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INFORMATION PAPER

**EXPERIMENTAL DATA IN THE
PENSIONER AND BENEFICIARY LIVING
COST INDEX, FEBRUARY 2013 AUSTRALIA**

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I N Q U I R I E S

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SUMMARY

This information paper presents the results of an investigation into the spending patterns of the pensioner and other government beneficiary households and discusses how these spending patterns could be better represented in the Pensioner and Beneficiary Living Cost Index (PBLCI). The investigation is based on detailed expenditure information taken from the 2009–10 Household Expenditure Survey (HES).

Based on the detailed HES data, the spending patterns of pensioner and other government beneficiary households were found to be statistically significantly different from those of the general Consumer Price Index (CPI) sample population within 52 of the 85 expenditure classes represented in the PBLCI. These differences translated into statistically significant differences in the price movements experienced by the two sample populations in 24 of the 85 expenditure classes.

The more detailed HES data has been incorporated into an experimental PBLCI and an analysis of the impact on the headline 'all-groups PBLCI' quarterly and annual percentage change figures and the all-groups PBLCI index level is presented in the 'Results' section of this paper. During the five year period (March 2006 to March 2011) covered by the analysis, the impact on the percentage changes fluctuated between minor positive and minor negative effects. The effect on the index level was a marginal upward trend.

In addition to the main findings, the investigation identified seven items including 'home help' and 'money order charges' not currently represented in the PBLCI/CPI basket of goods and services which, based on their level of expenditure, could be considered for inclusion in the PBLCI. The investigation also identified retail outlets preferred by pensioner and other government beneficiary households that are not currently included in the CPI.

The results suggest that the quality of the PBLCI could be improved if the weights applied within particular expenditure classes were derived from expenditure specific to pensioner and other government beneficiary households, and by including new items and outlets in the price sample collected for the PBLCI.



ABBREVIATIONS

ALCI	Analytical Living Cost Index
CPI	Consumer Price Index
EA	elementary aggregate
HES	Household Expenditure Survey
PBLCI	Pensioner and Beneficiary Living Cost Index

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INTRODUCTION

The PBLCI is designed to measure the changes in prices of goods and services purchased by consumer households whose principal source of income is the government age pension or other government transfer payment.

The PBLCI was first published in September 2009 and was initially constructed by combining the existing Analytical Living Cost Indexes (ALCIs) for aged pensioner households and other government transfer recipient households. The publication was accompanied by an ABS *Information Paper: Introduction of the Pensioner and Beneficiary Living Cost Index, Australia* (cat. no. 6466.0) which provided details of the PBLCI and its relationship with the CPI and stated an intention to regularly review the index.

One such review led to the introduction of improved expenditure weights at the expenditure class level and above. These weights were estimated using data from the 2009–10 HES, which included a significantly increased sample of pensioner and other government beneficiary households. The improved expenditure weights were included at the introduction of the 16th Series Australian Consumer Price Index in September 2011¹. More detail is contained in *Analytical Living Cost Indexes and Pensioner and Beneficiary Living Cost Index: 16th Series Weighting Patterns, 2011* (cat. no. 6472.0).

While the PBLCI now has expenditure class weights more representative of the spending patterns of pensioner and other government beneficiary households, it is primarily constructed using the same expenditure class price indexes used for the CPI². The assumption is that the spending patterns of pensioner and other government beneficiary households within an expenditure class are similar to those of the general CPI population, or if they are different, that they do not translate into different price movements experienced by the two at the expenditure class level.

The ABS has undertaken an extensive analysis to determine whether this assumption holds, or whether the PBLCI can be improved by applying weights that are more representative of the spending patterns of pensioner and other government beneficiary households at the level below expenditure class. This report presents the results of this analysis.

1 A number of other improvements were also implemented at the same time. The scope of the expenditure weights for pensioner and other government beneficiary households was changed from state/territory expenditures to capital city level expenditures to align with the approach used in the CPI. Also, the CPI Commodity Classification used for categorising goods and services in the PBLCI was updated. Finally, rather than being derived by combining two existing ALCIs, the PBLCI was sourced directly from CPI movements, except for mortgage interest charges, consumer credit and gross insurance charges which are not included in the CPI for conceptual reasons. It should also be noted that since the December quarter 2011 the timeliness of the PBLCI release has been improved with the PBLCI generally being released on the first Wednesday following the release of the CPI, and that since the June quarter 2012 the *Pensioner and Beneficiary Living Cost Index* (cat. no. 6467.0) and *Analytical Living Cost Indexes for Selected Australian Household Types* (cat. no. 6463.0) have been amalgamated into a single, improved product *Selected Living Cost Indexes, Australia* (cat. no. 6467.0).

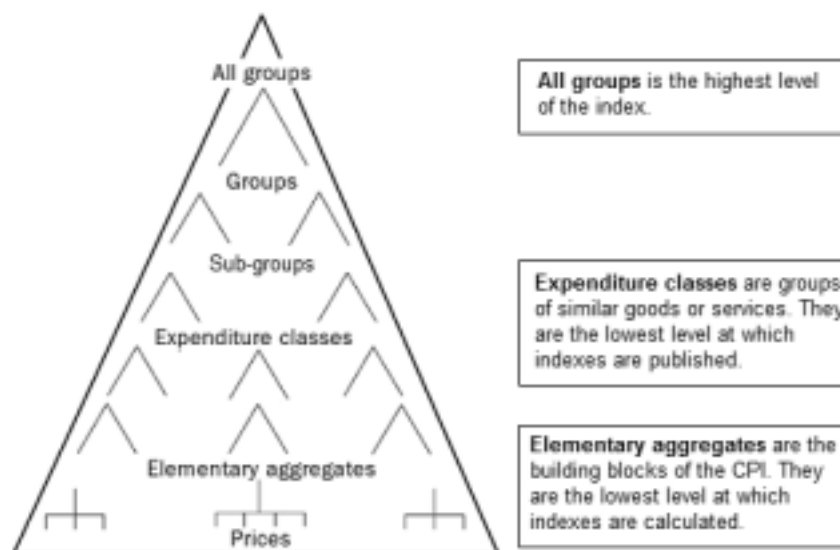
2 There are some exceptions. Within ten expenditure classes, expenditure weights are already based on the spending patterns of pensioner and other government beneficiary households.

OBJECTIVES OF THE STUDY

The primary objective of the study was to determine whether pensioner and other government beneficiary households have different spending patterns below the expenditure class level, and whether any differences are likely to translate into differences in the price movements experienced by these households compared to the households represented in the main CPI.

Reference to how the ABS constructs the CPI and the PBLCI will be useful here and is presented in Figure 1 below. At the lowest level, prices of representative items are generally combined into Elementary Aggregate (EA) indexes via a simple average. EA indexes are aggregated up to expenditure class level indexes via a weighted average with weights based on household expenditure information. The expenditure class level indexes are aggregated in similar fashion up to the all-groups index on which the published headline figures are based. The group and sub-group indexes are intermediate level indexes presented to provide users with a greater level of detail.

Figure 1: Construction of the CPI and the PBLCI



Currently, the expenditure weights applied at the EA level within the PBLCI are taken from the CPI and are not derived from expenditure specific to the pensioner and other government beneficiary households. There are a few exceptions that are discussed in Appendix A: Expenditure Class Analysis.

Detailed household expenditure data from the 2009–10 HES was used to compare the spending patterns of pensioner and other government beneficiary households and the CPI households within expenditure classes. Where there were statistically significant differences in spending patterns, CPI price indexes at the elementary aggregate level were used to determine whether these translated into different price movements. Detailed results of this analysis are presented in *Appendix A: Expenditure Class Analysis*.

Further objectives of this study were to determine whether;

- additional representative items could be included in the PBLCI basket, and
- the PBLCI sub-population shop at a different selection of retail outlets from the CPI population.

RESULTS

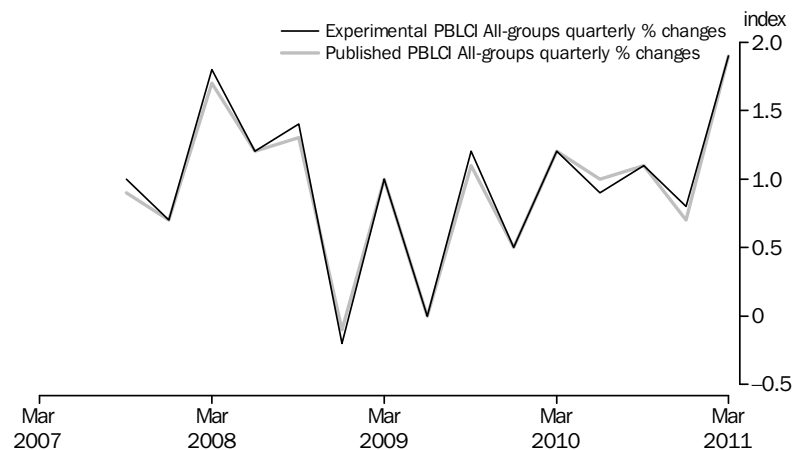
INDEX AGGREGATION

The results of analysis to compare the spending patterns of the PBLCI sample population and the CPI sample population based on detailed HES data showed the following. Of the 75 expenditure classes within which the EA weights are not derived from expenditure information specific to the PBLCI households, 52 showed statistically significantly different spending patterns between the two samples. In 24 of these classes, the difference in spending patterns was accompanied by differences in price movements. Further details of this analysis can be found in *Appendix A: Expenditure Class Analysis*.

The following charts compare the existing all-groups PBLCI index with an experimental version in which the 21 of the 24³ expenditure class indexes discussed above are constructed using PBLCI expenditure weights at the EA level. Both indexes have a reference date of March 2006⁴, i.e. the indexes are set to 100 at March 2006.

Figure 2 compares the quarterly percentage changes for the two indexes. The movements show little difference and never differ by more than 0.1 (rounded to one decimal place) percentage points

2 PUBLISHED AND EXPERIMENTAL PBLCI QUARTERLY PERCENTAGE CHANGES



3 For three of the 24 expenditure classes, it was not possible to complete a price comparison for the full five year period.

4 The PBLCI published index is only available from June quarter 2007. Earlier index values have been estimated based on historical 'Age Pensioner' and 'Other Government Transfer Recipient' Indexes for the purposes of this analysis.

RESULTS *continued*

INDEX AGGREGATION *continued*

Figure 3 compares the annual percentage changes for the two indexes. Again, the movements show little difference for the most part with the only perceptible differences at December 2009 (0.1 percentage points, to one decimal place) and March 2010 (0.2 percentage points, to one decimal place)

3 PUBLISHED AND EXPERIMENTAL PBLCI ANNUAL PERCENTAGE CHANGES

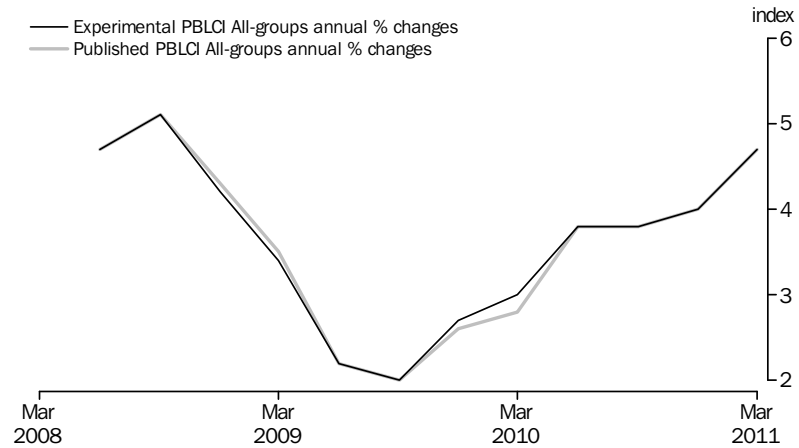
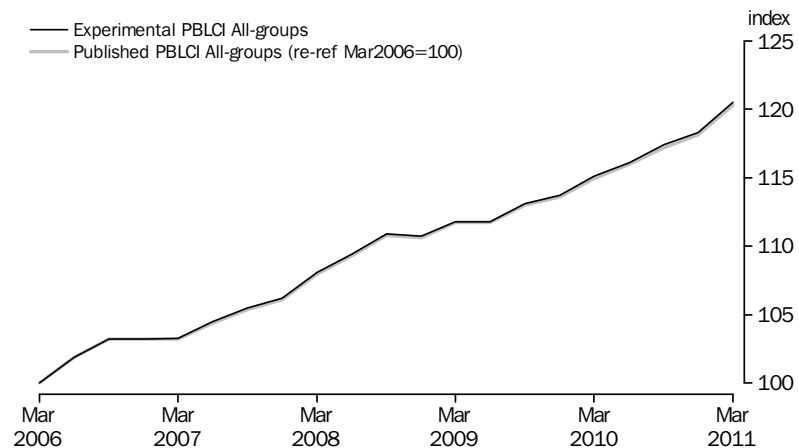


Figure 4 shows the index levels for the published PBLCI and the experimental series. Both indexes are referenced to March 2006=100. The experimental index tracks slightly above the published throughout and as of March 2011 the levels are 120.5 and 120.3 respectively.

4 PUBLISHED AND EXPERIMENTAL PBLCI INDEX LEVELS



RESULTS *continued*

ADDITIONAL ITEMS AND OUTLETS

A further issue the investigation considered is the likelihood of there being items on which the PBLCI households spent a significant amount of their household budget but which were not currently represented in the index. The investigation identified seven such items which could be considered for inclusion in the PBLCI if suitable expenditure information and representative prices can be regularly sourced.

A final consideration was whether the shopping habits of the PBLCI households differed from the main CPI sample population. To enable this analysis, detailed retail receipts were collected from households with the aim of determining when and where they carried out their shopping and whether these habits differed between the PBLCI households and the main CPI households. The information suggested that the shopping habits of the two sets of households did differ for many items and this often led to the PBLCI households paying less on average for those items than the main CPI households.

CONCLUSION AND FUTURE PLANS

CONCLUSION

The results of the analysis have presented some interesting findings that highlight the value of the data and the investigation. The investigation has shown that specifically targeting the PBLCI households when collecting expenditure information and using that information to derive expenditure weights within the expenditure classes gives different index results in 24 of the 85 expenditure classes compared with the existing method. During the five year period (March 2006 to March 2011) covered by the analysis, the impact on the published quarterly and annual percentage changes would have been minor positive and minor negative effects at different times. The effect on the index level would have been a marginal upward trend.

The investigation also shows that there are some goods and services that are a significant part of the PBLCI households' expenditure that are not currently represented in the published PBLCI and that there are retail outlets at which these households shop that are not currently represented in the published PBLCI.

FUTURE PLANS

This investigation has shown that the current published PBLCI could be improved upon by making use of expenditure information relevant to PBLCI households at the more detailed levels. Judging from the results of the analysis, the impact on the published PBLCI figures would be minimal. If suitable detailed expenditure information can be regularly sourced, the ABS will make use of this information to improve the index. Sourcing the appropriate data will require additional funding.

There are potential benefits from introducing 'new' goods and services into the PBLCI and collecting prices from a wider range of retail outlets but this has not been analysed. The ABS is considering this as part of its wider programme of improvement in its price index concepts, data sources and methods.

APPENDIX EXPENDITURE CLASS ANALYSIS

There are currently 85 expenditure classes in the PBLCI of which 10 make use of detailed expenditure data relevant to PBLCI households accounting for 29% of the total expenditure by pensioner and other government beneficiary households.

Of the remaining 75 expenditure classes, 52 exhibit statistically significant differences in spending patterns and 24 of these are also showing large differences in price movements.

Twenty expenditure classes exhibited no significant difference in spending patterns, while an analysis of spending patterns was not possible for three expenditure classes.

Table 1 below provides a summary.

A1 COMPARISON OF SPENDING PATTERNS WITHIN EXPENDITURE CLASSES

<i>Expenditure Classes</i>	<i>Number</i>	<i>PBLCI</i>
		<i>Expenditure Weight %</i>
Total PBLCI/CPI Expenditure Classes	85	100
Weights within expenditure class derived from detailed PBLCI household expenditure data	10	29
Weights within expenditure class NOT derived from detailed PBLCI household expenditure data; of which	75	71
Show statistically significant differences in spending patterns; and	52	55
Large differences in price movements(a)	24	27
Small differences in price movements	16	17
Limited price analysis possible(b)	12	11
No statistically significant differences in spending patterns	20	14
Analysis of spending patterns not possible(c)	3	2

- (a) The difference in price movements was at least 0.5 percentage points over the 5 year period March 2006 to March 2011
- (b) There was only a limited concordance between groupings used for the analysis of spending patterns, and CPI elementary aggregates
- (c) No grouping of items below expenditure class level was possible using HES data

The methodology employed for the analysis of spending patterns was as follows;

- Within CPI expenditure classes, commodities were partitioned into sub-classes. These sub-classes were designed specifically to highlight differences in spending patterns, and in general they did not coincide exactly with CPI elementary aggregates.
- 2009–10 HES data was used to estimate the expenditure proportions for each group calculated separately for pensioner and other government beneficiary households and the households in the main CPI.
- Retail receipt information was used, where available, to create sub-classes of commodities.
- Pairwise t-tests using standard ABS methodologies were used to identify statistically significant differences in the expenditure proportions between pensioner and other government beneficiary households and the households in the main CPI.
- A difference between the two in spending in an EC is considered to be statistically significant if a pairwise t-test has a p-value less than 0.05 (95% confidence) on at least one major category of items in the EC.

The methodology employed for the analysis of price movements was as follows;

- A concordance was established between CPI elementary aggregates and the sub-classes described above.
- Where the concordance was sufficiently good, elementary aggregate-level expenditure weights were estimated separately for pensioner and other government beneficiary households and the households in the main CPI from 2009–10 HES data.

APPENDIX EXPENDITURE CLASS ANALYSIS *continued*

continued

- Elementary aggregate weights were used to weight elementary aggregate-level price indexes from the CPI to produce price indexes for expenditure classes. This was carried out separately for pensioner and other government beneficiary households and the households in the main CPI.
- This enabled a comparison of the price movements over the period March 2006 to March 2011 based on the weights for pensioner and other government beneficiary households and based on the weights for the general CPI population.
- While the difference in the price movements due specifically to differences in the elementary aggregate weights is only an estimate of the difference in price movements actually experienced, it can be used to determine whether improvements in the quality of the index can be realised.

Table 2 below lists the 21 expenditure classes for which statistically significant differences in spending patterns translated into large differences in price movements experienced by pensioner and other government beneficiary households compared with the households in the main CPI⁵. For each expenditure class the table shows the influence of the expenditure class in both the PBLCI and the CPI as measured by its expenditure weight.

A2 TABLE 2: EXPENDITURE CLASSES SHOWING STATISTICALLY SIGNIFICANT SPENDING PATTERNS AND PRICE MOVEMENTS

<i>Expenditure Class</i>	<i>PBLCI Expenditure Weight (%)</i>	<i>CPI Expenditure Weight (%)</i>
Fish and other seafood	0.56	0.41
Lamb and goat	0.47	0.26
Poultry	0.69	0.49
Food additives and condiments	0.42	0.30
Fruit	2.35	1.60
Jams, honey and spreads	0.22	0.14
Garments for men	1.11	0.74
Garments for women	2.14	1.47
Maintenance and repair of the dwelling	2.48	2.05
Glassware, tableware and household utensils	0.44	0.43
Hairdressing and personal grooming services	0.80	0.90
Telecommunications equipment and services	3.75	2.93
Audio, visual and computing equipment	1.27	1.56
Audio, visual and computing media and services	0.91	0.98
Other recreational, sporting and cultural services	0.98	1.09
Other services in respect of motor vehicles	1.11	1.35
Cleaning and maintenance products	0.42	0.29
Other non-durable household articles	1.85	1.46
Other household services	0.97	0.69
Newspapers, magazines and stationery	0.99	0.68
Tertiary education	0.30	1.40
Total	24.20	21.20

Aggregate indexes were constructed to represent the 21 expenditure classes in the table above, where statistically significant spending patterns resulted in differences in price movement of more than 0.5% over the period from March 2006 to March 2011. The indexes are shown in Figure A3 below. The index based on the classes in their existing form is labelled the 'PBLCI 21 classes aggregated' and the index constructed using the more detailed HES data to derive weights within the expenditure classes is labelled 'Experimental PBLCI 21 classes aggregated'. The comparison of the price movements revealed that in 16 of the classes, the movement was greater (more positive) in the experimental classes and this has translated into an index level that is around 0.7 points

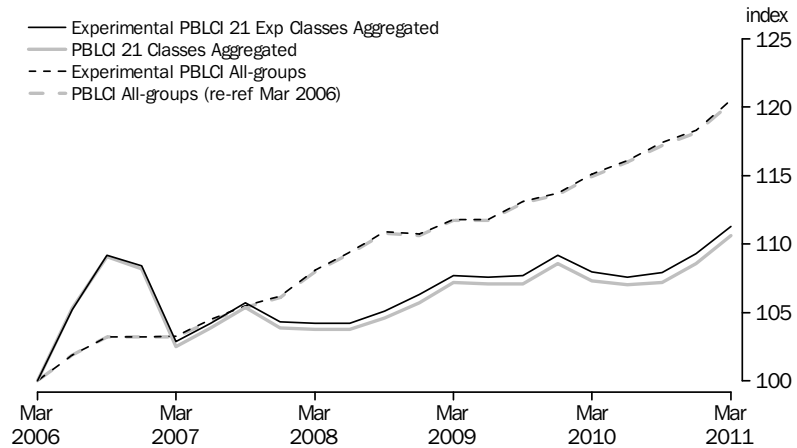
⁵ For three of the 24 expenditure classes, it was not possible to complete a price comparison for the full five year period.

APPENDIX EXPENDITURE CLASS ANALYSIS *continued*

continued

higher than the existing. The 21 classes examined represent slightly less than 25% (in expenditure terms) of all classes in the PBLCI and Figure A3 shows the impact that this differences in the 21 classes would have had on the all-groups index level (naming conventions are maintained). The impact on the all-groups index is minimal over the period considered.

A3 AGGREGATING EXPENDITURE CLASS INDEXES AND THE IMPACT ON THE ALL-GROUPS INDEX, Index level comparisons



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