should be moved from Housing to a Financial charges group if so created; and
- any other comments on the CPI commodity classification.

ITEM COVERAGE (see Chapter 5)

Ideally, the CPI should include all the goods and services which are significant in household consumer spending by the target population group. In practice, it is not always practicable to calculate weights and/or measure price changes, so some goods and services bought by Australian consumers are excluded from the CPI. It is estimated that items included in the CPI account for approximately 95% of target group outlays on consumption. The results of the 1993–94 Household Expenditure Survey (HES) will be analysed to quantify the extent of under coverage and to identify those areas not currently covered with a view to assessing the feasibility of introducing them to the CPI.

Present thinking is that the item coverage should be expanded to include home computer equipment and software, tertiary education fees and domestic and homecare services although the development of suitable specific price measures for some of these items may prove difficult in the short term. The inclusion of gambling is not seen as a high priority given both the difficulty in obtaining reliable weighting data and the expectation that the predominant influence on the price measurement will be movements in the CPI itself.

User comments

User comments are invited on proposals to extend the commodity coverage of the CPI as described above.

OTHER ISSUES (see Chapter 6)

To assist in better analysing the various sources of price pressures and to provide measures better suited to some indexation requirements, the ABS compiles a number of supplementary indexes derived from the CPI. Examples of these include:

- indexes for the All groups excluding, in turn, each of the eight major commodity groups;
- separate indexes for goods and services;
- the index of underlying inflation, as defined by the Commonwealth Department of the Treasury (see Appendix 5 for a description of this index);
- an index for Selected State and local government charges; and
- separate indexes for imported and domestically produced items.

Those series which involve aggregating (or excluding) items at the CPI expenditure class level or higher are relatively easy to produce and their interpretation is straightforward as they are based on weights which do not change between CPI reviews. The series which rely on distinctions below the expenditure class level present problems in both construction and interpretation. The series of particular concern to ABS are those for Selected State and local government charges, and imported and domestically produced items.

The Selected State and local government charges index was introduced in 1982 in response to requests from several State Governments and considerable general interest in the impact of changes in State and local government charges on the index. Since then, the index has been used to compare movements in charges levied by government between States and, within States, between the public and private sectors. The ABS is of the view that this index has outlived its usefulness and should be dropped.

Following the move to a floating exchange rate regime in December 1983, there was considerable interest in monitoring exchange rate effects on the CPI. However, as it is not possible to specifically estimate the effect of exchange rate variations on items included in the CPI, the ABS provides information on the price movements of wholly or predominantly imported items included in the CPI, together with information about their effect on the CPI as a whole. Given the effort required to produce this information, the ABS believes that it is time to revisit the uses made of these measures with a view to ensuring that the right question is being answered.

The CPI is a temporal price index, that is, it provides a measure of price change over time. The indexes constructed for each city measure how prices in each city have moved over time; they cannot be used to draw inferences about whether prices in one city are any higher or lower than prices in any other city.

The ABS is aware that for a number of applications, the difference in price levels between cities is of interest. With the implementation of a new processing system for the CPI, there is scope for the development of programs capable of providing such spatial comparisons. The ABS would therefore be interested in assessing the demand for such indexes on an annual or less frequent basis.

User comments

User comments are invited on:

- use of the series for Selected State and local government charges;
- use of separate indexes for imported and domestically produced items; and
- demand for measures of spatial price differences.

Organisations or individuals are invited to make written submissions on any aspect of the CPI, and in particular on the issues highlighted above.

These submissions must be received by 20 June 1997 and should be addressed to:

Mr Keith Woolford
Director
Prices Development Section
Australian Bureau of Statistics
PO Box 10
BELCONNEN ACT 2616

Facsimile: (06) 252 8555

CHAPTER 1 INTRODUCTION

1.1 The CPI is a general indicator of the rate of change in prices paid by households for the goods and services they buy for consumption. It is a widely used economic indicator which directly or indirectly affects all Australians.

1.2 The present 12th series CPI, which uses a 1988–89 weighting base, was first published in the September quarter 1992 CPI release. The results of the 12th series review were summarised in ABS (1992b).

1.3 The ABS has commenced work on the latest in a series of periodic reviews of the CPI. The resulting 13th series CPI will have a 1993–94 weighting base, will be linked to the 12th series CPI in the December quarter 1997, and will first be published in the March quarter 1998 CPI release.

1.4 While an important objective of the CPI reviews is to update item weights (which remain fixed between reviews), these formal reviews also provide an opportunity to reassess the scope and coverage of the index and other methodological issues. As the Australian CPI is now relatively 'mature' in terms of commodity coverage, the latter more complex issues now preoccupy CPI reviews. In fact, this review will be the most comprehensive undertaken by the ABS since the CPI's inception in 1960.

1.5 As part of the review process, the ABS consults widely. To assist in the consultation process, the ABS is releasing this scoping paper which provides information on the issues and presents ABS views and preliminary proposals for addressing these issues. Organisations or individuals are invited to make written submissions on any aspect of the CPI.

1.6 These submissions must be received by 20 June 1997 and should be addressed to:

Mr Keith Woolford
Director
Prices Development Section
Australian Bureau of Statistics
PO Box 10
BELCONNEN ACT 2616

Facsimile: (06) 252 8555

BACKGROUND TO THE REVIEW

1.7 The CPI was introduced in the June quarter 1960. At the time of its introduction index numbers were compiled retrospectively to the September quarter 1948. The CPI was preceded by a series of retail price indexes which provided data extending back to 1901.

1.8 With the introduction of the CPI, the ABS adopted a new approach to the construction of retail price indexes. Instead of the former emphasis on long-term fixed-weight indexes, the aim was to compile a series of shorter-term indexes which would be chain linked together to form a single long-term series. This strategy was aimed at ensuring that

the items included in the index continued to be representative of the expenditure patterns of households in aggregate.

1.9 When the next series CPI is published, the CPI will consist of 13 short-term retail price indexes. The previous indexes were linked in the following periods: June quarter 1952; June quarter 1956; March quarter 1960; December quarter 1963; December quarter 1968; December quarter 1973; September quarter 1974; September quarter 1976; March quarter 1982; December quarter 1986; and June quarter 1992.

1.10 The timing of the current review is consistent with past practices and international recommendations which suggest an interval of about five years between reviews. Timing is generally dependent on the availability of data from the (approximately) five-yearly HES.

SCOPE OF THE REVIEW

1.11 In addition to updating expenditure weights and linking the 13th series to the current 12th series, this review will examine the following major issues:

Principal purpose of the CPI

(i) The Australian CPI was originally designed as an input to the income adjustment process. Increasingly however, the CPI is being used as a general measure of inflation. It is not possible to produce a single measure that is entirely suitable for both purposes due to certain fundamental differences in requirements. A crucial issue for this review is to decide whether the CPI should continue to be designed to assess changes in the purchasing power of household incomes or whether it should be redesigned to provide a better measure of general inflation. Chapter 2 deals with this issue.

Frequency of compilation

(ii) Of the OECD countries, only Australia and New Zealand compile and publish their CPIs on a quarterly basis; all other OECD (and some non-OECD) countries produce monthly CPIs. This issue is covered in Chapter 3.

Population coverage

(iii) The current CPI is constructed to reflect the expenditure patterns of wage and salary earner households in each of the eight capital cities. This restriction reflects the traditional use of the CPI as an input to wage determination processes. The TCC to the 12th series review recommended that the ABS investigate widening the scope of the CPI to cover a broader cross-section of the population. Chapter 4 discusses the options and issues associated with expanding coverage in both the household type and geographical dimensions.

Introduction of a ninth major commodity group 'Financial charges'

(iv) During the 12th series review the TCC recommended that the 13th series review consider the creation of a ninth major commodity group, 'Financial charges', to bring together Mortgage interest charges and Consumer credit charges from the Housing and Household equipment and operation groups. The creation of this additional group was seen as a means of enhancing users' abilities to analyse CPI outcomes with respect to the effect of interest rates. Chapter 5 looks at the options and impacts of creating such a group. (Whether interest charges continue to be included in the CPI or not will depend in part on the outcome of (i) above.)

Commodity coverage

(v) The broad coverage of the CPI basket has not been examined since the 1986 review. The current review will examine areas of household expenditure not currently included in the CPI to assess the necessity/feasibility of extending the coverage. As part of this exercise, the current item classification will also be reviewed. The outcomes on (i) and (iv) above will also influence this work. Chapter 5 looks at possible commodity changes and describes some of the technical issues associated with altering the commodity structure.

1.12 Chapter 6 discusses a number of other issues relevant to the CPI review and Chapter 7 provides a timetable for the review.

1.13 The issues outlined above are clearly of major import for the CPI and are somewhat interrelated. Their resolution will benefit from comment and support of all those with an interest in the CPI.

CONSULTATION

1.14 Since the 1970s, the CPI review process has incorporated formal consultative mechanisms involving key users of the CPI and the general public. At the time of the 12th series review this took the form of a TCC. The consultative process included public submissions which were invited through advertisements in major newspapers.

1.15 For this review a CPI Advisory Group will be formed. The following organisations are being invited to have a representative on the group:

Commonwealth Department of the Treasury
Commonwealth Department of Social Security
Commonwealth Department of Industrial Relations
Reserve Bank of Australia
a State Government Treasury Department
Australian Chamber of Commerce and Industry
Australian Council of Trade Unions
Australian Council of Social Service
Australian Pensioners' and Superannuants' Federation
Australian Consumers' Association.

In addition, a business economist and an academic will be invited to join the Advisory Group.

1.16 Public submissions on the CPI review are being invited through newspaper advertisements and, additionally, through this scoping paper. In line with previous practice, an information paper will be published outlining the outcome of this review.

CHAPTER 2 PRINCIPAL PURPOSE OF THE AUSTRALIAN CONSUMER PRICE INDEX

2.1 The CPI is an important economic indicator and actions related to movements in it have direct or indirect effects on all Australians. The CPI continues to be used by parties in wage and salary setting negotiations. The CPI is also used in the indexation of pension and superannuation payments and government taxes and charges (with over 100 references to the CPI in Commonwealth and State legislation). Many business contracts are also regularly adjusted to take account of changes in the CPI or in some components of it. It is also used as a general measure of inflation for purposes of macro-economic management.

2.2 The various uses of the CPI can be conveniently categorised under three principal purpose headings:

- as input to the income adjustment process;
- for general indexation of public and private sector contracts; and
- as a measure of inflation for macro-economic policy management.

2.3 There are also three alternative conceptual approaches to constructing CPIs:

- the *acquisitions* approach;
- the cost of *use* approach; and
- the actual outlays (or *payments*) approach.

These approaches are described in Appendix 1. In practice, the conceptual distinctions are unimportant for most areas of household consumption because they either do not arise or are of no practical consequence. Appendix 1 explains the circumstances under which the distinctions are important. This is particularly the case with housing costs.

2.4 It is highly desirable that a single conceptual framework be adopted across the different commodity groups in order to ensure consistency of treatment of price change over time. The selection of approach depends on an assessment of the various purposes for which the index is to be used and the extent to which the conceptual nuances impinge upon those uses.

INPUT TO THE INCOME ADJUSTMENT PROCESS

2.5 'Income' in this sense is intended to cover wages and salaries and superannuant and pensioners' incomes. Although the wage and salary adjustment process has become increasingly less mechanistic, it is generally accepted that one of the inputs is an assessment of the extent to which the purchasing power of household income has changed over time. For income adjustment purposes, the requirement is for a CPI which indicates how much household incomes ought to be adjusted by in order to preserve purchasing power.

GENERAL INDEXATION

2.6 The range of public and private sector contracts and charges which are subject to indexation makes it impossible to precisely define an index suitable for all such purposes. For example, the underlying motivation for indexing fees and charges could be any of the following:

- to maintain the 'real' impost of a fee or charge (e.g. to maintain the value of a tax from the perspective of the taxpayer);
- to maintain the 'real' value of the gross income of the service provider (e.g. to maintain the gross receipts of a landlord);
- to maintain the 'real' value of the net income of the service provider (e.g. to maintain the net income of a landlord); or
- to adjust prices in line with the movement in market prices of similar items.

Although the CPI is conceptually not ideal for a large proportion of these applications, it does possess three features which satisfy the administrative requirements for indexation; namely, it is widely available, it is timely, and it is not subject to revision.

INFLATION MEASUREMENT

2.7 The issue of how to best measure 'inflation' is very complex. In an information paper released on 24 February 1997, the ABS (1997) devoted considerable space to the discussion of this issue. Users who are interested in the subject of inflation measurement are strongly encouraged to obtain a copy of this paper. The subject will only be addressed briefly here.

2.8 Despite universal usage of the term 'inflation', there is no generally agreed definition of the term. Nevertheless, despite the lack of a strict macro-economic definition, there is some convergence of views as to the conceptual properties that would be possessed by an index designed for the analysis of price inflation for the household sector. These can be summarised as follows:

- It would encompass only market transactions. That is, government services which are not marketed, and notional transactions such as those where homeowners are deemed to rent dwellings from themselves as landlords, would not be included.
- It would capture the inflationary trend in prices associated with transactions in goods and services and accordingly would not include interest rates.
- It would relate to pure price change and incorporate very recent weighting information.
- The effects of changes in government charges and taxes would be capable of separate analysis, and the effects of erratic price fluctuations would be identifiable.
- It would be non-revisable, and provide certainty to users.

2.9 Inclusion of interest charges in the current CPI is seen by users as the major shortcoming in the use of the CPI as a measure of inflation.

2.10 The ABS considers that a suite of price indexes as proposed in the Analytical Framework paper (ABS 1997), offers a better possibility for measuring inflation than any tinkering or alteration to the CPI might achieve.

COMMENT

2.11 Since its inception the CPI has undergone many transformations, with commodity coverage expanded greatly and index construction methodology becoming increasingly sophisticated. The three fundamental criteria which have guided the ABS in considering any substantive changes to the CPI are that the proposed changes should be:

- conceptually soundly based, being consistent with the overall purpose of the CPI as a measure of changes over time in the price of a constant basket of consumer goods and services;
- able to be understood by the broad range of users of the index, and to command their confidence; and
- capable of being implemented effectively.

2.12 To date, successive CPI reviews have served to ensure that refinements to the index have resulted in a measure increasingly more suited to its principal purpose. The 12th series CPI review 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).

2.13 The ABS is aware of the many uses now made of the CPI, including as an input to the income adjustment process, the indexation of government taxes and charges (with over 100 references to the CPI in Commonwealth and State legislation alone), the indexation of government bonds and business contracts, and as a general measure of inflation for purposes of macro-economic management.

2.14 The specific index requirements for these many uses range from a measure suitable for assessing changes in the purchasing power of household incomes through to a measure specially suited for the measure of price inflation for the household sector.

2.15 The key issue to be decided by this review is which of these requirements can be regarded as the principal purpose of the CPI. We can then determine the most appropriate conceptual basis to fit that purpose.

CHAPTER 3 FREQUENCY OF CONSUMER PRICE INDEX COMPILATION

3.1 Of the OECD countries, only Australia and New Zealand compile and publish their CPIs on a quarterly basis; all other OECD (and some non-OECD) countries produce monthly CPIs. This chapter discusses various options for, and implications of, producing the CPI on a monthly basis.

BACKGROUND

3.2 The Australian CPI has always been compiled on a quarterly basis, although up to the early 1980s the index for the Food group was compiled and published on a monthly basis. While the issue of whether the CPI should be produced monthly has been raised from time to time, users have, on balance, agreed that a quarterly release is an appropriate strategy for Australia. The debate about frequency of release has recently been revived in the context of the less frequent compilation of the balance of payments statistics. Further, the issue of the frequency of CPI compilation was raised with the promulgation by the International Monetary Fund of its Special Data Dissemination Standard (SDDS). The SDDS identifies statistical release practices, statistical coverage and periodicity and other requirements with which countries are expected to comply if they wish to access international capital markets on more favourable terms. (The standard gives some minimal flexibility for countries to seek exemption from satisfying all of the standards.) The standard specifies that CPIs should be produced monthly.[1]

3.3 The frequency of compilation and publication of a statistic like the CPI represents a balance between the benefits and the costs. The benefits generally cited in favour of a monthly CPI are an increased ability to detect turning points and international comparability. The costs associated with a move to a monthly release would include the obvious additional resources required to collect and compile data more frequently and, possibly, a reduction in data quality. There is also the issue of the impact on financial markets. In a context where there is sometimes market instability surrounding CPI releases, there may be increased concerns with a monthly CPI, particularly if the quality is not as good as with a quarterly CPI.

3.4 Some key features of current CPI processes are relevant to the issue of frequency of release. First, in concept the CPI measures the change between average price levels during one quarter and average price levels during the next quarter. Although it is clearly not practicable to measure all prices perfectly on this basis, the ABS adopts a number of strategies to approximate this concept across the index as a whole. Key to these strategies is the ABS practice of undertaking price collection continuously across the quarter. Second, a quarterly compilation and

---

1 See International Monetary Fund (1996). A copy of the SDDS, which also requires publication of the CPI within one month of the reference month, is available on request from the ABS

publication program provides sufficient lead time to resolve most of the quality change issues during the period in which they occur.

3.5 In order to approximate the quarterly average prices for the more volatile items, the ABS currently obtains sufficient prices to construct monthly indexes for a subset of items included in the CPI. In aggregate, these items account for approximately 20% of the CPI by weight and 10,000 price observations per month (accounting for 30,000 of the approximately 100,000 price observations made each quarter).

3.6 However, the dispersion of these volatile items across the index is such that in only one of the major commodity groups, Tobacco and alcohol, are the majority of items priced monthly. In other groups where monthly pricing is significant, Food and Transportation, the items priced monthly only account for between 20% and 30% of the group indexes by weight.

COST OF PRODUCING THE CURRENT CPI

3.7 The all-up cost of producing the current quarterly CPI is $5.2 million per year (excluding the cost of undertaking these approximately five-yearly reviews). This can be approximately apportioned as follows:

Price collection	$1.84 million
Quality adjustment	$0.91 million
Sample maintenance	$0.30 million
Sample reviews	$0.70 million
Price editing and index construction	$0.75 million
Computing charges	$0.50 million
Publication and client servicing	$0.20 million

Offsetting these costs is the revenue derived from publication sales. After printing and postage costs, sales of CPI publications return $280,000 per year.

OPTIONS

3.8 There are a number of strategies which could be adopted in order to compile a monthly CPI. These range from the full replication of the existing quarterly index on a monthly basis to, at the other extreme, making use of the existing price data to estimate a monthly index. Clearly, there are options which lie between these two extremes. However, for the purpose of illustration, the remainder of this chapter will be largely restricted to a discussion of these two broad options.

Full replication

3.9 The thrust of this option is to produce a monthly CPI of roughly the same quality as the existing quarterly measure. Under this option, all prices would be collected on a monthly basis. This would involve the collection of an additional 140,000 prices per quarter — resulting in an increase in price collection from 100,000 to 240,000 prices per quarter (or 80,000 prices per month). To the extent that the number of price observations underpinning each published index would fall from 100,000

to 80,000 it could be said that even this option would result in some degradation in quality.

Feasibility

3.10 From a purely data processing point of view, this would appear to represent the simplest option. It would require only a change to the pricing frequency; all existing index construction techniques could be retained unchanged. However, the current practice of taking price observations throughout the course of the index reference period, while continuing to publish within a month of the reference period, would be difficult to sustain if the current quality adjustment and data editing levels were to be maintained. While it is doubtful that the same volume of quality adjustment work could be conducted during the index reference period when the change takes place as at present, due to delays in gaining necessary data from respondents, the loss could be minimised by adopting different price collection strategies.

3.11 Price observations for each monthly index could continue to be carried out over a four week period, only with a slight lag. For example, the pricing period could encompass the first three weeks of the current month and the final week of the previous month. Closing off data collection one week before the end of the reference month would allow for publication within three weeks of the end of the reference period with minimal loss of quality adjustment (the measurement of residual quality changes would still take place but be reflected in the index with a one month lag).

3.12 Alternatively, price collection could be further concentrated around a point of time close to the middle of the month, again, providing the opportunity to minimise the reduction in timely quality adjustment. This approach is followed in the United Kingdom. Compared with the continuous, but lagged, pricing approach, this strategy would require a substantial change in ABS staffing arrangements as a greater number of price collectors would be required but only for approximately one week per month. A move to the use of part-time price collectors would require careful management with an increased training load due to expected higher turnover in personnel.

Cost

3.13 Indicative, preliminary estimates are that:

- price collection costs would increase in line with the increase in the number of price observations, i.e. by 140% or by $2.58 million;
- quality adjustment costs could be expected to increase by something in the order of 50% or by $460,000;
- sample maintenance costs would increase marginally, by say 10% or by $30,000;
- sample review costs would remain unchanged;
- price editing and index construction costs would approximately double, an increase of $750,000;
- computing costs would increase by approximately 50% or by $250,000; and

- publication production and client servicing costs would increase by approximately 20% or by $40,000

giving a total increase in the order of 80% or $4.1 million. If publication sales were maintained at current levels per issue with no change in price, net receipts from publication sales could be expected to increase by $560,000 per year.

Timeframe

3.14 Depending on which price collection strategy was to be selected, the lead time before monthly price collection could be fully implemented would be somewhere between six and 12 months. First publication of monthly indexes would be a further 12 months away.

Use of existing price data

3.15 This can be regarded as a minimalist option as the thrust is to make as much use of existing price data to estimate a monthly CPI. In practice this would require rearranging existing price collection schedules to allow for the imputation of 'missing' monthly prices. Strategies for achieving this could be to split existing price samples in three, pricing from one-third of the total number of respondents for each item in each of the three months, ranging through to pricing only one-third of the items in each of the three months. In practice, it is likely that a combination of these techniques would be required and some additional pricing would be necessary (say an additional 20,000 prices per quarter). The resulting monthly index would not be of the same quality as the existing quarterly index, although the reliability of the measure of quarterly price change (obtained as the simple, arithmetic average of the three monthly indexes) would be unchanged.

Feasibility

3.16 Adoption of this option would require considerable up-front research and development to devise the most appropriate imputation algorithms, modify the existing computer processing system accordingly, and reschedule price collection. The issue of the period over which price observations are taken each month is also relevant to this option (see paragraphs 3.10 to 3.12).

Cost

3.17 Indicative, preliminary estimates are that:

- price collection costs would increase in line with the increase in the number of price observations, i.e. by 20% or by $370,000;
- quality adjustment costs could be expected to remain unchanged;
- sample maintenance costs could be expected to increase by more than that involved in the first option as the maintenance of the relatively smaller samples would be more critical in ensuring a reliable index, say by 30% or by $90,000;
- sample review costs would remain unchanged;
- price editing and index construction costs would also be greater under this option compared with the first, as the price samples could be expected to be more volatile; these costs are estimated to increase by approximately 150% or by $1.13 million;

- computing costs would increase by approximately 50% or by $250,000; and
- publication production and client servicing costs would increase by approximately 20% or by $40,000

giving a total increase in the order of 36% or $1.87 million. If publication sales were maintained at current levels per issue with no change in price, net receipts from publication sales could be expected to increase by $560,000 per year. However, maintenance of current publication layout and detail is regarded as unlikely under this option due to the reduced reliability of some of the component series. If this occurred, reductions in both issue price and numbers of subscribers could be expected.

Timeframe

3.18 It could take up to two years to develop and evaluate the imputation procedures and modify price collection and processing procedures where necessary. First publication of monthly indexes would be a further 12 months away.

COMMENT

3.19 The additional cost of compiling and publishing a monthly CPI would be considerable (at least $1.87 million per year). The strength of user views received to date has not been sufficient to justify this additional expenditure. Unless strong arguments in favour of a monthly CPI emerge, the ABS is of the view that the CPI should continue to be compiled and published on a quarterly frequency.

CHAPTER 4 POPULATION COVERAGE

4.1 The current CPI is constructed to reflect the expenditure patterns of wage and salary earner households in each of the eight capital cities. This restriction reflects the traditional use of the CPI as an input to wage determination processes. The Report of the TCC for the 12th series review included the following recommendation (recommendation 6.3.6):

> The committee found support for widening the scope of the CPI to cover a broader cross section of the population. The committee recommends that the ABS review the target population with a view to include additional household groups (subject to the cost implications of any such widening). This investigation could be undertaken prior to the next major review.

4.2 This chapter discusses the options and issues associated with expanding coverage in both the household type and geographical dimensions.

SELECTING THE POPULATION AND GEOGRAPHIC COVERAGE FOR THE CPI

4.3 The *Resolution concerning consumer price indices* (Fourteenth International Conference of Labour Statisticians, 1987) includes the following:

> 4. The reference population should normally be defined very widely, specifying those income groups and household or family types that are excluded.
>
> 5. The regional scope should normally be defined as widely as possible, noting any exclusions. It should also be specified whether any regional limitation or breakdown of consumption expenditure and of price collection relates to sales in a region, or to purchases by residents of a region.
>
> 6. Separate indices may be computed for different population groups or for different regions.
>
> 7. The extent to which expenditure abroad is included should be clearly indicated.

4.4 The Australian CPI accords with the above in so far as the relevant exclusions are specified. However, the reference population and the regional scope are towards the lower end of the desirable range.

4.5 Before looking at the specific issues which influence the choice of population and geographic coverage, it may be useful to express the coverage of the current Australian CPI in terms of the above:

- The reference population is described as employee households, where these are defined as households deriving at least three-quarters of their income from wages and salaries, but excluding the top 10% of this group in terms of income.
- The regional scope is restricted to the eight capital cities, for which separate estimates of expenditure are derived for purchases by residents of those regions.
- Separate indexes are computed for the residents of each region.

- Expenditure relates to the total expenditures of population group households in each region and thus includes expenditure outside the region (including expenditure abroad).

The current CPI population group (capital city employee households) accounts for approximately 29% of Australian private households and 34% of total private household expenditure. The following tables present information on household types by region which can be used to assess the coverage gains that can be made by expanding either or both the household type or regional coverage of the CPI.

4.1 AUSTRALIAN HOUSEHOLDS, PRINCIPAL SOURCE OF INCOME, 1993–94

	Wages and salaries						
	Current CPI	*Other*	*Total*	*Superannuation*	*Government pensions and benefits*	*Own business and/or other private income*	*Total*
	%	%	%	%	%	%	%
New South Wales							
Sydney	9.6	3.5	13.2	0.3	5.2	2.4	21.1
Other New South Wales	. .	5.8	5.8	0.2	5.0	1.7	12.7
Total	*9.6*	*9.3*	*19.0*	*0.5*	*10.1*	*4.1*	*33.7*
Victoria							
Melbourne	8.1	2.5	10.7	0.5	5.1	1.6	17.8
Other Victoria	. .	3.4	3.4	0.2	2.4	1.1	7.1
Total	*8.1*	*5.9*	*14.1*	*0.7*	*7.5*	*2.7*	*24.9*
Queensland							
Brisbane	3.8	1.1	5.0	0.1	2.3	1.1	8.5
Other Queensland	. .	4.9	4.9	0.2	2.7	1.4	9.2
Total	*3.8*	*6.0*	*9.8*	*0.3*	*5.0*	*2.5*	*17.7*
South Australia							
Adelaide	2.7	1.1	3.7	0.1	2.1	0.6	6.6
Other South Australia	. .	0.9	0.9	0.0	0.9	0.4	2.2
Total	*2.7*	*1.9*	*4.7*	*0.1*	*2.9*	*1.0*	*8.7*
Western Australia							
Perth	3.2	0.8	4.0	0.3	2.1	1.0	7.3
Other Western Australia	. .	1.2	1.2	0.0	0.5	0.5	2.3
Total	*3.2*	*2.1*	*5.2*	*0.3*	*2.6*	*1.5*	*9.6*
Tasmania							
Hobart	0.5	0.1	0.6	0.0	0.3	0.1	1.1
Other Tasmania	. .	0.7	0.7	0.1	0.6	0.2	1.6
Total	*0.5*	*0.8*	*1.3*	*0.1*	*1.0*	*0.3*	*2.7*
Northern Territory							
Darwin	0.3	0.0	0.3	0.0	0.1	0.0	0.4
Other Northern Territory	. .	0.5	0.5	0.0	0.0	0.0	0.6
Total	*0.3*	*0.6*	*0.8*	*0.0*	*0.1*	*0.0*	*1.0*
Australian Capital Territory							
Canberra	0.8	0.4	1.1	0.1	0.3	0.2	1.7
Other Australian Capital Territory	. .	0.0	0.0	0.0	0.0	0.0	0.0
Total	*0.8*	*0.4*	*1.1*	*0.1*	*0.3*	*0.2*	*1.7*
Australia							
Capital cities	29.0	9.6	38.6	1.4	17.3	7.1	64.4
Other	. .	17.4	17.4	0.7	12.2	5.3	35.6
Total	**29.0**	**27.0**	**56.0**	**2.1**	**29.5**	**12.4**	**100.0**

Source: ABS n.d.(a); and unpublished data.

4.2 AUSTRALIAN HOUSEHOLDS, EXPENDITURE ON GOODS AND SERVICES BY PRINCIPAL SOURCE OF INCOME, 1993–94

	Wages and salaries						
	Current CPI	*Other*	*Total*	*Superannuation*	*Government pensions and benefits*	*Own business and/or other private income*	*Total*
	%	%	%	%	%	%	%
New South Wales							
Sydney	11.5	6.0	17.5	0.3	3.0	2.8	23.4
Other New South Wales	. .	7.2	7.2	0.1	2.6	1.7	11.5
Total	*11.5*	*13.2*	*24.7*	*0.4*	*5.5*	*4.4*	*34.9*
Victoria							
Melbourne	9.8	3.8	13.6	0.3	3.0	1.9	18.8
Other Victoria	. .	3.8	3.8	0.1	1.3	0.9	6.1
Total	*9.8*	*7.6*	*17.3*	*0.5*	*4.3*	*2.8*	*24.9*
Queensland							
Brisbane	4.5	1.5	6.0	0.1	1.3	1.1	8.4
Other Queensland	. .	5.3	5.3	0.1	1.5	1.6	8.6
Total	*4.5*	*6.8*	*11.3*	*0.2*	*2.8*	*2.7*	*16.9*
South Australia							
Adelaide	2.9	1.5	4.5	0.2	1.0	0.6	6.3
Other South Australia	. .	1.0	1.0	0.0	0.4	0.3	1.7
Total	*2.9*	*2.5*	*5.5*	*0.2*	*1.4*	*0.9*	*8.0*
Western Australia							
Perth	3.7	1.3	5.0	0.2	1.2	1.1	7.4
Other South Australia	. .	1.2	1.2	0.0	0.4	0.5	2.1
Total	*3.7*	*2.5*	*6.2*	*0.2*	*1.5*	*1.6*	*9.5*
Tasmania							
Hobart	0.6	0.1	0.7	0.0	0.2	0.1	1.0
Other Tasmania	. .	0.7	0.8	0.1	0.3	0.2	1.4
Total	*0.6*	*0.8*	1.5	*0.1*	*0.5*	*0.3*	*2.4*
Northern Territory							
Darwin	0.3	0.0	0.4	0.0	0.0	0.0	0.5
Other Northern Territory	. .	0.7	0.7	0.0	0.0	0.0	0.8
Total	*0.3*	*0.7*	*1.1*	*0.1*	*0.1*	*0.1*	*1.3*
Australian Capital Territory							
Canberra	1.0	0.7	1.7	0.1	0.2	0.2	2.1
Other Australian Capital Territory	. .	0.0	0.0	0.0	0.0	0.0	0.0
Total	*1.0*	*0.7*	*1.7*	*0.1*	*0.2*	*0.2*	*2.1*
Australia							
Capital cities	34.2	15.0	49.2	1.2	9.8	7.6	67.8
Other	. .	20.0	20.0	0.5	6.5	5.1	32.2
Total	**34.2**	**35.0**	**69.2**	**1.7**	**16.3**	**12.7**	**100.0**

Source: ABS n.d.(a); and unpublished data.

Reference population group

4.6 The choice of reference population group for the CPI is tied most closely to the principal purpose served by the index. In the Australian case, the restriction to employee households reflects the traditional use of the CPI as an input to wage determination processes.

4.7 The restriction of the population group to employee households can be challenged on three fronts. First, the tight nexus between movements in the CPI and wage and salary adjustments no longer exists.

Second, from an income adjustment perspective, the CPI is used directly to adjust the incomes of households that are not in scope of the CPI, specifically households in receipt of social security benefits or superannuation payments. Third, changes in the demographic profile of Australian households have resulted in a decline in the relative importance of employee households.

4.8 If the principal purpose of the CPI is seen as providing a means of assessing changes in the purchasing power of the incomes of Australian households in aggregate or to provide a measure of inflationary pressure on households, then, conceptually, the reference population group should be expanded. However, expansion of the population group has the potential to increase item substitution bias and raises issues about the need for separate indexes for different population groups — these issues are taken up in paragraphs 4.15 to 4.24. Cost issues are also relevant.

Regional coverage

4.9 The choice of region to be covered by the CPI is largely linked to the costs involved in price collection. A secondary, but important, consideration is the basis on which expenditure data is available — expenditure by residents of a region, or expenditure within a region. Both of these have played a role in determining the geographic coverage of the Australian CPI. Approximately 64% of private households are located in the eight capital cities and the HES provides estimates of the expenditures of those households. (It also provides estimates for households outside the capital cities.)

4.10 If the objective is to produce a measure representative of all Australian households, there would appear to be a prima facie case for extending coverage beyond the eight capital cities. However, this would present a number of conceptual and practical difficulties.

4.11 Utilising a household expenditure survey to derive expenditure patterns for a CPI has a number of advantages over alternative sources of weighting data. In the first instance, expenditures can be derived for specific household types and secondly, relative expenditures on quite different items (e.g. bread and education fees) are estimated consistently. In collating expenditure data by region from the HES, estimates are derived of the expenditures of those households resident in a region without regard to where the purchases were made. For those households residing in large urban areas such as the capital cities, it is reasonable to conclude that, with the exception of expenditure on holiday travel and accommodation, expenditure was incurred in the same region. Therefore, price measures can be constructed by reference to prices of items within the same region.

4.12 Once we move away from these large urban areas, current data sources do not permit reliable identification of where purchases were made except perhaps for basic foodstuffs and geographically determined items such as housing, local government rates and charges etc. which can be assumed to have been purchased locally. However, those items purchased less frequently such as consumer durables, clothing etc. may well be purchased on infrequent visits to larger urban areas. This

presents a significant practical problem in establishing reliable price samples. While this could be overcome by running point of purchase surveys, these are expensive.

4.13 The ABS constructed a set of spatial price indexes for approximately 200 Australian cities and towns over the period 1960 to 1990. Although these indexes were limited to food prices, the results indicated that in the absence of major structural change, such as the opening or closing of a branch rail line, the relative prices remained fairly constant over time. In other words, while the price levels for the localities included in the study were often quite different from those prevailing in the capital cities, all areas exhibited similar price movements over time.

4.14 The collection of reliable price data and adequate information to enable quality changes to be quantified, would require employment of suitably trained staff. This is expected to cost substantially more than an index that is confined to the capital cities.

Separate indexes

4.15 As with population coverage, the requirement for indexes for subgroups of the population can be viewed in two dimensions: indexes for different household types and indexes for different regions (and a combination of the two, indexes for different household types in different regions). To simplify exposition, these will be looked at separately.

Indexes for different household types

4.16 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. Expenditure for this group in aggregate can be derived from the HES with slightly more reliability than that for the present population group due to an overall larger sample size. While the range of items priced would need to be expanded to include items not purchased by the current population group (such as discount transport fares etc. purchased by age pensioners), this would be restricted to only those items that prove significant in terms of purchases by the population as a whole and could be phased in.

4.17 However, it needs to be recognised that expanding the population group in this way may result in some undesirable consequences for index bias and representativeness of the index for particular applications. Studies conducted by the ABS have shown that while different household types can exhibit quite different expenditure patterns, the pattern for any particular household type changes very slowly over time. The implications of this are as follows.

4.18 The frequency at which expenditure patterns need to be updated is a function of the rate of change in expenditure patterns. The more rapid the change in expenditure patterns, the more frequently index weighting patterns need updating to ensure that they continue to be representative and to minimise item substitution bias. With stable, but different, expenditure patterns for individual household types, changes in the distribution of household types through (say) general ageing of the population, will result in the expenditure pattern for the population as a

whole changing. It follows that expansion of the population coverage may require more frequent weight updates. (The frequency of updates at all levels of the index will be examined, irrespective of whether population coverage is expanded, in order to minimise the risk of item substitution bias.)

4.19 Whatever the population group chosen for the CPI, the weighting pattern reflects the expenditure pattern of that group as a whole. Since no individual household is likely to have an expenditure pattern exactly matching that of the group as a whole (in fact this is impossible, as households cannot both own and rent their principal residence), changes in the CPI are unlikely to reflect exactly the impact of price movements on particular households. If the population group chosen for the CPI is particularly broad, this argument can then be extended to say that changes in the CPI are unlikely to reflect exactly the impact of price movements on narrower groups of the population. The natural conclusion to draw from this is that, if the uses of the index are related to household type then what is required are separate indexes for each household type.

4.20 However, the current exclusion of particular subgroups of the Australian population from the CPI population group does not necessarily mean that the CPI does not provide a suitable measure of price change for all household types. This apparent contradiction of the arguments contained in the two preceding paragraphs is supported by empirical evidence in Australia and other countries. For example, a study undertaken by ABS in 1992 (ABS 1992a) (and updated in ABS (1993) and Higgins (1995)) showed that an experimental index constructed to reflect the quite different expenditure patterns of age pensioner households displayed little variation from the CPI over an extended period of time (0.1 index points over 11 years), although there were differences in index movements when shorter periods were examined.

4.21 If all prices change at the same rate, then the weights are irrelevant. The greater the dispersion in the rates of price change, the greater the importance assumed by the weights. Although the weighting patterns of the two population groups were quite different, there was no correlation between weights and magnitude of price change when moving from one group to the other (i.e. items with a higher relative weight in the age pensioner index did not exhibit a tendency to higher rates of price change, and vice versa).

4.22 The study did not allow for the likelihood that within some categories of expenditure (e.g. Pharmaceuticals), the types of items consumed by age pensioner households could be different to those consumed by employee households, and within other categories (e.g. Urban transport fares) age pensioner households could face significantly different prices. Had this study been able to make allowance for the specific items purchased by age pensioner households and the prices faced by those households, there may have been greater differences.

4.23 On the international front, the Boskin Report (page 71) noted that:

> Some have suggested that different groups in the population are likely to have faster or slower growth in their cost of living than recorded by changes in the CPI. We find no compelling evidence of this to date, and in fact two studies suggest that disaggregating by population group, for example by region or by age, would have little effect on measured changes in the cost of living. Further work on this subject remains to be done. In particular, the prices actually paid, not just expenditure shares, may differ.

4.24 The construction of purpose built indexes for different subgroups of the population would represent a major undertaking compared with a single index option. First, the existing HES sample size may be too small to produce reliable expenditure estimates for small subgroups of the population, depending on the size of the subgroup. Second, much more work would be required in structuring price samples to reflect the particular items purchased, the outlets from which they are purchased, and the prices actually paid for them, separately for each population group. Assuming only four population groups; employee households, superannuant households, government benefits households, and self employed households, and taking into account the considerable ability to share prices data across the indexes, this could lead to a doubling of the current cost of compiling the CPI (i.e. an additional $5.2 million per year).

Indexes for different regions

4.25 The ABS currently compiles and publishes a separate CPI for each of the eight capital cities. The 'national' CPI is compiled as a weighted average of the eight capital city indexes.

4.26 The construction of a separate index for each city is based on sound statistical principles as separate estimates are available for expenditures in those cities and the construction of measures of price change is consistent with the measures of expenditure. These indexes would be constructed irrespective of whether they were published or not as part of the compilation of the CPI.

4.27 However, publication of separate indexes for the eight capital cities represents more than a by-product option. These indexes have been specifically constructed to meet the need for regional indexes. As such, they are constructed to a more or less uniform standard. The consequences of this strategy are that the HES samples are skewed to ensure sufficient sample sizes in the smaller cities and CPI price samples in each city are of approximately the same size. If the requirement was primarily for a 'national' index, HES sample sizes would be optimised to provide better national estimates (the sample size in each city would be roughly proportional to the number of households in each city) and price collection effort would be better allocated (more prices collected in the larger cities).

4.28 The expansion of regional indexes to provide publication quality separate indexes for sub-population groups in each city would be a significant undertaking. However, to date the ABS is not aware of any demand for these indexes.

4.29 There are many uses made of the CPI. For particular applications, there would be considerable merit in expanding the population coverage to cover as broad a cross-section of Australian households as possible. Given the relatively small additional costs involved, there appears to be a good case for expanding the population coverage to include all private households in the eight capital cities.

4.30 The costs associated with a move to broaden the geographical coverage of the CPI beyond the eight capital cities are more substantial. Such expansion would ensure the CPI is representative of all Australian households, although the differences with a capital city only index are expected to be small. The ABS would appreciate user views on expanding the geographical coverage, in particular on the uses that would be made of a CPI with a wider geographical coverage.

4.31 Currently the CPI is compiled and published for the eight capital cities and the weighted average of the eight capital cities (the latter is sometimes referred to as the 'headline CPI'). The ABS welcomes user views on the regional indexes to be compiled and the uses made of them, keeping in mind that without the requirement for regional indexes, the design of the CPI could be changed to optimise for the national index.

4.32 For those applications of the CPI which target particular household types, it would appear that specific indexes would be conceptually appropriate. User views are sought on the need for indexes for different household types, recognising that the costs of providing them are likely to be considerable.

CHAPTER 5 COMMODITY CLASSIFICATION AND ITEM COVERAGE

5.1 The TCC for the 12th series CPI review recommended (recommendation 6.2.3) that:

> The ABS consider restructuring the current CPI to create a ninth major group, Financial charges, which would include mortgage interest charges and consumer credit. To facilitate housing analysis consideration be given to the continued production of a Housing group inclusive of Mortgage interest charges. Such restructuring could be considered within the context of the next major review.

5.2 This chapter discusses the issues and implications of this proposal, the general issue of changes to the commodity classification and looks at the closely related issue of item coverage.

COMMODITY CLASSIFICATION

5.3 The commodity classification currently used for the CPI consists of eight broad groups of goods and services:

Food
Clothing
Housing
Household equipment and operation
Transportation
Tobacco and alcohol
Health and personal care
Recreation and education.

5.4 These groups are further broken down into a total of 35 subgroups which are in turn broken down into a total of 107 expenditure classes. The current CPI commodity classification is shown at Appendix 4 along with relative expenditure shares at June quarter 1992 prices.

5.5 The commodity classification for the CPI is seen as serving a number of important purposes:

- it assists in describing the CPI item coverage, weighting patterns and methodology to a broad range of users;
- it provides a framework for defining item coverage and identifying whether new items are within scope of the CPI and, if so, where price observations 'belong'; and
- it facilitates the production of indexes for components of the CPI for analytical and other purposes.

5.6 Although the Australian CPI is not currently constructed as a cost of living index (COLI), the cost of living framework, in particular the notions of utility and substitutability, underpins the design of the current classification. The general principle here is to structure the classification such that the highest levels of the classification represent items between which substitutability is deemed low, with the degree of substitutability increasing at the finer levels (with the finest level of the formal classification (expenditure classes) representing the level at which underlying quantity weights are fixed between CPI reviews). This approach varies from the more common industry-based commodity

classifications which are generally more concerned with grouping items with similar inputs (or manufacturing processes) together rather than grouping items with similar use (or utility) together. (To illustrate this point, consider how the alternative approaches might classify buckets. An industry-based commodity classification is likely to classify plastic, metal and wooden buckets in quite different regions of the classification based on their industry of origin, while a utility-based classification will group them very close together as they would be viewed as providing almost identical utility as, say, water-carrying devices.)

5.7 The importance of getting the commodity classification right from an index construction viewpoint was highlighted recently in the Boskin Report (1996) which stated (page 17, footnote 19) that in order to minimise item substitution and quality adjustment bias, 'items which are the closest substitutes for each other in terms of how they are used, must be in the same item group, the lowest level at which indexes are constructed'. The Boskin Report recommended (Executive Summary, recommendation viii) that 'The BLS should investigate the impact of classification, that is item group definition and structure, on the price indexes to improve the ability of the index to fully capture item substitution'.

Financial charges

5.8 The discussion below presupposes that interest rates will continue to be included in the CPI. The issue of whether they are or not is predicated on user feedback on the principal purpose of the CPI, which is the subject of Chapter 2 of this paper.

5.9 The specific questions to be asked in respect of financial charges are one, how or where should they be reflected in the commodity classification from a conceptual viewpoint, and two, if they should be brought together under a new group, are there any practical implications?

5.10 To better appreciate the arguments both for and against a change, it is necessary to understand that mortgage interest charges relate only to interest charges payable in respect of a loan secured by mortgage over the principal dwelling of the household (i.e. excluding mortgages over holiday and investment properties), while consumer credit charges relate to interest charges payable in respect of all other consumer finance such as credit cards, personal loans, hire purchase agreements, etc.

5.11 The argument in favour of the current treatment is that mortgage interest charges represent a direct cost of home ownership and therefore are more correctly allocated to the Housing group. If they were to be excluded from the Housing group, the Housing group index number may be less useful for some applications as it could be seen as not fully representing all housing costs. Consumer credit charges, on the other hand, relate to the charges incurred in financing a much broader range of household consumption items and are more correctly classified to general household operating costs.

5.12 The arguments in favour of a change include the following. While mortgage interest charges can only be incurred by households owning their principal residence, it is less clear that the funds borrowed against

a mortgage are entirely used to finance home ownership. Financial deregulation and increases in real household income over recent decades have combined to provide households with greater and more flexible access to sources of finance. It is now more appropriate to view a mortgage as simply a security against which households can borrow funds to finance general household consumption expenditure such as consumer durables, holidays, children's education expenses, etc. The increase in the range of flexible mortgage or home equity products are cited in support of this view. Given this increased flexibility it would be reasonable to expect households to be able to shift between borrowings secured by mortgage and other forms of consumer credit depending on the relative price levels. Further, as it is generally agreed that interest rates should not be included in a measure of general inflation, the classification of all interest rate influenced measures in a single CPI group simplifies the separate analysis of the impact of interest rates on the CPI, although this would continue to be possible if no change were made.

Practical implications

5.13 If all financial charges were to be brought together under a new Financial charges group, the practical issues that arise are:

- how are the indexes for the changed Housing and Household equipment and operations groups to be handled?
- what reference base should be adopted for the new Financial charges group index?
- what should the structure of the new group incorporate? and
- is there any need to alter the methodology used to construct the interest charges indexes?

5.14 In line with the philosophy of the CPI being a series of short-term indexes linked together to provide a single long-term series, the most appropriate treatment of the indexes for groups and subgroups affected by compositional change is simply to link the two series. In other words, the indexes for these two groups would not be revised to reflect the new composition. While indexes post-December quarter 1997 will not be strictly comparable with those for earlier periods, the same can be said for the CPI as a whole. The extent to which this may impact on users of indexes for these particular groups is unknown, however it would be reasonable to expect it to be small.

5.15 When new items have been introduced to the CPI during previous reviews, the practice has been to publish indexes for these new items on a reference base of the link period (i.e. setting the index equal to 100.0 at the link quarter — in the case of this review, December quarter 1997). However, the introduction of a Financial charges group would primarily represent a reclassification and the currently published special series for Mortgage interest and consumer credit charges represents a sound historical basis for the new group. Therefore, it would seem sensible to link the index for the new group to the index for this special series.

5.16 The structure (or internal classification) that would be adopted for this new group is not clear at this stage. One option would be to break

the group down into two expenditure classes; one for mortgage interest charges, and one for consumer credit charges. However, if it is determined that these items are in fact readily substitutable then they should be combined into 'Interest charges' to retain the flexibility to adjust relative weights between CPI reviews.

5.17 The construction of an index for interest charges can, in concept, be viewed as taking place in two stages. In the first stage, the nominal value of the debt outstanding in the weighting base period is revalued to maintain its value in real terms. In the second stage, the prevailing interest rates are applied to the real value of the debt to arrive at the interest charges that would be payable in the current period. In revaluing this debt, it needs to be recognised that the value of the debt outstanding in the weighting base period is a function of the period in which the loan was drawn down (age of the loan) and rate at which repayments have been made. Therefore, maintenance of the real value of such debt requires each age cohort of debt to be revalued, in line with price changes of the things purchased with the borrowed funds, between the period in which the loan was drawn down and a period of similar age in the current index compilation period. In constructing the current measure of Mortgage interest charges, the debt is revalued in line with movements in house prices, while consumer credit debt is revalued in line with movements of all items included in the CPI (excluding Mortgage interest and consumer credit charges).

5.18 If it is accepted that loans secured by mortgage are used to finance goods and services other than housing, then it follows that the debt should be revalued by an index which includes more than just house prices. What proportion of mortgage debt is used to purchase items other than housing is a matter for conjecture. Records kept by financial institutions are, even if complete, unlikely to be kept in a form which would enable reliable estimation, although this will be explored during the course of the review. In the absence of reliable data, it may be reasonable to adopt some fairly arbitrary but intuitively reasonable estimate such as 10% or 20%. However, refinement of the measures of interest charges is something that could be implemented progressively and need not impede the move to a new classification at the conclusion of this review. (The ABS is constantly refining the measures of price change for items included in the CPI.)

Other possible changes to the commodity classification

5.19 The CPI commodity classification has not been subject to a major overhaul since the mid-1970s (when the Recreation and education group was first introduced). Changes since then have been mainly at the margin. The ABS is not proposing a major review at this time because there are other developments which are of a higher priority. Nevertheless, there are some areas of the existing classification that could be fixed reasonably simply without detracting from possible longer-term changes. These are outlined below:

- Amalgamating with other expenditure classes those expenditure classes which have declined in relative significance (particularly those

which now account for less than 0.5% of total expenditure). Examples include: Butter, Sugar, Cleaning utensils, and Watches and clocks.

- Combining the expenditure classes 'Fresh potatoes' and 'Other fresh vegetables' into the more meaningful 'Fresh vegetables'.
- Renaming some expenditure classes to either better reflect item coverage or make them more meaningful. Examples include renaming 'Records, cassettes and tapes' to 'Compact discs and audio and visual tapes'; 'Holiday travel and accommodation in Australia' to 'Domestic holiday travel and accommodation'.
- To separately recognise areas of expenditure which are both significant and currently combined with other items. Examples include 'Children and infants clothing', 'Books', and possibly 'Health insurance'.

ITEM COVERAGE

5.20 Ideally, the CPI should include all the goods and services which are significant in household consumer spending by the target population group. In practice, it is not always practicable to calculate weights and/or measure price changes, so some goods and services bought by Australian consumers are excluded from the CPI. It is estimated that items included in the CPI account for approximately 95% of target group outlays on consumption. The results of the 1993–94 HES will be analysed to quantify the extent of under coverage and to identify those areas not currently covered with a view to assessing the feasibility of introducing them to the CPI.

5.21 The items known to be currently excluded from the CPI for which expenditures are now thought to be significant are: home computer equipment and software, gambling, financial charges such as bank fees and transaction fees, tertiary education fees and domestic and homecare services.

5.22 In considering whether to expand the item coverage of the CPI or not, particularly if the new items present considerable measurement problems, it is important to recognise what the consequences of non-inclusion imply for aggregate index outcomes. Complete exclusion of items is equivalent to distributing their weight proportionately across all items currently included in the index. Therefore, to the extent that the price behaviour of excluded items is mirrored by the price behaviour of all other items on average, exclusion will have no material impact on index outcomes. The more an item's price behaviour can be expected to vary from the price behaviour of other items, the stronger the case for including the item in the index.

Home computer equipment and software

5.23 Household expenditure on this commodity is not only significant but also an increasing proportion of total expenditure. Total consumer expenditure on computer hardware/software in Australia has, according to the HES (ABS n.d.(a)) grown from $521.4 million in 1988–89 to $1,283.4 million in 1993–94, an increase of 146%.

5.24 In concept, home computer equipment would be included in the Recreation and education group either at the expenditure class level or one level lower depending on its significance. However, determining a reliable weight for expenditure on home computers for consumption may prove to be a major obstacle. Many computers purchased for use in the home are in fact for business-related purposes and hence should not be included in the CPI. While taxation figures on depreciation of home computers may be available to assist in determining whether the HES estimates overstate consumption expenditure on computers or not, this has yet to be investigated.

5.25 Pricing home computer equipment and software is not straightforward because individual items typically have short product life cycles. This phenomenon complicates pricing because it results in a rapidly changing product mix resulting in a greater than average need to adjust for quality change.

Gambling

5.26 Expenditure on gambling accounts for a significant share of household expenditure and has increased in relation to total household expenditure between 1988–89 and 1993–94. It is too large an individual item to be excluded from the CPI on the basis of insignificance. However, there are conceptual and practical problems associated with including gambling services in the CPI basket.

5.27 Only that gambling which can be considered as recreational is conceptually within scope of the CPI. In other words, gambling which is undertaken as a business (i.e. professional gamblers) is excluded. Nevertheless, practical difficulties arise in determining weights and price indicators for gambling. The HES data are subject to high relative standard errors and also to significant under reporting, making it necessary to rely on other data sources to set weights. Assuming reliable weights could be established, questions arise as to what is actually measured and whether it can be priced from quarter to quarter.

5.28 Establishing a 'price' or 'cost' of gambling depends on the view that is taken of the utility or service households derive from gambling. For example, if it is believed that the benefit derived from gambling is simply the 'thrill' of a possible win, then the cost or price can simply be represented by the nominal price of a gamble (e.g. a $2.00 lottery ticket or 20 cents in a poker machine) with a change in the quality of a gamble only arising from a change in the payout rate (e.g. through changes in the tax rate or the 'margin' of the service provider). However, this view would be difficult to sustain in light of the evidence of the tendency for the nominal value of the gamble to increase over time (e.g. the advent of $5.00, $10.00 etc. lottery tickets and $1.00, $2.00 poker machines). A more sustainable view is that the benefit to be derived from a gamble is a function of the real value of the expected return. In this case the measure of price change would require indexing of the price (by presumably the CPI lagged one period) adjusted for any change in payout rates. Therefore, a price measure for gambling would track movements in the remainder of the CPI (with a one-period lag) varying only when payout rates change.

Other financial charges

5.29 The former Prices Surveillance Authority (1995) recommended (page xlvii) 'The Australian Bureau of Statistics consider in its next review of the CPI the inclusion of Retail Transaction Account fees, charges and transaction taxes combined, in the index.'

5.30 There is a strong argument for expanding the coverage of financial charges in the CPI to include fees and charges levied on financial products used in household consumption. While such fees and charges remain relatively small in terms of total expenditure, they can be expected to increase rather than decrease in the future. Examples of fees and charges which could potentially be included are fees associated with personal loans, Financial Institutions Duty, Debits tax and fees or charges associated with transaction accounts, EFTPOS facilities, bank cheques, travellers cheques, etc. Financial charges incurred by households in undertaking savings or investment are theoretically out of scope of the CPI.

5.31 A natural place for these charges would be in the ninth group 'Financial charges' if such a group is created. In the absence of this restructuring it would be logical to include these items with Consumer credit charges and rename the subgroup to 'Consumer financial charges'.

5.32 Establishing price measures for other financial fees and charges will require detailed information from financial institutions which will make them difficult to implement in time for the introduction of the 13th series CPI. In the interim, movements could be imputed by Consumer credit charges.

Tertiary education fees

5.33 Tertiary education fees, as reported in the 1993–94 HES, have increased since the previous HES and primarily consist of two components; HECS payments and general education fees.

5.34 HECS is most appropriately viewed as consisting of two elements: a charge for education (the amount depending on workload, courses, etc.) and, for those students who do not pay the HECS fee upfront, a financing component (whereby the students effectively borrow the amount of the fees from the Government and are charged a nominal interest rate equal to the CPI). For the purpose of constructing the CPI these two elements need to be separated into the two transactions — drawing down on a loan and payment for a service. The actual fees paid for education (whether from their own savings or from money borrowed from the Government) represent a cost of education services while the interest charges on the borrowings represent a cost of credit (or a credit charge). The former would be added to the weight for education fees and price measures constructed accordingly, while the latter should be added to the weight for consumer credit or recognised separately (logically in the new Financial charges group if this proceeds).

Domestic and homecare services

5.35 In recent years a number of household services have become increasingly popular and now account for a significant proportion of household expenditure. These include services such as gardening services, pest control services, housekeeping and cleaning services (including ironing), hire of tools and hire of household durables. It is reasonable to expect that this upward trend is likely to continue.

5.36 Some of these services such as housekeeping and cleaning services (including ironing) may be difficult to price since many of these services operate as part of the cash economy. Nonetheless, it is proposed that these services be introduced with this review, and be priced under 'Domestic and homecare services' and reside under the subgroup Household supplies and services in the Household equipment and operation group.

COMMENT

5.37 If mortgage interest charges can no longer be deemed to relate only to the purchase of housing, then conceptually we should construct two measures — one relating to purchase of owner-occupied housing and one relating to other consumer purchases, the distinction between the two measures being the basis on which the underlying debt is revalued.

5.38 The creation of a ninth commodity group for Financial charges would seem to provide an appropriate means of gathering together financial charges incurred by households as consumers (including interest payable on amounts borrowed under HECS) thus facilitating their separate analysis. However, if mortgage interest charges relating to the purchase of owner-occupied housing were to be included in this new commodity group rather than in the Housing group, the index number series for the Housing group may be less useful than at present. The ABS would appreciate user views on this issue.

5.39 It would also seem sensible to take this opportunity to update other elements of the commodity classification where the issues seem clear cut while waiting for the outcome of the parallel investigation of possible bias in the CPI before implementing a possibly more fundamental restructuring.

5.40 While it should prove relatively straightforward to identify and quantify areas of consumption expenditure not currently covered by the CPI, the development of suitably reliable specific price measures is likely to be more difficult. Present thinking is that item coverage should be expanded to include home computer equipment and software, financial charges such as bank fees and transaction fees, tertiary education fees and domestic and homecare services. The inclusion of gambling is not seen as a high priority given both the difficulty in obtaining reliable weighting data and the expectation that the predominant influence on the price measure will be movements in the CPI itself. For the other items, the option of incorporating expenditure on these items into the weighting pattern of the 13th series CPI in advance of developing specific price measures, warrants serious consideration.

CHAPTER 6 OTHER ISSUES

6.1 Chapters 2 through 5 discuss the substantive issues that the ABS believes should be considered as part of this review of the CPI. This chapter outlines some less significant, but still important, issues on which the ABS would welcome advice. These are the compilation and dissemination of special analytical series and the requirement for spatial comparisons.

6.2 The ABS also extends an invitation to all users of the CPI to come forward with any other issues of concern that may not have been covered in this scoping paper.

ANALYTICAL SERIES

6.3 To assist in better analysing the various sources of price pressures and to provide measures better suited to some indexation requirements, the ABS compiles a number of supplementary indexes derived from the CPI. Examples of these include:

- indexes for the All groups excluding, in turn, each of the eight major commodity groups;
- separate indexes for goods and for services;
- the index of underlying inflation, as defined by the Commonwealth Treasury (see Appendix 5 for a description of this index);
- an index for Selected State and local government charges; and
- separate indexes for imported and domestically produced items.

6.4 Those series which involve aggregating (or excluding) items at the CPI expenditure class level or higher are relatively easy to produce and their interpretation is straightforward as they are based on weights which do not change between CPI reviews. The series which rely on distinctions below the expenditure class level present problems in both construction and interpretation. The series of particular concern to the ABS are those for Selected State and local government charges, and imported and domestically produced items.

Selected State and local government charges

6.5 The Selected State and local government charges index was introduced in 1982 in response to requests from several State Governments and considerable general interest in the impact of changes in State and local government charges on the index. Since then, the index has been used to compare movements in charges levied by government between States and, within States, between the public and private sectors.

6.6 In constructing this index, State and local government charges are defined as those fees and charges paid directly by consumers to State and local government enterprises for the provision of goods and services by those enterprises. The index does not measure the full impact of State and local governments on prices as it does not capture the effects of any changes in prices which are affected by government charges or

taxes, or over which government exerts some form of price control. With the privatisation of some State government services, the opening up of some traditional State government markets to private sector competition, the contracting out of various services and the commercialisation of many public sector business operations, the relevance and usefulness of the index, as either a measure of relative efficiency or as a measure of the impact of State and local governments on consumer prices, becomes ambiguous.

6.7 Present ABS thinking is that this index has outlived its usefulness and should be dropped. The ABS would welcome user comment.

Prices of imported items

6.8 Following the move to a floating exchange rate regime in December 1983, there was considerable interest in monitoring exchange rate effects on the CPI. However, it is not possible to specifically estimate the effect of exchange rate variations on items included in the CPI because:

- the ABS does not obtain information which permits any dissection of price movements into those attributable to changes in the exchange rate and those attributable to other factors such as changes in retailers' (or other) margins, increases in overseas prices of imported goods, changes in indirect taxes etc.; and
- the ABS has no means of identifying other possible effects of exchange rate variations, for example higher prices for locally manufactured goods arising from higher prices for raw materials, or increases in domestic prices reflecting higher export prices, or changes in prices of home-produced goods which are competitive with imported goods.

6.9 As a proxy, the ABS provides information on the price movements of wholly or predominantly imported items included in the CPI together with information about their effect on the CPI as a whole. The information is presented in index number and time series format in a special data product (ABS n.d.(b)).

6.10 In calculating these estimates, the approach has been to identify those items which, when priced for the CPI, were ascertained as being wholly or predominantly imported and then to calculate the price changes for these items regardless of the causes of the price changes. For the purpose of these estimates, items produced partly from imported materials, such as cigarettes, clothing and petrol, have not been included in the category 'predominantly imported' because there is a substantial amount of value added in Australia, and the finished goods are produced from a mixture of imported and home-produced materials and the ABS is unable to assess the relative contribution of the components to any retail price change.

6.11 These measures are deficient in a number of respects. First, there is no attempt to design price samples to explicitly reflect the relative importance of imported and domestically produced items, and to do so would be inappropriate for the construction of the CPI as it would result

in a source of origin rather than a utility-based commodity classification. Secondly, the approach relies on post ante identification of items that happened to be imported during the pricing period and, with increased globalisation, suppliers have increased flexibility to source identical products from a number of countries (including Australia) which creates significant problems for the field officers in identifying the country of origin. Third, as these indexes are not constructed with fixed underlying weights, the relative contribution of imported items to the CPI can change from period to period for reasons other than disparate price movements.

6.12 Given the effort required to produce these indexes, the ABS believes that it is time to revisit the uses made of these measures with a view to ensuring that the right question is being answered. The ABS would welcome users' views on this subject.

SPATIAL MEASURES

6.13 The CPI is a temporal price index, that is, it provides a measure of price change over time. The indexes constructed for each city measure how prices in each city have moved over time; they cannot be used to draw inferences about whether prices in one city are any higher or lower than prices in any other city.

6.14 The ABS is aware that for a number of applications, the difference in price levels between cities is of interest. With the implementation of the new processing system for the CPI, there is scope for the development of programs capable of providing such spatial comparisons. The ABS would therefore be interested in assessing the demand for such indexes on an annual or less frequent basis.

CHAPTER 7 TIMETABLE

7.1 The 13th series review of the CPI provides an opportunity for public involvement in the ongoing evolution of the CPI. This chapter presents a detailed timetable for the review.

EARLY MAY 1997

Release paper

7.2 Release and widely distribute this scoping paper to users of the CPI. Invite organisations or individuals to make written submissions, by 20 June 1997, on any aspect of the review.

MAY TO AUGUST 1997

Consultation

7.3 In addition to releasing this paper, there will be two stages in the formal consultative process. As well as inviting public submissions, the scoping paper will be presented to the CPI Advisory Group as a basis for discussions. A number of meetings of the Advisory Group will be held over the period May 1997 to August 1997.

7.4 In addition to the technical issues raised in the scoping paper, relevant issues arising from the public submissions will be discussed with the Advisory Group.

7.5 Advisory Group deliberations will need to be completed by the end of August 1997.

SEPTEMBER 1997

Finalise outcomes

7.6 Final decisions on the outcome of the review issues must be made by the ABS by 1 September 1997 in order to complete the work required to introduce the new series in the March quarter 1998.

DECEMBER 1997

New weights

7.7 Estimate new expenditure patterns and weights.

FEBRUARY 1998

Link 13th series to 12th series

7.8 The process of linking the old and the new series is an important component of the implementation of the 13th series review. This task cannot be completed until the December quarter 1997 CPI is published in late January 1998.

MARCH 1998

Publish paper

7.9 An information paper will set out the results of the 13th series review. It will be released prior to publication of the March quarter 1998 CPI.

APRIL 1998

Introduce 13th series

7.10 The 13th series CPI will be introduced in respect of March quarter 1998.

APPENDIX 1 ALTERNATIVE CONCEPTUAL APPROACHES TO THE CONSTRUCTION OF CONSUMER PRICE INDEXES

1 The Fourteenth International Conference of Labour Statisticians, convened by the Governing Body of the International Labour Organisation (ILO) in 1987, adopted a *Resolution concerning consumer price indices* (ILO resolution) which includes the following statement:

> The purpose of a consumer price index is to measure changes over time in the general level of prices of goods and services that a reference population acquire, use or pay for consumption. A consumer price index is estimated as a series of summary measures of the period-to-period proportional change in the prices of a fixed set of consumer goods and services of constant quantity and characteristics, acquired, used or paid for by the reference population. Each summary measure is constructed as a weighted average of a large number of elementary aggregate indices. Each of the elementary aggregate indices is estimated using a sample of prices for a defined set of goods and services obtained in, or by residents of, a specific region from a given set of outlets or other sources of consumption goods and services.

2 The simplest way of thinking about how this is achieved is to imagine a fixed 'basket' of goods and services which is representative of purchases by households. As prices of items in the basket vary, the total price of this basket will also vary. Hence the CPI is simply a measure of the change in the total price of this basket.

3 Although the broad objective of a CPI, as stated above, seems simple enough, the phrase 'goods and services that a reference population *acquire*, *use* or *pay* for consumption' (emphasis added) recognises that there are essentially three conceptually valid approaches to CPI compilation:

- the *acquisitions* approach, which defines the basket as consisting of all those consumer goods and services actually acquired by households during the base period;
- the cost of *use* approach, which defines the basket as consisting 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; and
- the actual outlays (or *payments*) approach which defines the basket in terms of the actual amounts paid (or outlayed) by households during the base period to gain access to consumer goods and services (without regard to the source of such funds).

There is no international standard approach which is recommended for adoption by countries. Therefore, countries have adopted different approaches which they believe best suit their principal uses.

4 In practice, these conceptual distinctions are unimportant for most areas of household consumption because they either do not arise or are of no practical consequence. The distinctions may become important however, where:

(i) the real value (or economic cost) of an item differs significantly from its price;

(ii) an item is consumed over a long period of time; or

(iii) expenditure is not directly related to quantities of specific goods and services (i.e. where expenditure cannot be directly computed as the product of a price and a quantity).

5 The *acquisitions* and *outlays* approaches result in very similar baskets. In fact, the acquisitions basket can be viewed as a subset of the outlays basket. Both approaches include all those goods and services acquired during the base period, while the outlays approach also includes payments which are not directly related to the acquisition of specific goods and services but represent inescapable costs of acquisition or consumption. Examples are local government property rates and interest charges.

6 Interest charges are incurred by those households that have financed purchases by borrowings. The total amount of interest charges incurred in any period typically bears no direct relationship to actual quantities of specific goods or services acquired by households during the period. As such, interest charges are not included in an acquisitions index. However, because interest charges are incurred as a consequence of consumption decisions, they are included in an outlays index.

7 The *economic cost of use* approach results in a basket which differs from those delivered by the alternative approaches in several important areas, specifically, goods and services provided to households at subsidised prices, and housing and other consumer durables which are consumed over a long period of time.

8 In the case of goods and services provided to households by government at subsidised prices (e.g. public housing, health services, pharmaceutical products, child care, education services, etc.), an economic cost of use index is not concerned with the costs actually faced by individual households but with the true economic cost of such goods and services. While these particular goods and services can be assumed to have been consumed at the time of acquisition and the underlying quantities can be quantified, for the purpose of deriving value weights and the subsequent measurement of price change for an economic cost of use index it is necessary to compute prices net of subsidies.

9 The actual costs faced by households in acquiring housing and other consumer durables which are consumed over a long period of time (e.g. motor vehicles, white goods, furniture, etc.) are also irrelevant for an economic cost of use index. For these items, consumption does not even approximately coincide with acquisition. An economic cost of use index requires the estimation of the value of that proportion of the stock of these items actually 'used up' in the base period (or the stream

of services consumed). A common practice is to use market rents for identical items (where available). In the case of owner-occupied housing for example, an economic cost of use index would adopt the rental equivalence method and impute rents based on market rents for similar dwellings. In Australia, this raises significant practical problems. First, 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. This weight could be as high as 30% so the movements in dwelling rents will have a significant impact on the index. Second, the private rental market in Australia is 'thin' in its representation of the full range and quality of owner-occupied housing which would create significant price measurement problems.

10 Although these alternative approaches are characterised by marked conceptual differences, these are more likely to result in short-term rather than long-term differences in outcomes (particularly so in the case of the acquisitions and outlays approaches). The expected long-term similarity of outcomes can be attributed to two factors. First, the conceptual distinctions are important for only a relatively small proportion of overall household consumption. Second, each approach covers a broad range of consumer goods and services which tend to exhibit similar long-term price behaviour in the absence of external shocks or institutional change.

APPENDIX 2 BIAS IN CONSUMER PRICE INDEXES

1 Bias can be defined as any systematic deviation of a statistic from its true measure. In order to make any assessment of the bias in the CPI, it is necessary to have a clear understanding of what might be the true measure. In discussing bias in the CPI most commentators do so by considering how well the CPI is able to measure changes in the cost of living (i.e. by comparing the CPI to an ideal estimator for a COLI). In some respects, however, this is an unfair comparison. Most countries, Australia included, have constructed their CPIs to measure the change over time in the price of a constant basket of consumer goods and services. Further, it is generally accepted among both statisticians and economists that it is practically impossible to compile a true COLI.

2 Using a cost of living framework, most economists agree that CPIs overstate changes in the cost of living. However, as the calculation of a true COLI is extremely difficult, there is much less agreement on the magnitude of the overstatement, which in any case would vary from country to country depending on the conceptual and practical decisions taken in the construction of their CPIs. As an example, consider the variations in the following estimates of the total bias in the annual rate of change in the CPIs for Canada, the United Kingdom and the United States of America:

Country	*Percentage points per year*
Canada	<=0.5
United Kingdom(a)	0.35–0.8
United States of America	0.8–1.6

(a) The United Kingdom index is called the Retail Prices Index.

Source: Estimates for Canada are from Crawford (1993), for the United Kingdom from Cunningham (1996) and the United States from the Boskin Report (1996).

It should be noted that these studies are not without their critics, including the statistical offices of the countries concerned which believe they overstate the bias problem. For example, it is assumed in these studies that the various sources of bias are additive.

3 The existence of any bias in the Australian CPI is a matter of concern for the ABS. As the issue is not as straightforward as commonly supposed, the remainder of this appendix sets out to describe the conceptual framework for COLIs, draw out the points of departure from the CPI, describe the procedures currently employed to minimise bias in the CPI and to identify possible future options.

COST OF LIVING INDEX (COLI)

4 A COLI would measure the change over time in the minimum cost of purchasing a basket of goods and services capable of providing the same utility (or satisfaction) as that provided by the basket purchased in the reference base period (Pollak 1983).

5 The theory of a COLI is based on consumer preference theory, the essential elements of which can be briefly summarised as follows. First, consumers derive a certain level of satisfaction (or utility) from goods and services. Second, consumers have well defined preferences such that when confronted with a choice between two baskets of goods and services they are able to say that they either prefer one basket to the other or that they have no preference for one basket over the other (or are indifferent between them). Third, there is a rational relationship between the rankings — by this it is meant that if one basket contains more of one item but no less of any other then it must be preferred to all other baskets.

6 It is the baskets between which a consumer is indifferent that are central to the COLI. Assume a set of baskets with only two goods. Those baskets between which a consumer is indifferent will contain different quantities of the two goods such that no bundle will contain more of one good without containing less of the other good. Given this scenario, as any one basket provides exactly the same utility as any other basket, the consumer will purchase that basket which is cheapest given the prevailing prices. Therefore, if relative prices change, the consumer is able to choose an alternative basket containing less of the item which has become relatively more expensive and more of the item which has become relatively cheaper, while maintaining the same level of utility and the same outlay.

7 When prices change, the objective of a COLI is to identify, from among that group of baskets that provide the same utility as the basket purchased in the reference period, that basket which would be purchased in the current period given the relative prices now prevailing (i.e. the now cheapest basket). The difference between the cost of this basket and the cost of the reference period basket provides the measure of the change in the cost of living. The problem with this is that only the basket actually purchased in the reference period is observable; the set of equal utility baskets are not directly observable. In concept, the problem of the unobservable set of equal utility baskets can be overcome by employing econometric techniques to estimate a set of underlying utility functions, however this is not a simple process.

8 Diewert (1976) demonstrated that certain classes of index formulae closely approximate the exact COLI for any utility function given some simplifying assumptions. These formulae, for which he coined the term superlative, include the Fisher Ideal Index and the Törnqvist Index. These formulae make use of the observable basket in both the reference period and the current period obviating the need to estimate the underlying utility functions. The relevant simplifying assumptions are that consumer preference functions are homothetic (i.e. income elasticities for all items are equal to one; in other words, a 1% increase in income will result in a 1% increase in demand for all items in the basket) and that preference functions do not change over time. While the validity of these assumptions can be challenged for comparisons over extended time periods, they can be regarded as reasonable over relatively short comparison periods. Most recent empirical studies of bias in CPIs have been undertaken by comparing an index obtained using the CPI fixed

basket approach to an index obtained using one of the superlative formulae.

9 In examining this issue in the United States of America, the Boskin Report (1996) went somewhat further and introduced what might be regarded as externalities into the preference functions. This report put forward the view that factors such as crime rates and levels of pollution also contribute to consumer well-being (and hence utility) and should also be taken into account when constructing a COLI. The argument goes something like this; to the extent that consumers may be prepared to pay higher prices for (say) power generation in return for cleaner air and/or water, then such price changes should be offset in the index. While these notions are intuitively appealing within an overall 'quality of life' context and warrant further research, the measurement problems are well beyond the current state of the art and are therefore not considered further.

10 Appendix 1 looks at the alternative conceptual approaches to the construction of a CPI. To the extent that the essential difference between a COLI and a CPI (as currently constructed) is that the former utilises a 'fixed utility' concept while the latter utilises a 'fixed basket' concept, the issue of determining the appropriate item coverage (based on principal purpose) is common to both constructs. In other words, there is no single COLI. One could, in theory, construct a COLI on an acquisitions, outlays or economic cost of use basis.

11 Before turning to the issue of which concept (fixed utility or fixed basket) is most appropriate for the purposes for which the CPI is used, it is worth looking briefly at the circumstances under which indexes constructed using these alternative concepts will differ. First, if all prices change at the same rate, the indexes will deliver identical outcomes. Therefore, the divergence in outcomes could reasonably be expected to be a function of the degree of dispersion in the rates of price change for individual items — it might therefore be reasonable to conclude that the differences will be greater during periods of high price inflation (which are generally characterised by greater dispersion of rates of price change). Second, the degree to which consumers regard items as substitutable — the more substitutable (e.g. different varieties of apples) the greater the divergence; the less substitutable (e.g. different surgical procedures) the less divergence.

12 There are severe practical problems in constructing a true COLI. The calculation requires use of a superlative formula (see paragraph 8 above) for which current period weights must be available. Such weights are either not available at all, or only with a signficant time lag. Despite these practical problems, it is clear that for most purposes for which the CPI is used, a cost of living construct would be the most appropriate. For example, if the purpose is to provide a measure which indicates how much household income should be adjusted to preserve some base period standard of living, then an index which takes account of the extent to which households can adjust their purchasing patterns to absorb at least some price change is clearly desirable (recognising that any over-compensation resulting from the use of a fixed basket index will result in households attaining a higher standard of living).

13 Before considering the various sources of bias in detail, it is useful to describe how the current CPI is constructed each quarter.

CONSTRUCTION OF THE CPI

14 Construction of the Australian CPI may be viewed as being undertaken in four stages:

micro
elementary aggregation
intermediate aggregation
upper level aggregation.

The descriptions that follow may not record precisely the actual practices employed. However, this is not considered important in this context as the objective is to describe how the index is put together in readily understandable terms. While some of the mechanics may differ, the intention and outcomes are equivalent.

Micro

15 The micro level can be regarded as the starting point. It involves the collection of price data for specific *items* from specified *outlets*. On average, approximately 100,000 price observations are made across Australia each quarter. For each outlet/item combination a price relative is constructed (simply the ratio of the price in the current period to the price in the base period). Where a change in item quality has been detected, an adjustment to the base period price is made to ensure that the price relative reflects only pure price change. For example, if the item priced this period is deemed to be of 10% higher quality than the item priced in the previous period, the base period price will be increased by 10% before constructing the price relative. Further, neither the specific items priced nor the outlets from which they are priced are fixed for the duration of any particular CPI series. Although some items may continue to be priced for many years (e.g. Jonathon apples), other items are subject to constant change in response to changing market conditions (e.g. the specific brands and models of television sets). Similarly, outlet samples are also changed to ensure they remain representative of the outlets at which consumers shop. Such measures are very important in minimising the possibilities of bias arising at the price collection stage.

Elementary aggregation

16 This process involves calculating an *elementary aggregate* index for *representative items* by reference to the price relatives for identical or nearly identical items separately for each of the eight capital cities. For example, an index for red apples in Sydney would be constructed by averaging the price relatives for all red apples priced in Sydney. As with individual specifications, representative items are also subject to change. For example, the representative items for Records, cassettes and tapes would have been changed to incorporate CDs.

Intermediate aggregation

17 Intermediate aggregation can involve several iterative steps. For example, the apple and pear indexes may be weighted together to derive an index for pomme fruits; the indexes for oranges and lemons may be weighted together to derive an index for citrus fruits; and finally the indexes for pomme fruits and citrus fruits may be weighted together to derive an index for fresh fruit. The important points to bear in mind about the intermediate aggregation process are:

- the outcome of intermediate aggregation is an index for each CPI *expenditure class* in each city; and
- the number of intermediate indexes and the weights used to combine elementary aggregate and intermediate indexes are subject to change between CPI reviews; again, this is important in minimising bias possibilities.

Upper level aggregation

18 Upper level aggregation refers to the process of weighting together the indexes for each of the 107 expenditure classes in each city to derive the subgroup (35), group (8) and All group indexes respectively. Indexes for the weighted average of the eight capital cities are also derived as part of this process. It is only at this level of aggregation that the underlying quantity weights are held fixed between CPI reviews.

SOURCES OF BIAS

19 It is generally recognised that there are five major sources of possible bias in consumer price indexes:

item substitution bias
outlet substitution bias
new goods bias
quality adjustment bias
elementary aggregate formula bias.

20 The first three sources of bias are ascribed to the difference between a fixed basket index and an ideal COLI, but the latter two (quality adjustment bias and elementary aggregate formula bias) are potential sources of bias common to all indexes.

Item substitution bias

21 The Boskin Commission assessed this bias at 0.15% per year for the United States' CPI. Item substitution bias arises from the inability of a fixed basket index to take account of the substitutions consumers make in response to changes in the relative prices of commodities (e.g. to consume more chicken and less beef when the price of chicken falls relative to the price of beef).

22 As stated previously (paragraph 8), estimation of item substitution bias is normally carried out by comparing an index obtained using the CPI fixed basket approach to an index obtained using one of the superlative formulae. This in itself is not a simple process as, in order to

construct the superlative index, both price and quantity data are required for each period.

23 The ABS does not currently use a superlative formula. However, the ABS employs a number of strategies to minimise item substitution bias. First, the results of the HES are not just taken at face value and input to the CPI. The results are subject to extensive analysis both to correct for any under reporting and to correct for any aberrations in expenditure during the HES survey year. These latter corrections are also targeted at identifying any emerging trends in consumption with a view to refining the HES estimates to reflect a 'normal' level of expenditure likely to be more representative of future rather than past expenditure patterns. While such adjustments clearly involve a degree of subjectivity, the ABS has long been of the view that the adjustments are warranted. Second, the ABS has selected a reasonably high level of commodity aggregation as the point at which to fix underlying quantity weights between CPI reviews (i.e. the 107 expenditure classes) and allows the weights at lower levels to be changed between reviews, if need be, to reflect current market conditions. The objective has been to fix weights at a level which represents clear distinctions between goods and services that are not readily substitutable and to retain flexibility to change weights at lower levels to reflect changes in proportions of expenditure on those goods and services that are readily substitutable for one another. The ABS maintains an ongoing program of 'sample reviews' with the explicit purpose of updating these low level samples and weights (see paragraphs 15–17 above). A side effect of this strategy is that it makes it virtually impossible to quantify any residual intermediate aggregation level item substitution bias.

Outlet substitution bias

24 Outlet substitution bias is equivalent to item substitution bias, only in this case it relates to consumers' abilities to shift to cheaper cost outlets for identical items rather than to shift to cheaper items. The Boskin Commission estimated this bias at 0.10% per year for the United States' CPI.

25 Quantification of outlet substitution bias for the Australian CPI would prove even more difficult than quantification of item substitution bias. However, considering the strategies the ABS already has in place to change low level samples (see particularly paragraph 15 above) between CPI reviews, it would be reasonable to conclude that any remaining outlet substitution bias in the Australian CPI would be very small.

New goods bias

26 New goods bias refers to the inability of a rigidly fixed basket index to account for the price behaviour of completely new goods entering the market. The concern here is not with changes to existing goods, for example a new model of motor vehicle, but with goods that are substantially different from those that were in existence in the weighting base period. Examples of new goods in recent years would be microwave ovens, compact discs and players, video cassette recorders etc. The Boskin Commission did not separately estimate for new goods bias

in the United States' CPI but incorporated such bias in its estimate for quality adjustment bias (see paragraph 30 below).

27 The reason new goods are significant in an index context is that these goods tend to exhibit quite marked price behaviour after entering the market characterised by a high entry price, followed by a period of rapidly declining price (if not in absolute terms then at least in relative terms) before assuming the status of an 'established' good. During the period between when a new good enters the market and becomes an accepted, established good, its marked downward price behaviour is unlikely to be reflected by the price behaviour of existing goods. To the extent that the price falls of new goods are not captured by the price index, the index will overstate the real change in the cost of living.

28 In assessing the potential impact of the omission of new goods from the CPI basket during this initial phase of their life cycle, it should be borne in mind that the initial volumes are very low (in fact nil in the period immediately preceding their introduction), growing as the price falls. Therefore, new goods bias increases with the delay in which new goods are introduced to the index — particularly if the delay is such that the new goods are not introduced until such time as they can be said to have become established goods.

29 The ABS does not maintain a rigidly fixed basket between CPI reviews (see paragraphs 15–17 and 23). While the ABS adopts a conservative approach to the introduction of new goods — generally introducing new goods into existing expenditure classes only after it can be seen that they have become widely available to the buying public and that they have become a permanent feature of household expenditure — this strategy would serve to minimise the extent of any new goods bias in the Australian CPI.

Quality adjustment bias

30 Quality adjustment bias arises from the statistician's inability to perfectly account for changes in the quality of items over time. The quality of goods and services can, of course, increase or decrease over time. It is not possible to precisely quantify the extent of quality adjustment bias in the CPI as the 'true' answer is never known. That said, the Boskin Commission assessed the combined new goods and quality adjustment biases in the United States' CPI at 0.60% per year.

31 The identification and quantification of quality change accounts for a significant proportion of the resources devoted to the construction of CPIs. While theoretical systematic approaches to quantifying quality change do exist, most notably the use of hedonic regression techniques, these approaches are invariably costly and rarely lend themselves to timely adjustment. Most statistical agencies therefore fall back on relying on the expert judgement of the statisticians compiling the CPI. The ABS is no different in this regard.

32 The ABS has a number of strategies in place to minimise quality adjustment bias (the procedure for practical correction is described briefly in paragraph 15). In the first instance, the ABS employs permanent field staff in each capital city for the collection of prices by

direct observation. These staff have been specifically trained to identify any changes in the physical or other characteristics of products and to report the details along with the price information. Second, the ABS maintains a proactive program of interviews with manufacturers and importers to both identify forthcoming changes in product specifications and to obtain information to assist in quantifying current and future quality changes. Third, the staff responsible for making the assessment of quality change are assigned responsibility for specific areas of the index in order to gain expertise in specific market segments and to ensure, as far as possible, consistency in adjustments over time.

33 While the ABS is unable to precisely quantify quality adjustment bias in the CPI, we can use our knowledge of believed adequacy of existing procedures to make a judgement about the possible magnitude of such error. On this basis it is possible to classify each expenditure class into one of three categories:

(i) quality adjusted (existing procedures are believed to adequately capture quality change);

(ii) low risk (no satisfactory procedures currently available but the items are not believed to be subject to significant quality change); or

(iii) high risk (no satisfactory procedures currently available and the items are believed to be subject to significant quality change).

34 Using the weights for the 12th series CPI at June quarter 1992, 48% of the index is judged as falling into category (i), 42% into category (ii), and 10% into category (iii).

35 Items for which quality adjustment procedures are currently believed adequate (category (i)), include most manufactured goods, for example, processed foodstuffs; clothing; footwear; household appliances etc.; motor vehicles; petrol; tobacco and alcohol; toiletries and personal products; books, newspapers and magazines; and video and sound equipment.

36 Items for which no satisfactory quality adjustment procedures are available but for which the risk of significant quality change is believed to be low (category (ii)), include non-manufactured goods and a range of services, for example, meat and seafoods; fresh fruit and vegetables; meals out; fabrics and knitting wool; dry cleaning and shoe repairs; housing costs; utilities; repairs to appliances; consumer credit charges; vehicle insurance; private motoring costs (excluding vehicles and petrol); hairdressing services; records, cassettes and tapes; sports and photographic equipment and toys; photographic services; repairs to recreational goods; entertainment services; and education and child-care.

37 High risk items for which no satisfactory quality adjustment procedures are available (category (iii)) are almost invariably services. The specific items of concern are:

postal services
telephone services
urban transport fares
hospital and medical services
optical services
dental services
pharmaceuticals
domestic and international holiday travel and accommodation.

38 Taking into account the relative significance of these high risk items (accounting for approximately 10% of the CPI basket), it is possible to estimate the magnitude of quality adjustment bias under assumptions of different rates of continuous quality improvement. However, quality change is not a smoothly continuous function, as changes in the quality of individual items normally take place in discrete 'jumps', and quality changes are not always for the better (for example reductions in the frequency of public transport; reductions in the number of hospital bed days, which may reflect a desire to reduce waiting lists rather than reflect any improvement in treatment). Therefore, for the purpose of this exercise it would be difficult to justify an average rate of continuous quality improvement of much above 1.0% per year. If these high risk items were to increase in quality by an average of 1.0% per year, the CPI would be biased upwards by 0.1% per year.

39 Quality adjustment remains one of the areas of principal concern to the ABS, particularly in respect of the growing services sector, and efforts will continue to be made to identify better means of adjusting for quality change in the CPI.

Elementary aggregate formula bias

40 'Elementary index bias arises from the use of an inappropriate method for aggregating price quotations at the very lowest level of aggregation' (Diewert 1995b). The Boskin Commission estimated this bias at 0.25% per year for the United States' CPI.

41 Elementary aggregates are the basic building blocks from which aggregate price indexes are constructed. They represent the second stage in index construction (see paragraph 16) and the only level for which indexes are constructed directly from a sample of price information. Further, elementary aggregates are defined as the lowest level for which reliable weighting information is available (i.e. it is not normally possible to further subdivide elementary aggregates due to a lack of weighting information).

42 In constructing elementary aggregate indexes from price data alone, the statistician is faced with a choice of possible methods. The three most used or commonly advocated methods are:

- to take the arithmetic average of the individual quality adjusted price relatives (see paragraph 15 for a definition of price relatives) — the arithmetic mean of relatives approach, referred to as the Carli formula;

- to construct a ratio of the arithmetic average of the prices in the current period to the arithmetic average of the prices in the base period — the relative of arithmetic means approach, referred to as the Dutot formula; and
- to take the geometric average of the individual quality adjusted price relatives — the geometric mean approach, referred to as the Jevons formula.

43 The three methods produce different results as they implicitly utilise different underlying weights. The Carli formula assumes equal base period value weights; the Dutot, equal base period quantity weights; and the Jevons equal expenditure shares in both periods. The ABS, in common with the majority of statistical agencies, currently uses the Carli formula.

44 Diewert (1995a) developed a suite of axiomatic tests against which to compare the performance of various index formulae and concluded that the Carli formula was the least satisfactory, being inherently upwardly biased, while there was little to choose between the Dutot and Jevons formula. Woolford (1994) used data for fresh fruit and vegetables in Canberra to demonstrate that, under certain data conditions, the choice of formula can result in significantly different outcomes. However he concluded that:

> after taking account of some of the practical aspects of index construction, the evidence does not point to the clear superiority of a single formula in all circumstances … and that the final choice (of formula for individual elementary aggregates) should … be left to the judgement of the prices statistician.

45 The ABS has developed and recently implemented a new processing system for the CPI which provides for the use of different formula at the elementary aggregate level. The ABS is also continuing to research the problem of elementary aggregate formula bias — preliminary results indicating that the use of inappropriate formula at this level could be leading to some overstatement of the CPI. As the results of this research reach firm conclusions in respect of individual price samples, the ABS intends to progressively implement new elementary aggregate formulae as appropriate. Initial expectations are that this will result in the restructuring of some elementary aggregate samples and the widespread, but not universal, adoption of the Jevons formula. This outcome would be consistent with steps taken recently by Statistics Canada in respect of their CPI and with work being done by the US Bureau of Labor Statistics in respect of its CPI.

Total bias

46 It is by no means clear that the estimates of the magnitude of the different sources of biases are independent. For example, to the extent that the Jevons formula for elementary aggregates accommodates a degree of outlet substitution, the adoption of this formula could be expected to reduce the estimate of outlet substitution bias. Similarly, improvements to quality adjustment procedures (which take effect below the elementary aggregate level), have the potential to alter the estimate

of elementary aggregate formula bias (either up or down). Further, to the extent that the sum of these actions result in changes to indexes at higher levels of aggregation, the estimates of item substitution bias could be expected to change (again, either up or down). For these reasons the ABS does not believe it is possible to reliably estimate the overall bias in the CPI, although the weight of evidence points to it being small.

CONCLUSION

47 While the ABS believes that any bias in the Australian CPI is very small, it is nevertheless concerned about the existence of any bias. The ABS is therefore conducting a detailed investigation of bias and possible solutions in parallel with this review. It will:

- investigate whether more frequent re-weighting of the 'basket' is justified;
- continue to ensure its sample of outlets remains representative and new goods are introduced into the index where appropriate;
- investigate the feasibility of extending quality adjustments to the items identified in paragraph 37; and
- adjust the elementary index formulae being used so that the most appropriate formula is being used.

APPENDIX 3 CONSUMER PRICE INDEXES IN SELECTED COUNTRIES

This Appendix provides summary information on the CPIs in a number of selected OECD countries on a range of matters which are discussed in this scoping paper. As noted by Turvey (1989, page 9) 'there are a number of issues in the design of a consumer price index where there is no unique best way of doing things', and the approaches used may reflect practical considerations as well as user needs. While we have ascribed a conceptual basis to each country's CPI, the classification is not always clear cut. The conceptual basis has implications for how the costs of home ownership[1] should be treated in the CPI and this is indicated below.

AUSTRALIA

Conceptual basis

Outlays.

Index formula

Laspeyres. Expenditure weights are derived from the HES and are revised at approximately five-yearly intervals.

Population

Wage and salary earning households deriving at least 75% of their income from wages and salaries, but excluding the top 10% in terms of income.

Region

Eight capital cities, with a 'national' index compiled as a weighed average of the eight capital cities.

Home ownership

Mortgage interest charges.

Pricing

Prices included in the index are an average for the quarter. The majority of items are priced quarterly. For more volatile items (e.g. petrol, alcohol, meat, fresh fruit and vegetables) prices are collected each month. A small number of items whose prices are known to be set annually (e.g. local government rates and charges) are collected only once a year.

---

1 Most countries also include repair and maintenance, homeowners' insurance and other costs associated with home ownership in their CPI.

Frequency

Quarterly.

CANADA

Conceptual basis

Outlays approach.

Index formula

Laspeyres. Expenditure weights are revised every four years, with the most recent update in 1995 (1992 weights). The next basket update is due in 1998 (1996 weights). Yearly basket update is proposed, starting in 1998.

Population

The reference population consists of the entire population.

Region

Ten provinces and 18 cities. Price collection continues to be concentrated in the large and medium-sized cities. For most commodities, these data are considered to be fairly representative of the price movements (although not the levels) in smaller cities and rural areas. The price collection extends to smaller cities for those goods and services which have prices that are recognised as being locally determined.

Home ownership

Mortgage interest and depreciation.

Pricing

Over 60,000 prices are collected monthly, covering more than 600 commodities. Price collection is done in the first three weeks of each month. Approximately 40% of the collection is done monthly. Exceptions to monthly collection include furniture and household appliances (bi-monthly), automobiles, clothing services, personal care services and newspapers (quarterly), and automobile registration and property taxes (annual) though these items may be priced more frequently if circumstances indicate that this should be done.

Frequency

Monthly.

JAPAN

Conceptual basis

Economic cost of use.

Index formula

Laspeyres. The base period and weighting pattern are revised every five years. The weights were derived from a household expenditure survey conducted in 1990, covering approximately 8,000 households. Monthly weights of fresh food items were obtained from average expenditure data for 1989 and 1990.

Population

The CPI covers households in the entire country, excluding one-person households and households mainly engaged in agriculture, forestry and fishing.

Region

Prices for most items are collected through personal visits to selected outlets and service establishments in 167 cities, towns and villages.

Home ownership

Rental equivalence.

Pricing

Prices are surveyed on Wednesday, Thursday or Friday of the week which includes the 12th of each month. For 42 items of fresh fish, fresh vegetables and fresh fruit prices are collected three times a month. Education fees are surveyed in April and September. Prices used in the index are retail prices actually paid by consumers on pricing day, excluding bargain, clearance, discount and temporary or abnormal prices, reduced prices for quantity purchases and prices of second-hand articles.

Frequency

Monthly.

THE NETHERLANDS

Conceptual basis

Economic cost of use.

Index formula

Laspeyres. Expenditure weights were derived from the 1990 budget survey of 2,767 households. The monthly weights of groups of seasonal products remain constant through the year, but the component weights vary by month to reflect the seasonality of these items.

Population

Indices for three groups of households are calculated:

- All private households.
- Employees' households with a 1990 gross household income below the median of the income distribution of the employees' households in the base year.
- Employees' households with a 1990 gross household income above the median of the income distribution of the employees' households in the base year.

Region

Price quotations are gathered monthly in 100 municipalities of over 10,000 inhabitants.

Home ownership

Rental equivalence.

Pricing

Price information relating to some 1,200 representative commodities and services is collected. Items which have frequent price variations, for example fresh vegetables, are measured three times a month. Other articles are measured monthly or less frequently, depending on expected price fluctuations. Exclusive of rent, some 100,000 price quotations are gathered monthly.

Frequency

Monthly.

NEW ZEALAND

Conceptual basis

Acquisitions approach.

Index formula

Laspeyres. Expenditure weights are derived from the Household Economic Survey (HES) which is conducted annually although CPI weights are only updated on a five-yearly cycle. In 1995 and 1996, Statistics New Zealand conducted an annual review which looked at, and adjusted if necessary, weights below the published regimen level.

Population

All private households living in permanent dwellings except those in remote rural areas and off-shore islands (95% of population). There were no other exclusions based on geographical location.

A Superannuitants Price Index is also produced, using price data obtained for the CPI, but with population and expenditure weights reflecting the profiles of superannuitants.

Region

Prices are collected in 15 urban areas. These urban areas are considered to be representative of the surrounding smaller urban and non-urban areas.

Home ownership

Costs of house construction and residential land, mortgage interest charges.

Pricing

Monthly surveys are conducted on the 15th of the month for food, non-food groceries, electricity, gas, petrol, alternative motor fuels, tobacco, alcoholic drinks, newspapers, domestic airfares and mortgage interest. Weekly surveys are conducted for fresh fruit and vegetables and telephone call charges. Annual surveys are conducted for items where prices are set annually, e.g. tertiary fees. For the reminder of the goods and services priced, price surveys are conducted quarterly on the 15th of the second month.

Some prices are national prices and a number of items are only priced when in season.

Frequency

CPI is published quarterly, with a Food Price Index published monthly.

UNITED KINGDOM

Conceptual basis

Outlays approach.

Index formula	
	Laspeyres. Weights are reviewed annually from the Family Expenditure Survey (a continuous household survey). Within sections, items are also reviewed annually. The weights for these come from a variety of sources.
Population	
	The reference population for the Retail Prices Index consists of all households including those whose head is self-employed or unemployed, estimated at 85% of the total population. The top 4% of households with the highest incomes, those living in institutions, and pensioner households dependent on state pensions (75% or more of their income from state benefits, approximately 11% of total households) are excluded.
	Separate indexes are produced that relate only to pensioner households excluded from the main population. The items are very similar to those for the main Retail Prices Index, but a few thought not to be bought much by pensioners are excluded and there are special bus and train fare indices to allow for pensioner concessions.
Region	Price movements are monitored in 146 locations (a location may be a major out of town shopping centre) throughout the country.
Home ownership	Mortgage interest and depreciation.
Pricing	Some 600 specified items are priced monthly in more than 10,000 reporting units. Pricing takes place on, or one day either side of, a mid-month Tuesday. Certain 'non-shop' prices (e.g. postal charges, utility charges) are collected quarterly or annually or as required when price changes take place.
Frequency	Monthly.
UNITED STATES OF AMERICA	
Conceptual basis	Economic cost of use.
Index formula	Laspeyres. Expenditure weights are updated at approximately ten-yearly intervals. The current weights, based on the average 1982 to 1984 expenditures, will be replaced by 1993–95 weights when the index for January 1998 is released. One-fifth of the outlet and item samples are updated each year using an annual point of purchase survey which also enables the introduction of new items into the index.
Population	The Bureau of Labor Statistics publishes a CPI for two major population groups:
	■ All urban Consumers (CPI –U) which covers approximately 80% of the total population; and

- Urban Wage Earners and Clerical Workers (CPI -W) which covers 32% of the total population.

CPI –U includes, in addition to the CPI –W population, groups such as professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees and others not in the labour force. Military and institutional populations are excluded.

Region

Urban areas of more than 2,000 population. Prices are collected in 85 urban areas across the country from about 57,000 housing units and 19,000 retail establishments. The indexes, in geographic dimension, are published for:

29 metropolitan cities
4 regions
4 population size classes
13 cross-classifications by area and population size classes.

Home ownership

Rental equivalence.

Pricing

Prices of food, fuel, and a few other items are obtained every month in all locations. Prices of most other items are collected every month in the five largest geographic areas and every other month in other areas. Indexes are published monthly for five major metropolitan areas and every other month for an additional 10 metropolitan areas.

Frequency

Monthly.

Information for this Appendix was obtained from International Labour Office (1992) and OECD (1994) and the statistical authorities.

APPENDIX 4 CONSUMER PRICE INDEX COMMODITY CLASSIFICATION AND WEIGHTS

EIGHT CAPITAL CITIES COMBINED — JUNE QUARTER 1992

	Percentage contribution		
Group, subgroup and expenditure class	*Group total*	*Subgroup total*	*Expenditure class*
Food	**18.324**	**. .**	**. .**
Dairy products	. .	1.463	. .
Milk and cream	. .	. .	0.895
Cheese	. .	. .	0.373
Butter	. .	. .	0.055
Other dairy products	. .	. .	0.140
Cereal products	. .	2.097	. .
Bread	. .	. .	0.867
Cakes and biscuits	. .	. .	0.773
Breakfast cereals	. .	. .	0.252
Other cereal products	. .	. .	0.205
Meat and seafoods	. .	3.001	. .
Beef and veal	. .	. .	0.736
Lamb and mutton	. .	. .	0.363
Pork	. .	. .	0.177
Poultry	. .	. .	0.401
Bacon and ham	. .	. .	0.308
Processed meat	. .	. .	0.690
Fish	. .	. .	0.326
Fresh fruit and vegetables	. .	1.417	. .
Fresh fruit	. .	. .	0.690
Fresh potatoes	. .	. .	0.121
Fresh vegetables	. .	. .	0.606
Processed fruit and vegetables	. .	0.829	. .
Processed fruit	. .	. .	0.140
Fruit juice	. .	. .	0.419
Processed vegetables	. .	. .	0.270
Soft drinks, ice cream and confectionery	. .	2.890	. .
Soft drinks and cordials	. .	. .	1.212
Ice cream and ice confectionery	. .	. .	0.354
Confectionery	. .	. .	1.324
Meals out and take away foods	. .	4.959	. .
Meals out	. .	. .	1.818
Take away foods	. .	. .	3.141
Other food	. .	1.668	. .
Eggs	. .	. .	0.121
Sugar	. .	. .	0.056
Jams, honey and sandwich spreads	. .	. .	0.149
Tea, coffee and food drinks	. .	. .	0.289
Food additives, sauces and spices	. .	. .	0.242
Margarine	. .	. .	0.130
Cooking oils and fats	. .	. .	0.084
Other food	. .	. .	0.597
Clothing	**6.264**	**. .**	**. .**
Men's and boys' clothing	. .	1.686	. .
Men's outer clothing	. .	. .	0.680
Men's knitwear	. .	. .	0.158
Men's shirts	. .	. .	0.317
Men's underwear, nightwear and socks	. .	. .	0.149
Boys' clothing	. .	. .	0.382
Women's and girls' clothing	. .	2.545	. .
Women's outer clothing	. .	. .	1.640
Women's knitwear	. .	. .	0.196
Women's underwear, nightwear and hosiery	. .	. .	0.345
Girls' clothing	. .	. .	0.364

...continued

EIGHT CAPITAL CITIES COMBINED — JUNE QUARTER 1992 — *continued*

	Percentage contribution		
Group, subgroup and expenditure class	*Group total*	*Subgroup total*	*Expenditure class*
Clothing — *continued*			
Fabrics and knitting wool	. .	0.746	0.746
Footwear	. .	1.063	. .
Men's footwear	. .	. .	0.354
Women's footwear	. .	. .	0.457
Children's footwear	. .	. .	0.252
Dry cleaning and shoe repairs	. .	0.224	0.224
Housing	**15.900**	**. .**	**. .**
Rents	. .	4.865	. .
Privately-owned dwelling rents	. .	. .	4.483
Government-owned dwelling rents	. .	. .	0.382
Home ownership	. .	11.035	. .
Mortgage interest charges	. .	. .	6.608
Local government rates and charges	. .	. .	2.190
House repairs and maintenance	. .	. .	1.827
House insurance	. .	. .	0.410
Household equipment and operation	**18.370**	**. .**	**. .**
Fuel and light	. .	2.339	. .
Electricity	. .	. .	1.752
Gas	. .	. .	0.531
Other fuel	. .	. .	0.056
Furniture and floor coverings	. .	4.344	. .
Furniture	. .	. .	3.505
Floor coverings	. .	. .	0.839
Appliances	. .	1.538	1.538
Household textiles	. .	0.754	. .
Bedding	. .	. .	0.353
Towels, linen and curtains	. .	. .	0.401
Household utensils and tools	. .	1.212	. .
Tableware, glassware and cutlery	. .	. .	0.261
Kitchen and cooking utensils	. .	. .	0.382
Cleaning utensils	. .	. .	0.084
Tools	. .	. .	0.485
Household supplies and services	. .	3.970	. .
Household cleaning agents	. .	. .	0.671
Household paper products	. .	. .	0.457
Other household non-durables	. .	. .	0.857
Stationery	. .	. .	0.429
Watches and clocks	. .	. .	0.121
Veterinary services	. .	. .	0.121
Pet foods	. .	. .	0.485
Travel goods	. .	. .	0.270
House contents insurance	. .	. .	0.382
Repairs to appliances	. .	. .	0.177
Postal and telephone services	. .	1.715	. .
Postal services	. .	. .	0.168
Telephone services	. .	. .	1.547
Consumer credit charges	. .	2.498	2.498
Transportation	**15.967**	**. .**	**. .**
Private motoring	. .	14.755	. .
Motor vehicles	. .	. .	3.989
Automotive fuel	. .	. .	4.698
Vehicle insurance	. .	. .	2.106
Motoring charges	. .	. .	0.839
Tyres and tubes	. .	. .	0.345
Vehicle servicing, repairs and parts	. .	. .	2.778
Urban transport fares	. .	1.212	1.212

...continued

EIGHT CAPITAL CITIES COMBINED — JUNE QUARTER 1992 — *continued*

Group, subgroup and expenditure class	*Percentage contribution*		
	Group total	*Subgroup total*	*Expenditure class*
Tobacco and Alcohol	**7.475**	**. .**	**. .**
Alcoholic drinks	. .	5.061	. .
Beer	. .	. .	2.927
Wine	. .	. .	1.016
Spirits	. .	. .	1.118
Cigarettes and tobacco	. .	2.414	2.414
Health and Personal Care	**6.850**	**. .**	**. .**
Health services	. .	3.961	. .
Hospital and medical services	. .	. .	3.150
Optical services	. .	. .	0.177
Dental services	. .	. .	0.634
Personal care products	. .	2.097	. .
Pharmaceuticals	. .	. .	0.820
Toiletries and personal products	. .	. .	1.277
Hairdressing services	. .	0.792	0.792
Recreation and Education	**10.850**	**. .**	**. .**
Books, newspapers and magazines	. .	1.146	1.146
Recreational goods	. .	2.564	. .
Video and sound equipment	. .	. .	0.802
Records, cassettes and tapes	. .	. .	0.308
Sports and photographic equipment and toys	. .	. .	1.454
Holiday travel and accommodation	. .	2.349	. .
Holiday travel and accommodation in Australia	. .	. .	1.296
Holiday travel and accommodation overseas	. .	. .	1.053
Recreational services	. .	2.852	. .
Photographic services	. .	. .	0.242
Repairs to recreational goods	. .	. .	0.112
Entertainment	. .	. .	2.498
Education and child care	. .	1.939	. .
Education fees	. .	. .	1.557
Child care fees	. .	. .	0.382
Total All Groups	**100.000**	**100.000**	**100.000**

APPENDIX 5 THE COMMONWEALTH TREASURY MEASURE OF UNDERLYING INFLATION

1 The Treasury measure of the 'underlying' inflation rate is derived by excluding items from the CPI basket on the basis that changes in their prices are: highly volatile; exhibit marked seasonal patterns; or are largely affected by policy decisions. By excluding from the basket those goods and services for which prices are significantly affected by exogenous factors, Treasury's underlying rate seeks to measure price movements which are predominantly influenced by market forces.

2 The items excluded and the reasons for Treasury's exclusion of them are as follows:

- Meat and seafood. Prices can be highly volatile (particularly in periods of drought) and exhibit a seasonal pattern.
- Fresh fruit and vegetables. Prices can be highly volatile from quarter to quarter, often driven by climatic conditions.
- Clothing. Prices exhibit a seasonal pattern with stronger increases in June and December quarters as a result of the methodology used to deal with seasonal availability of clothing (summer and winter lines).
- Government-owned dwelling rents. Prices are determined by government decisions and are often linked to tenant incomes rather than market determined rentals.
- Mortgage interest charges. These are affected by changes in monetary policy which feed through to mortgage interest rates.
- Local government rates and charges. Price changes mainly reflect revenue raising decisions of local governments.
- Household fuel and light. Price changes mainly reflect decisions made by State Governments.
- Postal and telephone services. Price changes are subject to some degree of regulation by the Commonwealth.
- Consumer credit charges. As for Mortgage interest charges above.
- Automotive fuel. Prices are highly volatile and are also affected by changes in Commonwealth excise and State franchise fees.
- Urban transport fares. Price changes are determined by State and Territory Governments.
- Tobacco and alcohol. Prices are affected by changes in Commonwealth excise and State license fees.
- Health services. Prices can be affected by changes in Medicare arrangements.
- Pharmaceuticals. Prices exhibit a regular seasonal pattern due to the impact of the Pharmaceutical Benefits Scheme safety net scheme, and are also subject to a degree of government regulation.
- Holiday travel and accommodation. Price change is highly seasonal.

- Education and childcare. Price change is highly seasonal.

3 The items excluded from the CPI basket in order to construct the Treasury measure are listed below, together with the weight of each item in the All groups CPI basket at June quarter 1992.

CPI item group, subgroup and expenditure class	*Weight in CPI basket*
Meat and seafoods	3.001
Fresh fruit and vegetables	1.417
Clothing	6.264
Government-owned dwelling rents	0.382
Mortgage interest charges	6.608
Local government rates and charges	2.190
Household fuel and light	2.339
Postal and telephone services	1.715
Consumer credit charges	2.498
Automotive fuel	4.698
Urban transport fares	1.212
Tobacco and alcohol	7.475
Health services	3.961
Pharmaceuticals	0.820
Holiday travel and accommodation	2.349
Education and childcare	1.939
Total	**48.868**

GLOSSARY

All groups index The index series showing price movement for the weighted combination of all goods and services priced for the CPI. The highest level of CPI aggregation.

Arithmetic mean The simplest method of deriving an average by adding all the items and dividing by the number of items.

Basket Commonly used term for the goods and services priced for the purpose of compiling the CPI.

Bias Any systematic deviation of a statistic from its true measure.

Carli price index An index compiled as the arithmetic average of the individual price relatives. Assumes equal base period value weights.

Chain index A continuous index number series formed by linking index numbers or series, in which the weighting pattern changes on a regular or frequent basis (e.g. annually).

Compilation The process of deriving price indexes for elementary aggregates.

Cost of living index An index that Pollack (1983) defined as measuring the change over time in the minimum cost of purchasing a basket of goods and services capable of providing the same utility (or satisfaction) as that provided by the basket purchased in the reference base period.

CPI population group That subset of the Australian population to which the CPI specifically relates, currently metropolitan employee households.

Dutot price index An index compiled as the ratio of the arithmetic average of the prices in the current period to the arithmetic average of the prices in the base period. Assumes equal base period quantity weights.

Elementary aggregate Elementary aggregates represent the lowest level for which indexes are constructed. In concept, they also represent the finest level at which commodity weights can be assigned.

Elementary formula bias Elementary aggregate formula bias arises from the use of an inappropriate method for aggregating price quotations at the very lowest level of aggregation.

Employee households For the purposes of the CPI are households which obtain at least 75% of their total income from wages or salaries, but excluding the top 10% (in terms of income) of such households.

Expenditure class A grouping of like items in the CPI regimen; this is the level at which CPI weights remain fixed during the life of each CPI series.

Fisher price index The Fisher ideal index is the geometric mean of the Laspeyres and Paasche indexes.

Fixed weighted index An index in which the weighting pattern is fixed for the period for which the index is calculated.

Geometric mean Is calculated as the *n*th root of the product of all the values in a set where *n* equals the number of values.

Group The first level of disaggregation of the CPI; at present the CPI comprises eight groups.

Household Expenditure Survey A sample survey conducted to determine the expenditure patterns of private households. Data from the HES is used as a primary source of information for the estimation of expenditure weights in the CPI.

Indexation The periodic adjustment of a money value (e.g. wages, pensions, rents) according to changes in a selected index.

Item substitution bias Arises from the inability of a fixed basket index to take account of the substitutions consumers make in response to changes in the relative prices of commodities (e.g. to consume more chicken and less beef when the price of chicken falls relative to the price of beef).

Jevons price index The geometric mean of the individual quality adjusted price relatives. Assumes equal expenditure shares in both periods.

Laspeyres price index A fixed weight price index in which the fixed weights used represent the relative importance of index items in the weighting base period.

Linking The technique used to join index series which have different weighting patterns to form a continuous series. The technique ensures that the resultant linked index reflects only price variations (i.e. the introduction of new items and weights does not itself affect the level of the index). Also referred to as chaining.

New goods bias Refers to the inability of a rigidly fixed basket index to account for the price behaviour of completely new goods entering the market.

Outlet substitution bias Relates to the inability of price collection arrangements to reflect the consumers' abilities to shift to cheaper cost outlets for identical items.

Price relative The ratio derived by dividing the price of an item in one period by its price in an earlier period.

Pure price change The change in the price of an item after removing any variation in price attributable to a change in quality or quantity.

Quality adjustment The elimination of the effect that changes in the attributes (quality) of an item have on the price of an item in order to isolate the pure price change.

Quality adjustment bias Arises from the inability to perfectly account for changes in the quality of items over time.

Specification Detailed description of the characteristics of a good or service to be priced.

Superlative index Certain classes of index formulae that closely approximate the exact cost of living index for any utility function given some simplifying assumptions. These formulae, for which Diewert (1976) coined the term superlative, include the Fisher Ideal Index and the Törnqvist Index. These formulae make use of the observable basket in both the reference period and the current period obviating the need to estimate the underlying utility functions.

Törnqvist price index The Törnqvist index uses logarithmic change techniques to measure price change between any two periods. Items are weighted together in this formula by the arithmetic average of their relative expenditures in these periods.

Weight The measure of the relative importance of an item in an index regimen. Weights can be expressed in either quantity or value terms.

Weighting base period The period to which the fixed expenditure weights relate.

REFERENCES

ABS n.d.(a), *Household Expenditure Survey, Australia: Detailed Expenditure Items,* Cat. no. 6535.0, various issues, ABS, Canberra.

ABS n.d.(b), *Consumer Price Index: Effect of Change in Prices of Imported Items*, Cat. no. 6444.0, various issues, ABS, Canberra.

ABS 1992a, *Information Paper: The Australian Consumer Price Index — Feasibility of Constructing Price Indexes for Special Population Groups*, Cat. no. 6445.0, February 1992, ABS, Canberra.

ABS 1992b, *Information Paper: The Australian Consumer Price Index 12th Series Review*, Cat. no. 6450.0, ABS, Canberra.

ABS 1993, 'Experimental Price Indexes for Age Pensioners', *Australian Economic Indicators*, Cat. no. 1350.0, July 1993, ABS, Canberra.

ABS 1997, *Information Paper: An Analytical Framework for Price Indexes in Australia,* Cat. no. 6421.0, ABS, Canberra.

Advisory Commission To Study The Consumer Price Index (Boskin Report) 1996, *Toward a More Accurate Measure of the Cost of Living, Final Report*, December 4, 1996.

Consumer Price Index Technical Consultative Committee 1992, *Report of the 12th Series CPI Review*.

Crawford, A. 1993, 'Measurement Biases in the Canadian CPI', *Technical Report No 64*, Bank of Canada, Ottawa.

Cunningham, Alastair W. F. 1996, 'Measurement Bias in Price Indices: an Application to the UK's RPI', *Working Paper Series No. 47*, Bank of England, London.

Diewert, W. E. 1976, 'Exact and Superlative Index Numbers', *Journal of Econometrics*, 4, pp. 115–145.

Diewert, W. E. 1995a, 'Axiomatic and Economic Approaches to Elementary Price Indexes', Discussion Paper no. 95–02, Department of Economics, University of British Columbia, Vancouver, Canada.

Diewert, W. E. 1995b, *Written Testimony for the United States Senate Committee on Finance*, April 6 1995.

Higgins, J. 1995, 'Experimental Price Indexes for Age Pensioner Households: An Update', *Australian Economic Indicators*, ABS Cat. no. 1350.0, September 1995, ABS, Canberra.

International Labour Office 1988, *Bulletin of Labour Statistics*, 1988–2, ILO, Geneva.

International Labour Office 1992, *Sources & Methods: Labour Statistics,* Volume 1, Consumer Price Indices, ILO, Geneva.

International Monetary Fund 1996, *Standards for the Dissemination by Countries of Economic and Financial Statistics, The Special Data Dissemination Standard*, IMF, Washington.

OECD 1994, *Sources and Methods Consumer Price Indexes*, OECD, France.

Pollack, Robert A. 1983, 'The Theory of the Cost-of-Living Index' in *Price Level Measurement: Proceedings of a conference sponsored by Statistics Canada*, W.E. Diewert & C. Montmarquette (eds), Minister of Supply and Services, Canada, Ottawa.

Prices Surveillance Authority 1995, 'Inquiry into Fees and Charges Imposed on Retail Accounts by Banks and Other Financial Institutions and by Retailers on EFTPOS Transactions', *Report No. 65*, June 1995, Prices Surveillance Authority, Melbourne.

The Fourteenth International Conference of Labour Statisticians 1987, *Resolution concerning consumer price indices*, ILO, Geneva, printed in International Labour Office (1988) and Turvey (1989).

Turvey, R. 1989, *Consumer price indices An ILO manual*, ILO, Geneva.

Woolford, K. 1994, *'A Pragmatic Approach to the Selection of Appropriate Index Formulae',* paper presented at the International Conference on Price Indices (31 October–2 November, 1994), Statistics Canada, Ottawa.

Australian Bureau of Statistics

INVITATION
CONSUMER PRICE INDEX REVIEW
SEMINAR PROGRAM

The ABS will be conducting public seminars in all capital cities on the 13th series review of the Consumer Price Index (CPI).

ABS officers will explain the main issues being considered in the review and will answer questions you may have about the CPI. You will also be able to comment on the review.

If you wish to attend a seminar, please complete the form below and return it at least one week before your chosen seminar, to:

Mr Koroush Ghazi
Prices Development Section
Australian Bureau of Statistics
PO Box 10
Belconnen ACT 2616
(Facsimile: 06 252 8555)

For further information, phone your ABS office or Mr Ghazi on (06) 252 6803.

✂----------

Name: .....

Company: .....

Address: .....

.....

Phone: ..... Fax:.....

I will be attending the CPI Review seminar (please tick box, indicating morning or afternoon session):

City	Date	Venue	Time	
Sydney	Monday 26 May	ABS, Level 5 St Andrew's House, Sydney	9:30am 2:00pm	❑ ❑
Brisbane	Wednesday 28 May	ABS, 17th Floor 313 Adelaide Street, Brisbane	9:30am 2:00pm	❑ ❑
Darwin	Monday 2 June	ABS, 5th Floor 81 Smith Street, Darwin	9:30am 2:00pm	❑ ❑
Perth	Wednesday 4 June	ABS, Level 16, Exchange Plaza 2 The Esplanade, Perth	9:30am 2:00pm	❑ ❑
Adelaide	Friday 6 June	Defence Force Recruitment Centre 3rd Floor, Commonwealth Centre, 55 Currie Street, Adelaide	9:30am 2:00pm	❑ ❑
Canberra	Friday 13 June	Conference Rm1, 3rd Floor NARA Centre cnr Constitution Av & London Cct, Canberra	9:30am 2:00pm	❑ ❑
Melbourne	Tuesday 17 June	ABS, CU Tower 485 La Trobe Street, Melbourne	9:30am 2:00pm	❑ ❑
Hobart	Thursday 19 June	ABS, 200 Collins Street Hobart	9:30am 2:00pm	❑ ❑

Note: Each seminar will take about 2 hours.