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**ABS STUDY INTO THE USE OF HFCE ESTIMATES FOR CPI WEIGHTING PURPOSES**

**ABS' HFCE-Weighted Price Index**

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## Abstract

The Australian Bureau of Statistics (ABS) Consumer Price Index (CPI) currently derives weights for its higher level indexes, that is, at the Expenditure Class<sup>1</sup> (EC) level and above, from ABS Household Expenditure Survey (HES) data for the most part.

As part of the compilation of the Australian System of National Account (ASNA), the ABS compiles estimates of Household Final Consumption Expenditure (HFCE) which, although partially sourced from the household expenditure survey (HES) data, are distinct from those data for a number of reasons.

The availability of HFCE data at a detailed level gives the potential for these data to be used as a weighting source for the CPI and this paper documents a study to examine the impact of replacing the higher level weights currently used in the Australian CPI with equivalent weights derived from HFCE data. An experimental index is created for the period June 1998 to December 2013 inclusive. As detailed HFCE data are available annually, the experimental index has weights updated annually and is annually chain-linked.

It is important to establish at the outset that the HES data from which the ABS CPI weights are derived and the national accounts HFCE estimates are compiled from different perspectives, for different purposes and to meet different needs. There are a number of differences in the data sources, concepts and methods used to compile the HFCE estimates and the household expenditure estimates on which the CPI weights are based which results in differences between them.

This paper details all of the adjustments made to the HFCE data in an attempt to more closely align it with the purpose and conceptual basis of the CPI. It also gives details of supplementary data used and how it has been applied and methods used to derive the experimental indexes. It presents the results of the analysis and compares the experimental index with the existing CPI. Results from this study are compared against previous research.

These comparisons show that although the long term trend in the experimental and the existing index is very similar, there are noteworthy differences in short term index movements at particular time periods. However, the conclusion is that deriving higher level weights for the ABS CPI from HFCE data is worthy of further investigation.

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<sup>1</sup> Expenditure classes are groups of similar goods or services. They are the lowest level at which indexes are published and weights are fixed between index reviews.

## 1. Introduction

The ABS Household Expenditure Survey (HES) collects detailed information about the expenditure, income and household characteristics of a sample of households resident in private dwellings throughout Australia. Although the HES provides comprehensive coverage of household expenditures, there are some weaknesses in the HES data for CPI purposes; it currently covers about 64% of the people living in Australia; problems with households' under reporting or inaccurate reporting are well documented and its six-yearly frequency<sup>2</sup> is an issue for the reweight of the CPI. However, alternatives to the HES are limited and HES clearly defines its population, scope, and item specificity. Expenditures from HES are used to derive expenditure weights for Expenditure Classes (ECs) and above in the ABS Consumer Price Index (CPI) and any systematic problems with weights derived from HES could result in similar weaknesses in the resulting CPI. Currently, the Australian Household Expenditure Survey (HES) is conducted every six years. As a consequence ABS Consumer Price Index (CPI) higher level weights are currently updated at six-yearly intervals.

This investigation examines the use of an alternative source of data for deriving the weights applied at the EC level and above. Weights applied at the levels below the EC are subject to more frequent change and are derived from HES data and a range of supplementary sources. The derivation of weights at the lower levels of the index is beyond the scope of this investigation.

Experimental indexes from June 1998 to December 2013 inclusive were calculated using weights derived from the Australian System of National Account (ASNA), Household Final Consumption Expenditure (HFCE)<sup>3</sup> estimates. The availability of detailed HFCE data on an annual<sup>4</sup> basis allowed for the calculation of annually reweighted, chain-linked indexes. Results from this analysis show that the index calculated using HFCE weights, hereafter referred to as the "HFCE CPI", follows the trend of the existing ABS CPI.

Section 2 discusses the NA HFCE estimates and the approaches used to derive expenditures from these estimates that align more closely with the conceptual basis of the CPI for each of the CPI expenditure classes. It also discusses the various adjustments applied that were applied to the HFCE data to achieve this. Methods used to calculate the HFCE CPI and any changes to the EC weights applied for the sake of consistency are discussed in section 3. Section 4 discusses results obtained in this analysis and comparisons made. Further comparisons are made with results drawn from an earlier

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<sup>2</sup> ILO CPI manual recommends the CPI weights to be updated at least every five years. Currently ABS HES is carried out every six years and is the main source of data for CPI weight updates.

<sup>3</sup> For more information on Household Final Consumption Expenditure (HFCE), see <http://www.ausstats.abs.gov.au/Ausstats>

<sup>4</sup> Less detailed HFCE estimates are available quarterly.

study which attempted to assess the impact of a more frequent update of CPI weights using HES data. Section 5 provides a summary and some closing remarks.

Appendixes giving greater detail on aspects of the discussion are included at the end of the paper.

## 2. Data Sources and Adjustments

Detailed HFCE estimates are compiled within the national accounts Input-Output framework. Tabulated values for HFCE are available by detailed Input-Output Product Classification (IOPC). Included in the HFCE measure is current expenditure by households and non-profit institutions serving households (NPISH). The NPISH element is outside of the scope of the ABS CPI; therefore, adjustments are made to the IOPC data to remove the NPISH element before the IOPC data are used to derive EC level weights for the CPI. Expenditure data for NPISH is not identifiable in all cases for all years, either because NPISH expenditure on certain products is considered negligible or detailed information is unavailable. In those cases no adjustment was possible. If the ABS were to consider deriving CPI weights from HFCE data in the future, this is an area where data quality would need to be improved.

Input-Output table time series with HFCE values at the detailed IOPC level are available annually from 2005/06 but less frequently before then. In this study, for annual re-weight a complete time series from 1998 to 2013 was established as follows; HFCE values at a higher level of aggregation (COICOP division) are available from 1998/9 –2011/12 inclusive and the proportional change in the expenditure at this level has been used to move (forwards or backwards as appropriate) the more detailed estimates to “impute” for the missing years.

The HFCE CPI included in this analysis is compiled using expenditure weights derived from HFCE data. The detailed HFCE data has been adjusted to more accurately represent the scope of the existing CPI. The remainder of this section describes the rationale for the adjustments that were applied and, briefly, the steps taken to apply them. Greater detail on all of the adjustments made is given in Appendix 1.

Current concordance tables between the ABS IOPC products and the CPI ECs are provided at a fairly high level and make no attempts to align the IOPC with the scope of the CPI. IOPC products are classed as either; out of scope of CPI, a one to one match for a CPI EC, a many to one match for a CPI EC, a one to many match for CPI ECs or a many to many match from IOPCs to CPI ECs. Table 1 below gives some examples.

**Table 1: IOPC to CPI Expenditure Class Concordance Examples**

<b>IOPC code</b>	<b>IOPC Descriptor</b>	<b>CPI Code</b>	<b>CPI Descriptor</b>	<b>Split ratio</b>
69000080	Scientific testing and analysis services	N/A	N/A	0.0
69000130	Statistical services	N/A	N/A	0.0
72940010	Call centre operation	N/A	N/A	0.0
25990060	Umbrellas	331	Accessories	1
13510050	T-shirts and tank tops	311	Garments for men	0.30
13510050	T-shirts and tank tops	312	Garments for women	0.58
13510050	T-shirts and tank tops	313	Garments for infants and children	0.12
24410010	Solid fuel or gas barbecues	531	Major Household Appliances	1
24490090	Electro-thermic appliances nec	531	Major Household Appliances	1
94210010	Domestic appliance repair and maintenance	531	Major Household Appliances	1

In the first three scenarios above, the matching process is straightforward. Complications arise only where the correspondence requires an IOPC product to be distributed among many ECs. For these IOPC products it is necessary to determine what proportion of the product's expenditure belongs in the corresponding CPI ECs. Existing concordance tables provide no information on how this should be achieved. Ratios are derived using a variety of supplementary data sources including the EC level HES data, Supply and Use Tables data from the ASNA and ABS building activity survey data. An example from table 1 shows the IOPC "T-shirts and tank tops" apportioned to three ECs using HES data. HES expenditure data indicate that between garments for men, garments for women and garments for children, expenditure proportions are 30%, 58% and 12% respectively. This resulted in a ratio of 0.30, 0.58 and 0.12 for the recorded expenditure on "T-shirts and tank tops" to the relevant CPI ECs. The ratios are multiplied by the respective HFCE value to give expenditures for each of the relevant ECs. A similar calculation is carried out on all of the IOPCs that concord to more than one EC. This generally results in a number of partial expenditures for an EC which are summed to generate the total expenditure for that EC.

In general, IOPC expenditures are apportioned as follows;

0 if the IOPC does not concord to an EC

1 if the IOPC concords to only one EC

$r_i = \frac{e_i}{\sum_{j=1}^n e_j}$  if the IOPC concords to  $n$  ECs, where;

$r_i$  is the split ratio;

$e_i$  is an EC representative expenditure derived from HES, Supply Use table or other ABS survey data and;

$$\sum_{i=1}^k \left( \frac{e_i}{\sum_{j=1}^n e_j} \right) = 1$$

And;

*Total EC Expenditure* ( $E_{EC}$ ) =  $(r_i \times HFCE_i) + \dots + (r_k \times HFCE_k) \pm$  scope adjustments

$$= \sum_{i=1}^k (r_i \times HFCE_i) \pm \text{scope adjustments}$$

And;

$$\text{EC Weight } (W_{EC}) = \frac{E_{EC}}{\sum_{i=1}^{85} E_{EC}}; \text{ for 85 ECs}$$

The most complex of the adjustments made here is to the “ownership of dwellings” HFCE estimate. Ownership of dwellings comprises the value of actual rents paid for private dwellings and imputed rentals for owner-occupied housing; described as the imputed value of housing services accruing to owner-occupiers from their occupation of both their principal residence and any additional residence such as a holiday home.

For the purpose of this investigation, a number of adjustments are made to the Ownership of Dwellings IOPC to derive separate estimates of household expenditure for the ‘dwelling rents’ and ‘purchase of new dwellings’ ECs. Greater detail on how these estimates are derived is given in Appendix 1.

Expenditures on healthcare and childcare services are also treated quite differently in the HFCE estimates but no adjustments were possible in these cases.

Note that no adjustments are made to the coverage of HFCE to align it with that of HES.

The IOPC expenditures (net of NPISH) are completely assigned to the relevant CPI ECs and additional adjustments may be made to these expenditures on a case by case basis to ensure consistency with existing CPI scope.

### **3. Index Construction Methods**

The CPI in a given period is generally estimated using weights from the base or reference year for a fixed basket of goods and services. These weights are updated at varying frequencies and the frequency varies from country to country<sup>5</sup>. The impact of fixing higher level expenditure weights for any period of time is known to result in a degree of 'higher-level substitution bias'. The magnitude of this bias is expected to increase with the duration between weights updates.

Remaining consistent with that concept, this research constructs an annually re-weighted HFCE CPI. HFCE estimates at a detailed level are released in the ASNA Input-Output Product Classification (IOPC) tables roughly three years<sup>6</sup> after the reference period.

Due to time required to compile the detailed Input-Output tables from which the HFCE data has been derived for this analysis, this study has allowed a lag of three years between the reference period of the HFCE data and the time at which it enters the index. For example, HFCE data referenced to 2001/02 will enter the index in the June quarter 2004.

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<sup>5</sup> For example, the UK CPI is re-weighted annually, US/Canada two-yearly, New Zealand three –yearly and Germany five-yearly.

<sup>6</sup> For more information on Household Final Consumption Expenditure (HFCE), see; <http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=5209.0.55.001&viewtitle=Australian%20National%20Accounts:%20Input-Output%20Tables~2009-10~Latest~20/09/2013&&tabname=Past%20Future%20Issues&prodno=5209.0.55.001&issue=2009-10&num=&view=&>

Weights are calculated for 85 of the existing 87 ECs (the ‘deposit and loan facilities’ and ‘other financial services’ ECs are omitted since indexes for these ECs are only available from 2011 and 2005 respectively) and are used to compile a HFCE CPI spanning 1998–2013. For the sake of consistency, the existing CPI is also re-compiled with these ECs excluded. The index formula used to compile the HFCE CPI is the Lowe index formula<sup>7</sup> which is again consistent with the existing CPI. Expenditures are price updated to the relevant price reference (or link) period as required by the Lowe index formula and indexes calculated as normal. The HFCE CPI has been referenced to 2011-12 = 100, consistent with the existing CPI. There are therefore no compilation or aggregation differences between the indexes.

#### 4. Results

HFCE weights compare reasonably well with HES weights for the corresponding HES years for most of the ECs (see Appendix 1). The HFCE CPI index tracks the current published ABS CPI reasonably well. However, discrepancies do exist, which is not unexpected given the known differences between HFCE and HES.

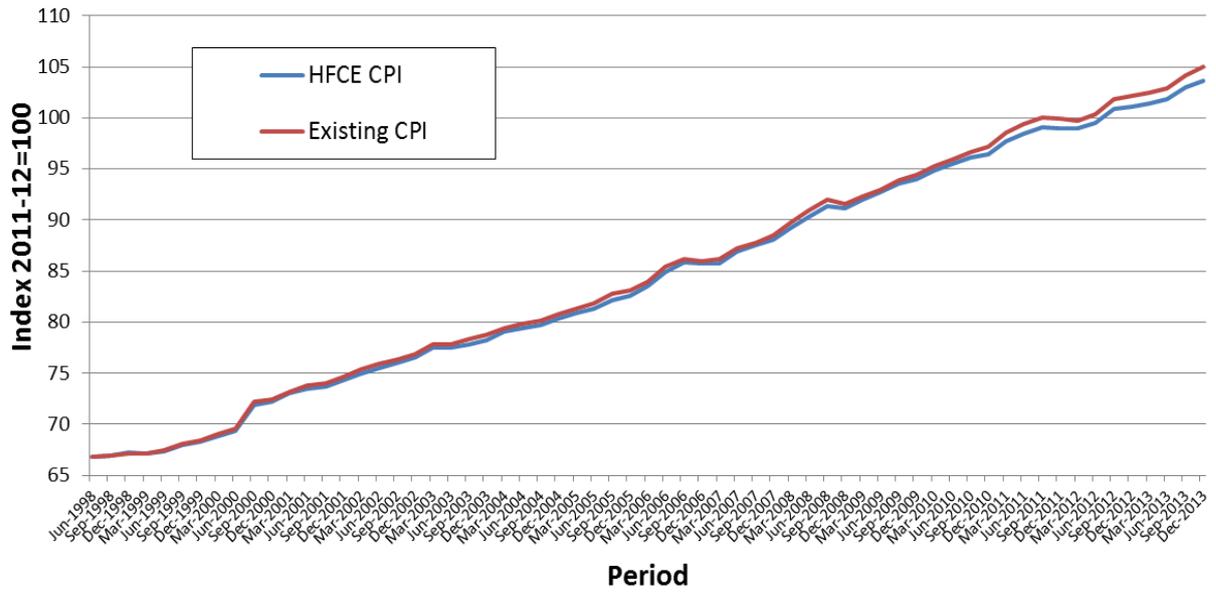
Figure 1 below compares the HFCE CPI and the existing CPI between June 1998 and December 2013. The current CPI index level tends to be slightly higher than the HFCE CPI. Figure 2 and figure 3 show the quarterly and annually percent changes for both indexes respectively and they are also very similar. The existing CPI (2.88) shows an average annual percentage change over the period that is 0.08 per cent higher than that of the HFCE CPI (2.80).

#### Figure 1: HFCE CPI and Existing CPI indexes

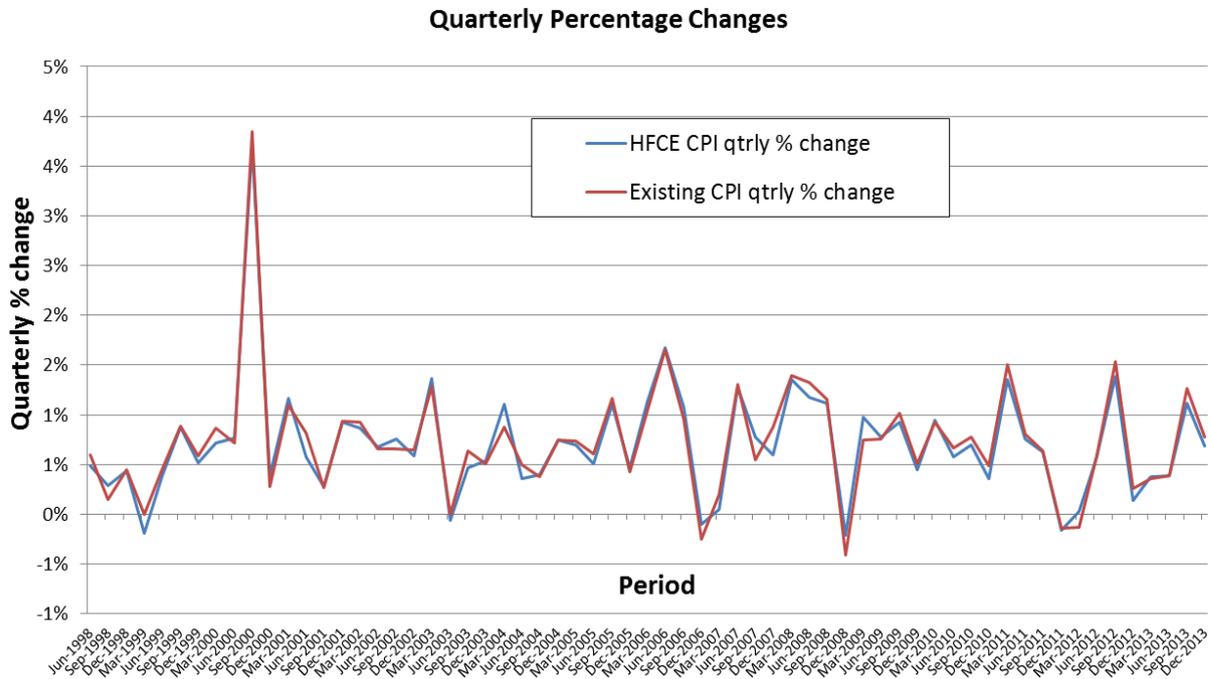
<sup>7</sup> ABS CPI methodology, the Laspeyres-type, specifically the Lowe, price updates the weights to the price reference period.

Algebraically  $(p^0, p^t, q^b) = \frac{\sum_{i=1}^n p_i^t q_i^b}{\sum_{i=1}^n p_i^0 q_i^b} = \sum_{i=1}^n \left(\frac{p_i^t}{p_i^0}\right) s_i^{ob}$ , where  $s_i^{ob} = \frac{\sum_{i=1}^n p_i^0 q_i^b}{\sum_{i=1}^n p_i^0 q_i^b} = \frac{p_i^b q_i^b (p_i^0/p_i^b)}{\sum_{j=1}^n [p_j^b q_j^b (p_j^0/p_j^b)]}$ ,  $b < 0 < t$

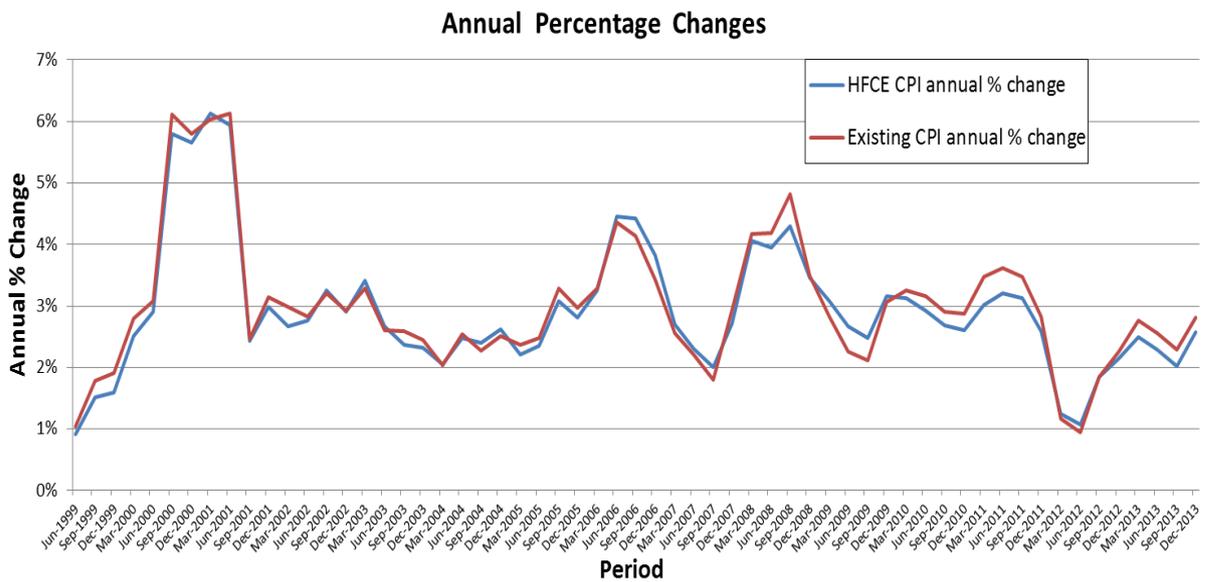
HFCE CPI and Existing CPI Indexes



**Figure 2: HFCE CPI and Existing CPI quarterly percentage changes.**



**Figure 3: HFCE CPI and Existing CPI annual percentage changes.**



As stated, any discrepancies can be entirely attributed to the difference in the source and the frequency of updating of the weights used in the index compilation.

For example, on closer examination, the noticeable discrepancy between June 2009 and March 2010 is attributable to the annual update of weights for the HFCE CPI. The existing CPI series weight over

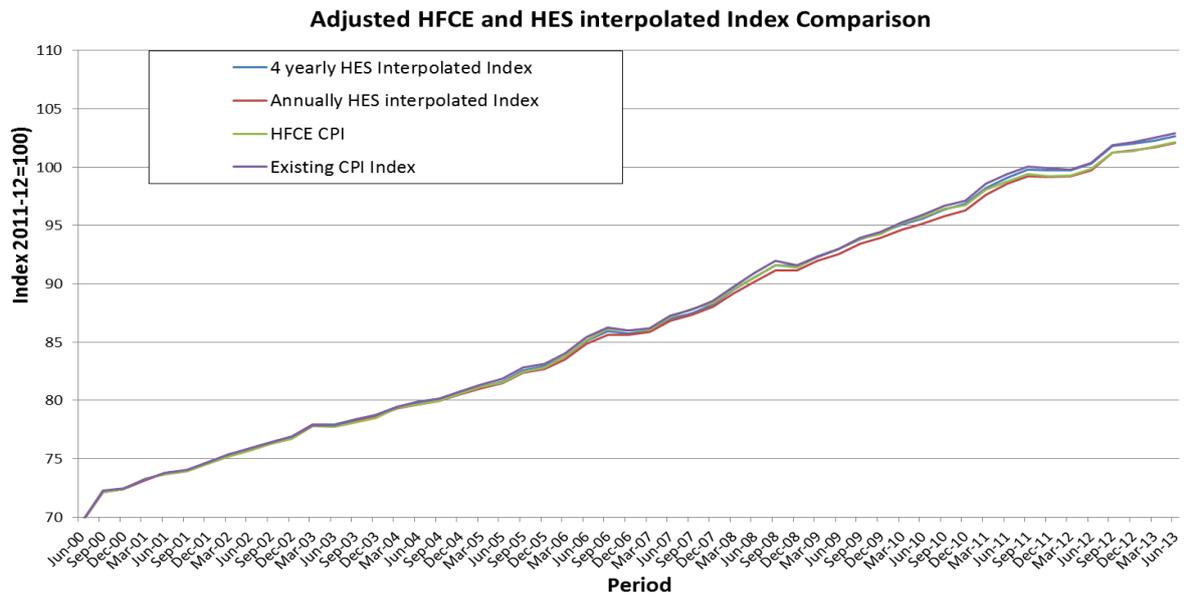
this period is from the reference period 2003/04. The fixing of the weights in the CPI prohibits the index from taking into account any significant changes in expenditure and this can clearly be seen in the case of the automotive fuel EC weight derived from the HES which was 3.78 in 2003/04 and remained at this level through the June 2009 to March 2010 period even though automotive fuel prices fell by 20.5 per cent between June 2008 and June 2009. By June 2009, the HFCE weight for the automotive fuel EC had declined to 3.29. The result is that the HES weight is leading the CPI to over-estimate the downward effect of the fall in automotive fuel prices.

As stated earlier, the ABS made recent attempts to assess the impacts of more frequent updates to the CPI weights using HES data. The research used linear interpolation techniques to derive annual weights for the non-HES years from the existing HES data and used these to construct CPI indexes re-weighted at varying frequencies. The results showed updating weights at frequencies of four years or lower did produce marginally lower estimates of CPI. However, it was not possible to assess how well these synthetically created weights reflect actual consumer behaviour. The study recommended an alternative or more independent source of data to derive weights, specifically the HFCE.

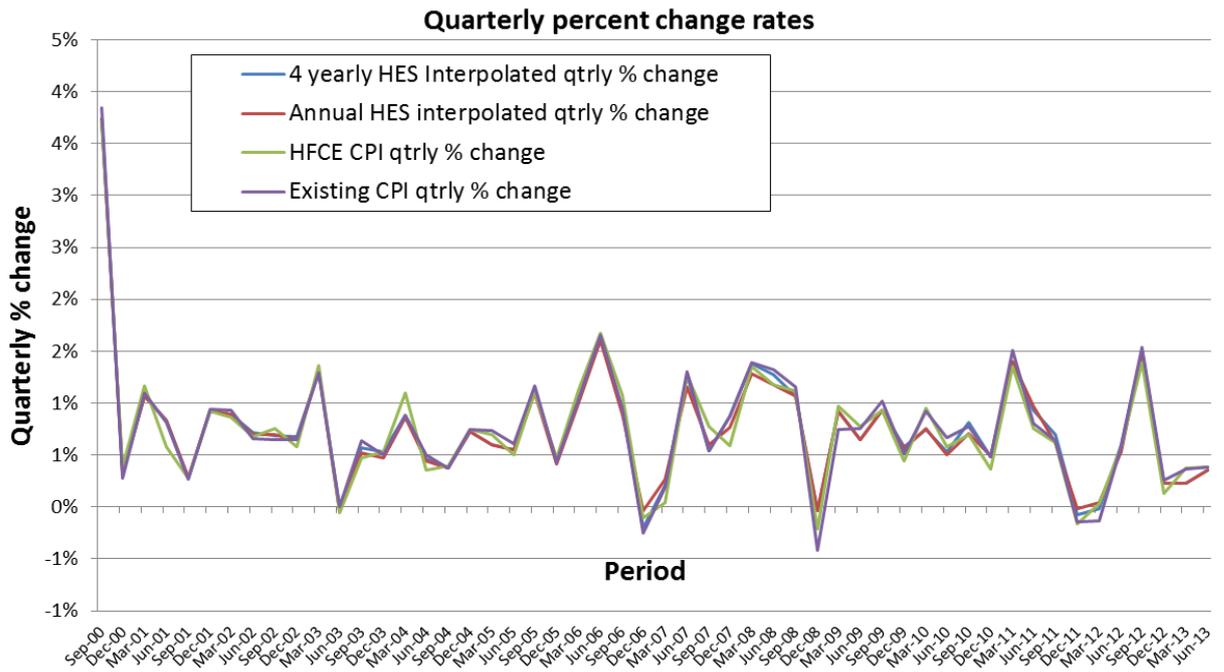
Results from this investigation (for the HFCE CPI) are compared to those obtained in the previous study using 'HES interpolated' weights (see figure 4 below). Comparisons are made with the annually and four-yearly re-weighted indexes from the earlier study.

The comparison covers a slightly shorter period from June 2000 to June 2013 and again shows the indexes trending very similarly. Figure 5 and figure 6 show the quarterly and annual percentage changes. The average annual percentage change over the period for the four yearly and annually re-weighted HES interpolated indexes is 3.04 and 3.00 per cent respectively compared with 2.85 per cent for the HFCE CPI index and 3.03 per cent for the existing CPI.

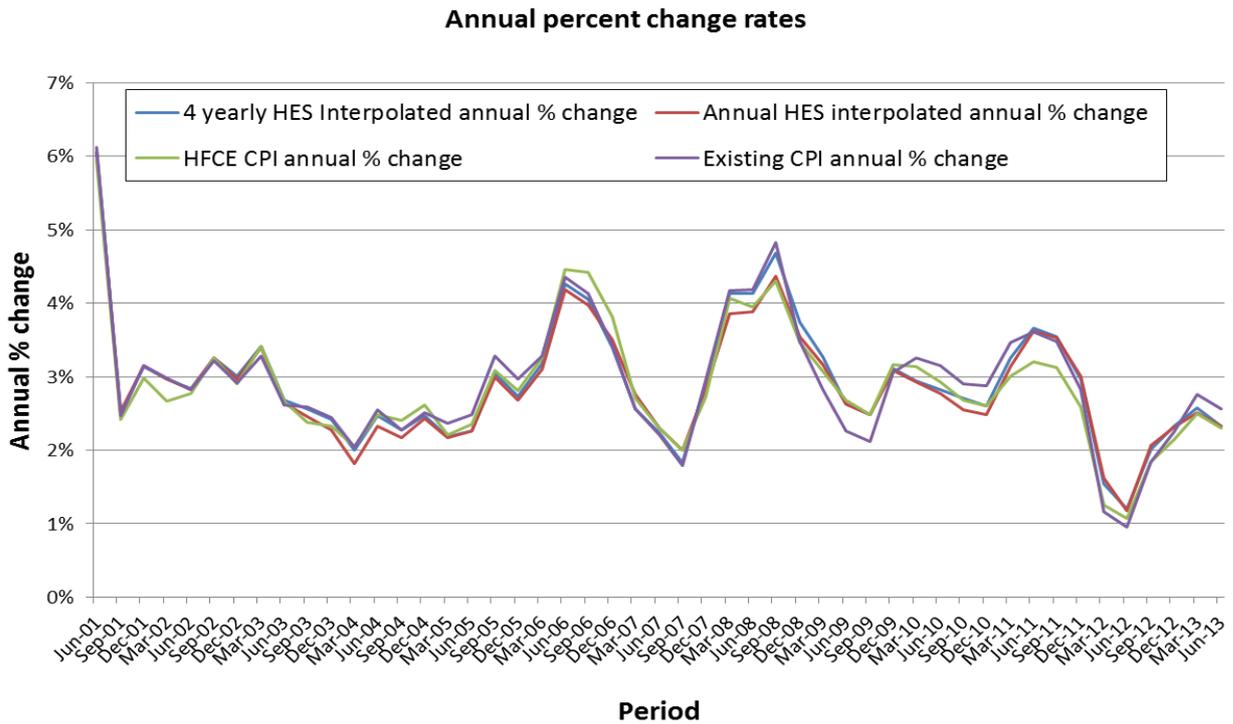
**Figure 4: HFCE CPI and HES interpolated index**



**Figure 5: HFCE CPI and HES Interpolated quarterly percent changes**



**Figure 6: HFCE CPI and HES Interpolated annual percent changes**

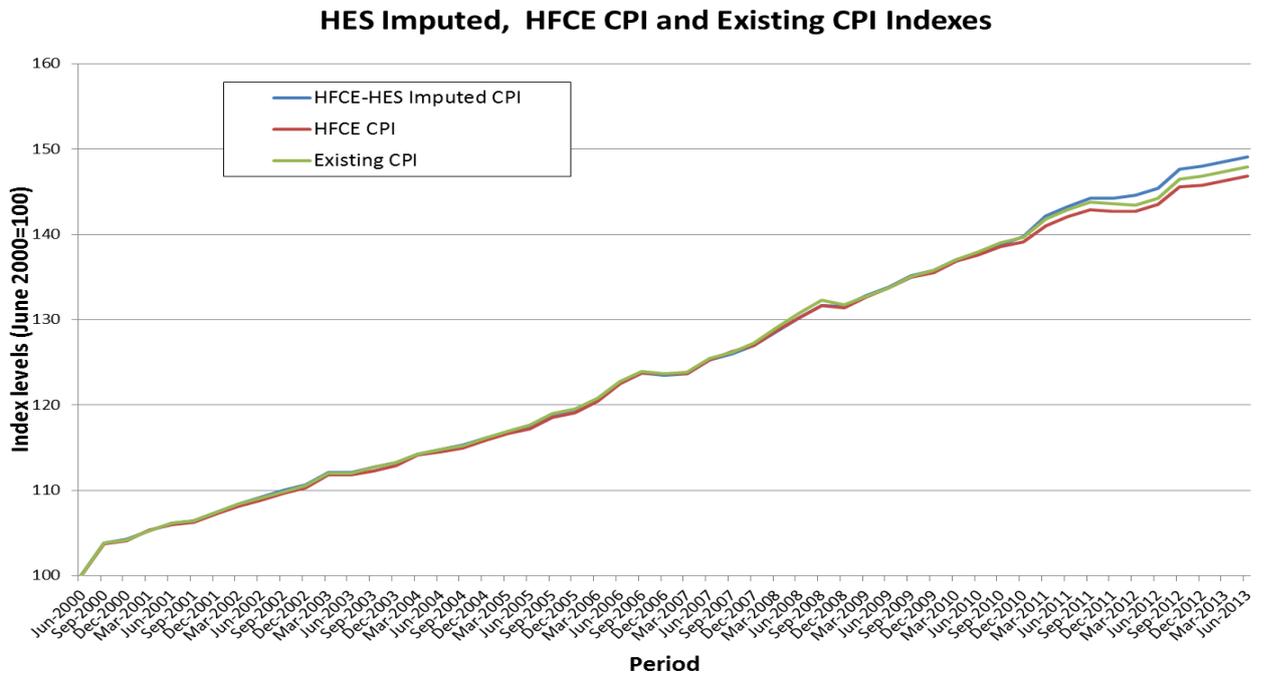


To complete the analysis, a final set of annual index weights was derived from the existing CPI weights as follows; the annual proportional changes in the HFCE derived weights were applied to the HES weights to derive a set of annual HES weights which were used to create an annually re-weighted, annually chain-linked index.

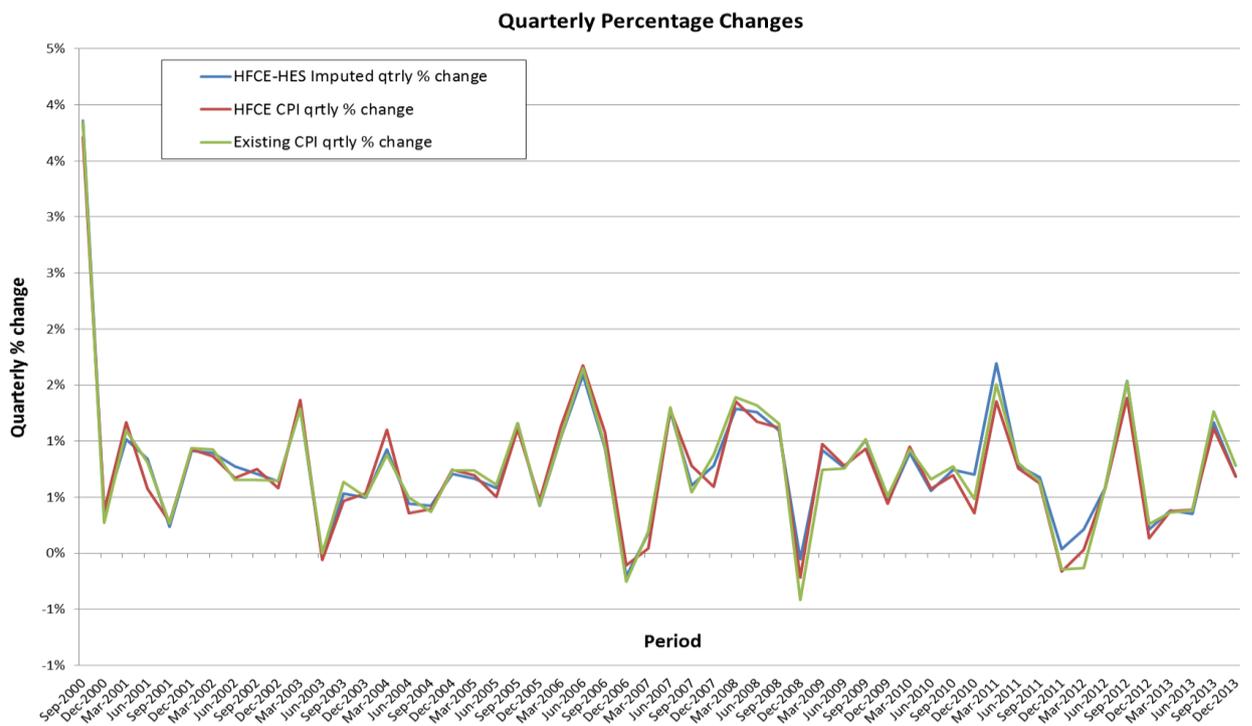
Figures 7, 8 and 9 below shows the ‘HES imputed’ index and percentage changes as before compared with the existing CPI Index and the HFCE CPI.

The comparison again covers the period from June 2000 to June 2013 and again shows the indexes trending very similarly. However, despite the annual percentage change over the period for the HES imputed index averaging 2.97 per cent (similar to the existing CPI at 3.03 per cent) it displays considerably greater volatility in the latter periods than the other indexes.

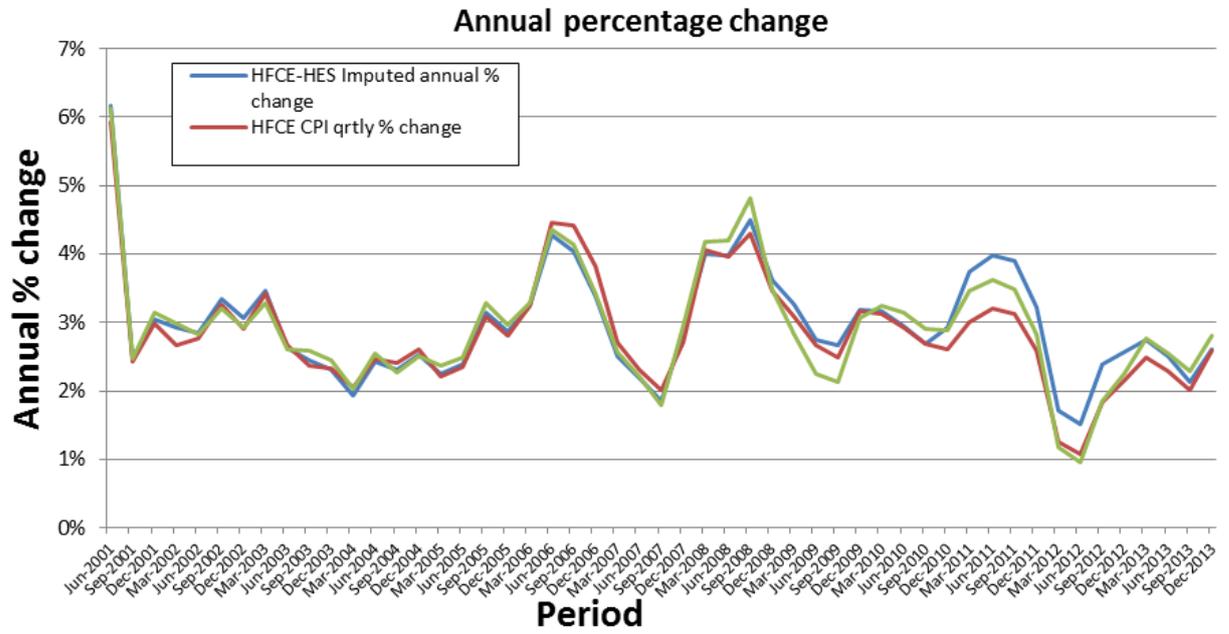
**Figure 7: HES Imputed, HFCE CPI and Existing CPI Indexes**



**Figure 8: HES Imputed, HFCE CPI and Existing CPI Indexes quarterly percentage changes**



**Figure 9: HES Imputed, HFCE CPI and Existing CPI Indexes annual percentage changes**



## 5. Summary and Closing Remarks

The ABS currently compiles a CPI for each of the eight state and territory capital cities and an aggregate 'National' CPI. The research detailed in this paper illustrates that replacing HES with HFCE data as a source of weights at the EC level for the majority of ECs when compiling the CPI at the National level is worthy of further investigation. Although HFCE estimates are available in the state accounts, this research does not investigate the use of HFCE to derive weights at the level of capital city.

This analysis draws attention to the problems that arise when attempting to derive CPI weights from HFCE estimates due to differences between the CPI and HFCE scope and coverage. Despite similar relative importance between HFCE and HES expenditures for the ECs there are conceptual differences in the treatment of similar categories between HFCE and CPI. For example, HFCE excludes expenditure on home insurance and maintenance of dwellings, and imputes rental payments for owner-occupied dwellings. The CPI represents home ownership costs by actual net house purchase (excluding land) plus alterations and additions and installed appliances. This is one area in particular where further investigation is required.

This analysis excludes the financial services sub-group which was introduced into the CPI from June 2005 and this is another area requiring further investigation of the coherence between the HFCE estimates and the scope and purpose of the CPI.

Other discrepancies may arise from the concordance process. HFCE and CPI data contain products that are out-of-scope for each other and adjusting for this requires detailed information and knowledge of products in the IO tables and CPI Expenditure Classes. In this analysis HFCE data is considered to match the CPI EC partially or completely. Ratios used in this analysis to allocate IOPC products that map into multiple ECs or to partially exclude some IOPC products from ECs, although based on supplementary data, are still somewhat subjective.

Fairly significant differences exist between the weights derived from HFCE and HES for some ECs; such as the rents, automotive fuel, restaurant meals and take away and fast food ECs. These differences are due to the conceptual treatment and the data on which the expenditure estimates are based.

The method of mapping HFCE expenditures to CPI ECs has relied on a 'top down' approach. Detailed IOPC information at a very low level would provide an opportunity to aggregate

expenditures into CPI ECs from the bottom up. However, it will be a challenge to obtain that level of detailed information and even if it were available the process could be similarly subjective.

It is worth noting that the use of HFCE estimates to derive weights for the CPI will broaden the scope of the CPI. HFCE is broader in scope than the HES data; it relates to expenditure by all Australian resident households and private non-profit institutions serving households whereas the HES relates to expenditure by Australian resident households of the eight capital cities of the States and Territories.

The HES data are collected directly from households, which although allowing for more population limiting specificity, for example, non-military and non-institutionalised households, does not cover very remote areas.

This study looked at a comparison between the existing CPI and the HFCE CPI across a period of around fifteen years. The existing CPI has undergone three reweighting exercises in that period while the HFCE CPI is reweighted annually when complete data is available to compile new estimates.

Conclusively, results indicate that the HFCE CPI tracks the existing CPI index fairly closely, despite differences in weights across the ECs. Overall, the average annual growth rate over fifteen years is 0.08% lower for the HFCE CPI compared with the existing CPI.

This study has re-compiled the historical ABS CPI by replacing the existing expenditure class weights with alternative weights derived from HFCE data. There are considerable conceptual differences between the two data sources and this study has focussed on the areas where those differences have the greatest impact and adjusted for them. Further work is required to improve understanding of the differences and refine methods for more closely aligning the two sources. When this is achieved, it is feasible that the ABS could consider compiling additional HFCE estimates that align with the purpose and correspond with the conceptual basis of the ABS CPI.

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## **Appendixes**

**Appendix 1: Significant Adjustments to IOPC data.**

**Appendix 2: HFCE Vs HES weights for HES years at EC level**

**Appendix 3: Details of IOPC split ratios and equivalent ECs**

**Appendix 4: Some notation used and reference year comparison for HFCE and HES weights**

## Appendix 1: Significant Adjustments to IOPC data.

As stated, a number of the IOPCs concord with more than one CPI EC and methods to apportion these values to the relevant CPI ECs are needed. Ratios to apportion the IOPCs to the relevant ECs are derived from a number of data sources; HES, Input-Output supply use tables and Clubs, Pubs, Taverns and Bars (ABS Publication Cat.8687.0) and Building Activity, Australia (Cat. 8752.0). HES data are the starting point for deriving ratios however in some cases expenditures derived from splitting IOPCs using only HES data as a supplementary source do not seem entirely plausible. For example, the IOPC item bread concords to the bread, restaurant meals and take away food ECs; HES weights for these ECs are 0.58, 2.81 and 2.62 respectively. Ratios for apportioning the IOPC ‘bread’ using HES weights are; 0.10, 0.47 and 0.43 and resulting IOPC expenditures derived using HES weights are as shown in the table below.

IOPC code	IOPC Descriptor	HFCE value (09/10)	CPI Code	CPI Descriptor	Split Ratio	Resulting Expenditure
11700010	Bread and bread rolls	3513	111	Bread	0.10	351.3
			171	Restaurant meals	0.47	1651.1
			172	Takeaway and fast food	0.43	1510.6

With an HFCE value of 3513 for the IOPC item 11700010, Restaurant meals and Takeaway and fast food are apportioned disproportionately high expenditures for Bread due to their comparatively high weight in HES. Bread is not an isolated case in this respect and consequently alternative sources of supplementary information have been sought and utilised.

Data from Input-Output Supply Use tables (I-O SUT) gives estimates of consumption by households (final) and industry (intermediate). In the above situation these data are used instead of HES to derive the ratios (see table of ratios below). This approach seems to provide more plausible ratios in these situations compared to the HES weights and has been applied where it was judged to be more appropriate. Another example is where data from ‘Clubs, Pubs, Taverns and Bars’ (ABS Publication Cat.8687.0) are used to derive ratios for alcohol services and proportions of alcohol consumed on and off premises in a similar fashion.

Certain expenditures that fall within the scope of the CPI are considered to be intermediate consumption<sup>8</sup> within the ASNA and therefore excluded from the HFCE values in the Input-Output tables. This is the case with expenditure on repairs and maintenance of the dwelling and dwelling insurance.

*“The ASNA deviates from the 2008 SNA recommendation and has excluded all maintenance and repair of dwellings from HFCE. Expenses associated with these activities are included as*

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<sup>8</sup> Intermediate consumption consists of the value of goods and services consumed as inputs in the production of output.

*intermediate consumption of the Ownership of Dwellings industry and COICOP Group 04.3 is not included in HFCE in the ASNA (ASNA Concept, Sources and Methods Australia 2013)”.*

*“Insurance of the dwelling itself is excluded from household final consumption expenditure as it is considered to be part of the intermediate consumption of the industry, Ownership of dwellings” (ABS Publication ASNA Concept, Sources and Methods Australia 2013)*

For the purposes of this research, these expenditures are sourced from intermediate consumption within the input-output tables and included as part of household expenditure.

The Ownership of dwellings IOPC comprises; imputed rents by owner-occupiers (taken to be the equivalent of the new dwelling purchase EC in CPI for the purpose of this investigation) and actual dwelling rents for private dwellings (the equivalent of the CPI Rents EC). Imputed rents are estimated for owner-occupier dwellings using data from the Census of Population and Housing and actual rents data paid by private renters. In this investigation, the HFCE value for the ownership of dwellings IOPC is initially split into imputed rents by owner-occupiers and actual dwelling rents using HES data proportions. ASNA states that *"estimates of total dwelling rent (imputed rent of owner-occupiers plus other dwelling rent) for intercensal and post-census periods are obtained by multiplying an estimate of the stock of dwellings by an estimate of the average rent of rented dwellings"*.

Municipal & Metropolitan improvement rates (the equivalent of CPI property rates) are also included in the owner-occupied dwelling HFCE value and are similarly excluded using HES data proportions. ASNA states *"Land taxes and municipal and metropolitan improvement rates are allocated to the Ownership of Dwellings industry based on the proportion of the value of residential land to the total value of land"*.

Lastly, the target population for the CPI is Australia-resident, private households living in permanent private dwellings. The CPI population does not include a number of categories of household that are captured in HFCE estimates; people living in non-private dwellings such as hotels, motels, boarding houses, hostels, motor camps and homes for the elderly; patients in hospitals; residents of psychiatric and penal institutions; members of the permanent armed forces; members of non-Australian armed forces; and overseas diplomats. An estimate of people living permanently in these ‘other’ dwellings must be excluded. Building Activity, Australia (Cat. 8752.0) publishes estimates of the value of residential and non-residential dwellings. These data are used to derive proportions for excluding non-residential dwellings from the HFCE estimates to give an expenditure value that is more consistent with the CPI population.

In summary;

Ownership of the Dwelling (IO Tables) = (Imputed rents for owner-occupiers + Municipal & Metropolitan improvement rates) + Actual rent by private renters.

Appendix 3 provides detailed information on split ratios for IOPC items and the various ECs which they are mapped into.

## Appendix 2: HFCE Vs HES weights for HES years at EC level

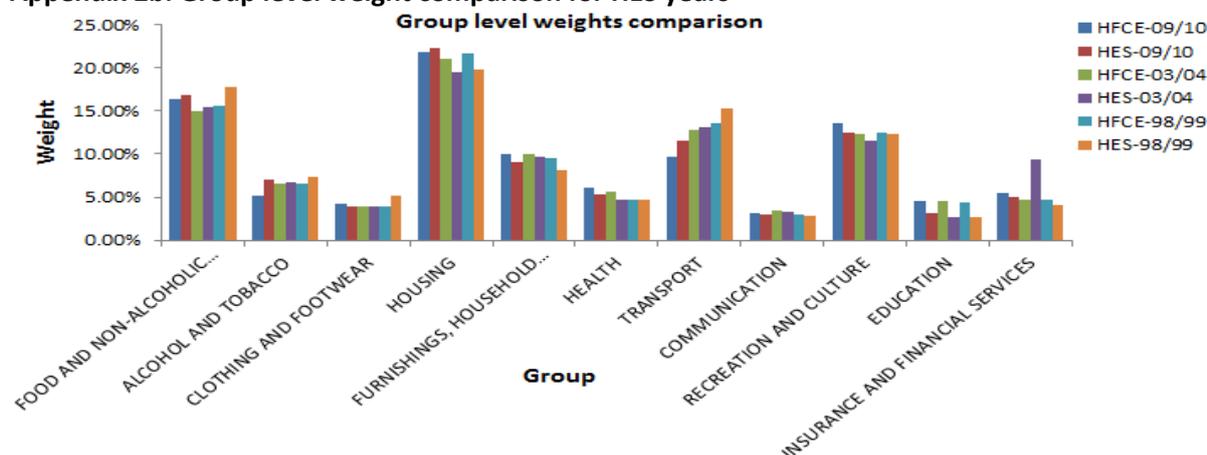
Expenditure Class	HFCE-09/10	HES-09/10	HFCE-03/04	HES-03/04	HFCE-98/99	HES-98/99
Bread	0.42	0.58	0.64	0.63	0.65	0.82
Cakes and biscuits	0.56	0.74	0.47	0.71	0.50	0.87
<b>Breakfast cereals</b>	<b>0.09</b>	<b>0.18</b>	<b>0.10</b>	<b>0.20</b>	<b>0.10</b>	<b>0.24</b>
<b>Other cereal products</b>	<b>0.39</b>	<b>0.21</b>	<b>0.44</b>	<b>0.18</b>	<b>0.47</b>	<b>0.26</b>
Beef and veal	0.24	0.39	0.19	<b>0.50</b>	<b>0.19</b>	<b>0.54</b>
<b>Pork</b>	<b>0.12</b>	0.36	0.11	0.16	0.11	0.19
Lamb and goat	0.17	0.26	0.13	0.26	0.14	0.26
<b>Poultry</b>	<b>0.11</b>	<b>0.49</b>	0.25	0.48	0.26	0.49
<b>Other meats</b>	<b>0.13</b>	<b>0.38</b>	0.13	<b>0.38</b>	<b>0.14</b>	<b>0.43</b>
Fish and other seafood	0.23	0.41	0.20	<b>0.41</b>	<b>0.21</b>	<b>0.44</b>
Milk	0.52	0.42	0.10	<b>0.55</b>	<b>0.10</b>	<b>0.81</b>
Cheese	0.17	0.34	0.22	0.32	0.23	0.35
<b>Ice cream and other dairy products</b>	<b>0.69</b>	<b>0.39</b>	0.44	0.31	0.43	0.35
Fruit	1.07	1.60	1.33	0.95	1.36	0.96
Vegetables	1.26	1.34	1.61	1.15	1.58	1.34
<b>Eggs</b>	<b>0.03</b>	<b>0.11</b>	<b>0.03</b>	<b>0.10</b>	<b>0.03</b>	<b>0.12</b>
Jams, honey and spreads	0.14	0.14	0.08	0.15	0.08	0.17
Food additives & condiments	0.33	0.30	0.31	0.27	0.31	0.34
<b>Oils and fats</b>	<b>0.30</b>	<b>0.17</b>	<b>0.35</b>	<b>0.19</b>	0.36	0.21
Snacks and confectionery	1.21	0.97	1.36	1.05	1.42	1.19
Other food products n.e.c.	0.30	0.47	0.50	0.54	0.46	0.53
Coffee, tea and cocoa	0.23	0.27	0.28	0.24	0.27	0.32
<b>Waters, soft drinks and juices</b>	<b>1.96</b>	<b>0.87</b>	<b>1.90</b>	<b>0.91</b>	1.57	1.30
Restaurant meals	1.90	2.81	2.43	2.00	2.39	2.03
Take away and fast foods	3.76	2.62	2.33	2.56	2.20	2.89
Spirits	0.57	0.91	0.65	0.87	0.67	1.03
Wine	1.11	1.64	1.16	1.57	1.18	1.71
Beer	1.46	2.20	1.95	1.93	2.00	2.41
Tobacco	1.96	2.32	2.69	2.41	2.67	2.27
Garments for men	0.65	0.74	0.49	0.75	0.51	0.98
Garments for women	1.83	1.47	1.49	1.40	1.57	1.80
Garments for infants and children	0.39	0.31	0.31	0.40	0.34	0.47
Footwear for men	0.17	0.14	0.19	0.18	0.19	0.25
Footwear for women	0.42	0.34	0.42	0.34	0.47	0.39
Footwear for infants and children	0.16	0.13	0.17	0.12	0.18	0.19
Accessories	0.47	0.74	0.46	0.56	0.48	0.62
<b>Cleaning, repair and hire of clothing</b>	<b>0.20</b>	<b>0.12</b>	0.12	0.16	<b>0.13</b>	<b>0.37</b>
Rents	7.22	6.71	7.04	5.22	7.21	5.60
New dwelling purchase by owner-occupiers	8.15	8.67	7.67	7.87	8.13	7.86
Maintenance and repair of the dwelling	1.47	2.05	1.48	2.18	1.49	1.85
Property rates and charges	1.55	1.26	1.17	1.16	1.26	1.20
Water and sewerage	1.05	0.90	1.04	0.77	1.06	0.87
Electricity	1.84	1.99	1.83	1.63	1.86	1.66
Gas and other household fuels	0.57	0.72	0.69	0.70	0.72	0.70
Furniture	1.61	1.63	1.31	1.96	1.31	2.31
<b>Carpets and other floor coverings</b>	<b>0.28</b>	<b>0.28</b>	0.38	<b>0.25</b>	0.36	0.23
<b>Household Textiles</b>	<b>0.27</b>	<b>0.61</b>	0.25	<b>0.53</b>	0.26	0.49
<b>Major household appliances</b>	<b>1.18</b>	<b>0.50</b>	1.12	<b>0.67</b>	1.14	0.87
<b>Small electric household appliance</b>	<b>0.55</b>	<b>0.24</b>	<b>0.59</b>	<b>0.27</b>	<b>0.57</b>	<b>0.28</b>
Glassware, tableware and household utensils	0.44	0.43	0.41	0.47	0.41	0.49
Tools and equipment for house and garden	0.27	0.26	0.28	0.35	0.29	0.34
Cleaning and maintenance products	0.24	0.29	0.36	0.33	0.33	0.43
Personal care products	1.50	1.11	1.57	1.18	1.53	1.40
Other non-durable household products	1.89	1.46	2.47	1.40	1.99	1.48

Child care	0.26	0.69	0.17	0.45	0.17	0.44
Hairdressing salons and personal grooming	0.78	0.90	0.76	0.75	0.70	0.74
Other household services	0.70	0.69	0.49	0.60	0.51	0.62
Pharmaceutical products	0.76	1.17	0.77	1.02	0.64	1.02
Therapeutic appliances and equipment (incl. dentures)	<b>0.55</b>	<b>0.14</b>	0.29	0.12	0.25	0.12
Medical and hospital services	3.95	3.42	3.87	2.77	2.86	2.71
Dental services	0.77	0.56	<b>1.04</b>	<b>0.67</b>	0.91	0.69
Purchases of vehicles	3.65	3.25	5.14	4.90	5.68	5.85
Spare parts and accessories for motor vehicles	0.72	0.99	0.59	0.68	0.65	1.01
Automotive fuel	3.06	3.55	3.34	3.78	3.71	4.25
Maintenance and repair of motor vehicles	1.21	1.67	1.97	1.99	2.27	2.20
<b>Other services in respect of motor vehicles</b>	<b>0.25</b>	<b>1.35</b>	<b>0.13</b>	<b>1.02</b>	<b>0.13</b>	<b>1.09</b>
Urban transport fares	0.78	0.74	1.04	0.73	1.12	0.85
Postal services	<b>0.22</b>	<b>0.12</b>	<b>0.36</b>	<b>0.11</b>	<b>0.30</b>	<b>0.15</b>
Telecommunication equipment and services	2.98	2.93	2.65	3.20	2.64	2.73
Audio, visual and computing equipment	1.42	1.56	0.96	1.53	1.00	1.30
Audio, visual and computing media and services	0.59	0.98	1.36	0.81	1.27	0.83
Books	0.51	0.40	0.48	0.44	0.47	0.49
<b>Newspapers, magazines and stationery</b>	<b>1.32</b>	<b>0.68</b>	<b>1.34</b>	<b>0.57</b>	<b>1.38</b>	<b>0.57</b>
Domestic holiday travel and accommodation	2.41	2.47	1.97	2.27	2.01	2.40
International holiday travel and accommodation	1.91	2.29	1.55	1.79	1.61	1.95
<b>Sports and recreational equipment</b>	<b>1.06</b>	<b>0.61</b>	<b>1.05</b>	<b>0.55</b>	<b>1.08</b>	<b>0.65</b>
Games, toys and hobbies	0.79	0.78	0.52	0.51	0.55	0.52
Pets and related products	0.45	0.38	0.59	0.40	0.61	0.43
Veterinary and other services for pets	0.23	0.40	<b>0.21</b>	<b>0.44</b>	0.21	0.33
Sports participation	1.06	0.94	<b>0.24</b>	<b>0.73</b>	0.28	0.81
<b>Other recreation activities and cultural services</b>	<b>1.88</b>	<b>1.09</b>	<b>2.37</b>	<b>1.09</b>	2.05	1.41
<b>Preschool and primary education</b>	<b>1.35</b>	<b>0.52</b>	<b>0.84</b>	<b>0.53</b>	0.80	<b>0.50</b>
Secondary education	1.78	1.26	<b>1.61</b>	<b>0.94</b>	1.63	<b>0.94</b>
Tertiary education	1.40	1.40	<b>1.92</b>	<b>1.26</b>	1.92	<b>1.25</b>
Insurance	0.91	1.40	<b>0.74</b>	<b>1.50</b>	0.79	1.46

#### Appendix 2a: HFCE Vs HES weights at group level for HES years

Group	HFCE-09/10	HES-09/10	HFCE-03/04	HES-03/04	HFCE-98/99	HES-98/99
FOOD AND NON-ALCOHOLIC BEVERAGES	16.32%	16.84%	14.96%	15.44%	15.56%	17.72%
ALCOHOL AND TOBACCO	5.10%	7.06%	6.61%	6.79%	6.52%	7.41%
CLOTHING AND FOOTWEAR	4.28%	3.98%	3.84%	3.91%	3.88%	5.19%
HOUSING	21.84%	22.30%	21.11%	19.53%	21.73%	19.75%
FURNISHINGS, HOUSEHOLD EQUIPMENT AND SERVICES	9.96%	9.10%	10.00%	9.61%	9.56%	8.09%
HEALTH	6.03%	5.29%	5.62%	4.70%	4.66%	4.69%
TRANSPORT	9.66%	11.55%	12.81%	13.11%	13.55%	15.25%
COMMUNICATION	3.20%	3.05%	3.52%	3.31%	2.94%	2.88%
RECREATION AND CULTURE	13.62%	12.56%	12.37%	11.55%	12.53%	12.29%
EDUCATION	4.53%	3.18%	<b>4.54%</b>	<b>2.73%</b>	<b>4.35%</b>	<b>2.69%</b>
INSURANCE AND FINANCIAL SERVICES	5.45%	5.08%	<b>4.62%</b>	<b>9.31%</b>	4.71%	4.04%

#### Appendix 2b: Group level weight comparison for HES years



### Appendix 3: Details of IOPC split ratios and equivalent ECs

IOPC(2009)	IOPC(2009) descriptor	CPI(16th series)	CPI(16th series) descriptor	Partial	Split ratio
01220010	Lettuces grown undercover	142	Vegetables	p	0.762
01220010	Lettuces grown undercover	171	Restaurant meals	p	0.123
01220010	Lettuces grown undercover	172	Take away and fast foods	p	0.115
01220020	Tomatoes grown undercover	142	Vegetables	p	0.762
01220020	Tomatoes grown undercover	171	Restaurant meals	p	0.123
01220020	Tomatoes grown undercover	172	Take away and fast foods	p	0.115
01220030	Other vegetables, fresh or chilled, grown underco	142	Vegetables	p	0.762
01220030	Other vegetables, fresh or chilled, grown underco	171	Restaurant meals	p	0.123
01220030	Other vegetables, fresh or chilled, grown underco	172	Take away and fast foods	p	0.115
01230010	Lettuces grown outdoors	142	Vegetables	p	0.762
01230010	Lettuces grown outdoors	171	Restaurant meals	p	0.123
01230010	Lettuces grown outdoors	172	Take away and fast foods	p	0.115
01230020	Tomatoes grown outdoors	142	Vegetables	p	0.762
01230020	Tomatoes grown outdoors	171	Restaurant meals	p	0.123
01230020	Tomatoes grown outdoors	172	Take away and fast foods	p	0.115
01230030	Potatoes, sweet potatoes and edible roots and tu	142	Vegetables	p	0.762
01230030	Potatoes, sweet potatoes and edible roots and tu	171	Restaurant meals	p	0.123
01230030	Potatoes, sweet potatoes and edible roots and tu	172	Take away and fast foods	p	0.115
01230040	Beans, french and runner; peas, green or blue gro	142	Vegetables	p	0.762
01230040	Beans, french and runner; peas, green or blue gro	171	Restaurant meals	p	0.123
01230040	Beans, french and runner; peas, green or blue gro	172	Take away and fast foods	p	0.115
01230050	Cabbages, brussels sprouts, cauliflowers and hea	142	Vegetables	p	0.762
01230050	Cabbages, brussels sprouts, cauliflowers and hea	171	Restaurant meals	p	0.123
01230050	Cabbages, brussels sprouts, cauliflowers and hea	172	Take away and fast foods	p	0.115
01230060	Carrots grown outdoors	142	Vegetables	p	0.762
01230060	Carrots grown outdoors	171	Restaurant meals	p	0.123
01230060	Carrots grown outdoors	172	Take away and fast foods	p	0.115
01230070	Onions grown outdoors	142	Vegetables	p	0.762
01230070	Onions grown outdoors	171	Restaurant meals	p	0.123
01230070	Onions grown outdoors	172	Take away and fast foods	p	0.115
01230090	Other vegetables (incl. melons), fresh or chilled gr	142	Vegetables	p	0.762
01230090	Other vegetables (incl. melons), fresh or chilled gr	171	Restaurant meals	p	0.123
01230090	Other vegetables (incl. melons), fresh or chilled gr	172	Take away and fast foods	p	0.115
01330020	Berries nec - fresh and sun-dried	141	Fruit	p	0.762
01330020	Berries nec - fresh and sun-dried	155	Snacks and confectionery	p	0.238
01360010	Citrus fruit - fresh and sun-dried	141	Fruit	p	0.762
01360010	Citrus fruit - fresh and sun-dried	171	Restaurant meals	p	0.123
01360010	Citrus fruit - fresh and sun-dried	172	Take away and fast foods	p	0.115
01370010	Olives - fresh and sun-dried	141	Fruit	p	0.762
01370010	Olives - fresh and sun-dried	155	Snacks and confectionery	p	0.238
01390040	Edible nuts (excluding Peanuts) nec; Other fruit n	141	Fruit	p	0.250
01390040	Edible nuts (excluding Peanuts) nec; Other fruit n	155	Snacks and confectionery	p	0.114
01390040	Edible nuts (excluding Peanuts) nec; Other fruit n	171	Restaurant meals	p	0.329
01390040	Edible nuts (excluding Peanuts) nec; Other fruit n	172	Take away and fast foods	p	0.307
01600010	Whole milk, chilled but otherwise untreated	131	Milk	p	0.435
01600010	Whole milk, chilled but otherwise untreated	133	Ice cream and other dairy produc	p	0.505
01720010	Eggs	151	Eggs	p	0.264
01720010	Eggs	171	Restaurant meals	p	0.381
01720010	Eggs	172	Take away and fast foods	p	0.355
01910020	Horse stud and breeding services; horses nec	943	Pets and related products	p	0.487
01910020	Horse stud and breeding services; horses nec	944	Veterinary and other services for	p	0.513
01990010	Pet breeding and live animals nec	943	Pets and related products	p	0.487
01990010	Pet breeding and live animals nec	944	Veterinary and other services for	p	0.513
02000010	Farmed oysters (including Pearl), paua and mollus	126	Fish and other seafood	p	0.282
02000010	Farmed oysters (including Pearl), paua and mollus	171	Restaurant meals	p	0.372
02000010	Farmed oysters (including Pearl), paua and mollus	172	Take away and fast foods	p	0.347
02000030	Farmed fish and fish hatchery products	126	Fish and other seafood	p	0.282
02000030	Farmed fish and fish hatchery products	171	Restaurant meals	p	0.372
02000030	Farmed fish and fish hatchery products	172	Take away and fast foods	p	0.347
02000040	Farmed prawns and crustaceans nec	126	Fish and other seafood	p	0.282
02000040	Farmed prawns and crustaceans nec	171	Restaurant meals	p	0.372
02000040	Farmed prawns and crustaceans nec	172	Take away and fast foods	p	0.347
04110010	Rock lobster and crab	126	Fish and other seafood	p	0.282
04110010	Rock lobster and crab	171	Restaurant meals	p	0.718
04120010	Prawns	126	Fish and other seafood	p	0.282
04120010	Prawns	171	Restaurant meals	p	0.372
04120010	Prawns	172	Take away and fast foods	p	0.347

04130010	Fish and squid (line fishing)	126	Fish and other seafood	p	0.282
04130010	Fish and squid (line fishing)	171	Restaurant meals	p	0.372
04130010	Fish and squid (line fishing)	172	Take away and fast foods	p	0.347
04140010	Fish (trawling or netting)	126	Fish and other seafood	p	0.282
04140010	Fish (trawling or netting)	171	Restaurant meals	p	0.372
04140010	Fish (trawling or netting)	172	Take away and fast foods	p	0.347
04190010	Oysters and other aquatic invertebrates nec, live,	126	Fish and other seafood	p	0.282
04190010	Oysters and other aquatic invertebrates nec, live,	171	Restaurant meals	p	0.372
04190010	Oysters and other aquatic invertebrates nec, live,	172	Take away and fast foods	p	0.347
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	121	Beef and veal	p	0.257
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	122	Pork	p	0.033
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	171	Restaurant meals	p	0.261
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	172	Take away and fast foods	p	0.243
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	123	Lamb and goat	p	0.171
11110010	Fresh meat, chilled or frozen (excl kangaroo or ho	125	Other meats	p	0.035
11110080	Meat (excl fresh) for human consumption	125	Other meats	p	0.428
11110080	Meat (excl fresh) for human consumption	171	Restaurant meals	p	0.283
11110080	Meat (excl fresh) for human consumption	172	Take away and fast foods	p	0.264
11110080	Meat (excl fresh) for human consumption	123	Lamb and goat	p	0.026
11110110	Other animal products nec	125	Other meats	p	0.428
11110110	Other animal products nec	156	Other food products n.e.c.	p	0.035
11110110	Other animal products nec	171	Restaurant meals	p	0.260
11110110	Other animal products nec	172	Take away and fast foods	p	0.242
11110110	Other animal products nec	943	Pets and related products	p	0.035
11120010	Poultry and poultry products (incl canned)	124	Poultry	p	0.264
11120010	Poultry and poultry products (incl canned)	171	Restaurant meals	p	0.381
11120010	Poultry and poultry products (incl canned)	172	Take away and fast foods	p	0.355
11130010	Bacon and ham and other dried, salted or smoked	122	Pork	p	0.428
11130010	Bacon and ham and other dried, salted or smoked	172	Take away and fast foods	p	0.572
11130020	Smallgoods nec (incl crumbed lamb outlets, cured	125	Other meats	p	0.428
11130020	Smallgoods nec (incl crumbed lamb outlets, cured	171	Restaurant meals	p	0.296
11130020	Smallgoods nec (incl crumbed lamb outlets, cured	172	Take away and fast foods	p	0.276
11200010	Fish, canned	126	Fish and other seafood	p	0.282
11200010	Fish, canned	171	Restaurant meals	p	0.372
11200010	Fish, canned	172	Take away and fast foods	p	0.347
11200020	Fresh, chilled or frozen whole fish, fillets and fish m	126	Fish and other seafood	p	0.282
11200020	Fresh, chilled or frozen whole fish, fillets and fish m	171	Restaurant meals	p	0.372
11200020	Fresh, chilled or frozen whole fish, fillets and fish m	172	Take away and fast foods	p	0.347
11200030	Rock lobster and crayfish (incl tails), chilled or froz	126	Fish and other seafood	p	0.282
11200030	Rock lobster and crayfish (incl tails), chilled or froz	171	Restaurant meals	p	0.718
11200040	Crustaceans, molluscs & aquatic invertebrates nec	126	Fish and other seafood	p	0.282
11200040	Crustaceans, molluscs & aquatic invertebrates nec	171	Restaurant meals	p	0.372
11200040	Crustaceans, molluscs & aquatic invertebrates nec	172	Take away and fast foods	p	0.347
11310010	Processed liquid milk (incl whole milk and skim)	131	Milk	p	0.495
11310010	Processed liquid milk (incl whole milk and skim)	133	Ice cream and other dairy product	p	0.505
11310020	Cream (incl thickened), not concentrated or sweet	131	Milk	p	0.495
11310020	Cream (incl thickened), not concentrated or sweet	133	Ice cream and other dairy product	p	0.505
11320010	Ice cream and frozen confections	133	Ice cream and other dairy product	p	0.495
11320010	Ice cream and frozen confections	155	Snacks and confectionery	p	0.505
11330010	Flavoured whole milk drinks	131	Milk	p	0.519
11330010	Flavoured whole milk drinks	133	Ice cream and other dairy product	p	0.481
11330060	Cheese and curd	132	Cheese	p	0.495
11330060	Cheese and curd	171	Restaurant meals	p	0.261
11330060	Cheese and curd	172	Take away and fast foods	p	0.244
11400060	Vegetables, prepared or preserved (incl dried or s	142	Vegetables	p	0.762
11400060	Vegetables, prepared or preserved (incl dried or s	171	Restaurant meals	p	0.123
11400060	Vegetables, prepared or preserved (incl dried or s	172	Take away and fast foods	p	0.115
11400070	Tomato pulp, puree and paste	142	Vegetables	p	0.762
11400070	Tomato pulp, puree and paste	162	Waters, soft drinks and juices	p	0.238
11400090	Vegetable juices (incl mixtures)(incl tomato); mixtu	142	Vegetables	p	0.762
11400090	Vegetable juices (incl mixtures)(incl tomato); mixtu	162	Waters, soft drinks and juices	p	0.238
11400110	Soup and homogenised food preparations includ	142	Vegetables	p	0.762
11400110	Soup and homogenised food preparations includ	156	Other food products n.e.c.	p	0.238
11400150	Dried roots, tubers and vegetables; Flour and mea	142	Vegetables	p	0.762
11400150	Dried roots, tubers and vegetables; Flour and mea	171	Restaurant meals	p	0.123
11400150	Dried roots, tubers and vegetables; Flour and mea	172	Take away and fast foods	p	0.115
11610010	Wheat and other cereal flours (incl self-raising)	114	Other cereal products	p	0.391
11610010	Wheat and other cereal flours (incl self-raising)	943	Pets and related products	p	0.609

11620010	Cereal foods (incl breakfast foods)	113	Breakfast cereals	p	0.331
11620010	Cereal foods (incl breakfast foods)	114	Other cereal products	p	0.603
11620020	Mixes and doughs nec (incl custard powder) for p	114	Other cereal products	p	0.331
11620020	Mixes and doughs nec (incl custard powder) for p	171	Restaurant meals	p	0.315
11620020	Mixes and doughs nec (incl custard powder) for p	172	Take away and fast foods	p	0.234
11700010	Bread and bread rolls	111	Bread	p	0.718
11700010	Bread and bread rolls	171	Restaurant meals	p	0.146
11700010	Bread and bread rolls	172	Take away and fast foods	p	0.136
11700020	Biscuits and biscuit crumbs; rusks; ice cream con	112	Cakes and biscuits	p	0.718
11700020	Biscuits and biscuit crumbs; rusks; ice cream con	171	Restaurant meals	p	0.146
11700020	Biscuits and biscuit crumbs; rusks; ice cream con	172	Take away and fast foods	p	0.136
11700030	Cakes, pastries and crumpets	112	Cakes and biscuits	p	0.718
11700030	Cakes, pastries and crumpets	171	Restaurant meals	p	0.146
11700030	Cakes, pastries and crumpets	172	Take away and fast foods	p	0.136
11700040	Meat pies	112	Cakes and biscuits	p	0.718
11700040	Meat pies	171	Restaurant meals	p	0.146
11700040	Meat pies	172	Take away and fast foods	p	0.136
11700050	Biscuit and bread dough (incl frozen)	112	Cakes and biscuits	p	0.718
11700050	Biscuit and bread dough (incl frozen)	156	Other food products n.e.c.	p	0.022
11700050	Biscuit and bread dough (incl frozen)	171	Restaurant meals	p	0.134
11700050	Biscuit and bread dough (incl frozen)	172	Take away and fast foods	p	0.125
11820050	Crystallised, drained and glace fruit, nuts and pee	141	Fruit	p	0.762
11820050	Crystallised, drained and glace fruit, nuts and pee	155	Snacks and confectionery	p	0.238
11990030	Peanut butter and other nut butters, pastes and p	152	Jams, honey and spreads	p	0.514
11990030	Peanut butter and other nut butters, pastes and p	156	Other food products n.e.c.	p	0.486
11990120	Food products nec (incl jelly crystals, meat pastes	114	Other cereal products	p	0.017
11990120	Food products nec (incl jelly crystals, meat pastes	152	Jams, honey and spreads	p	0.495
11990120	Food products nec (incl jelly crystals, meat pastes	156	Other food products n.e.c.	p	0.033
11990120	Food products nec (incl jelly crystals, meat pastes	171	Restaurant meals	p	0.232
11990120	Food products nec (incl jelly crystals, meat pastes	172	Take away and fast foods	p	0.216
13330010	Textile interior furnishing articles (incl blankets (ex	521	Household Textiles	p	0.305
13330010	Textile interior furnishing articles (incl blankets (ex	521	Household Textiles	p	0.305
13330010	Textile interior furnishing articles (incl blankets (ex	942	Games, toys and hobbies	p	0.330
13330020	Towels (incl tea towels) and face washers of cotto	521	Household Textiles	p	0.433
13330020	Towels (incl tea towels) and face washers of cotto	942	Games, toys and hobbies	p	0.561
13330040	Textile quilted prods, hosedtubing, nonwovens, (b	521	Household Textiles	p	0.333
13330040	Textile quilted prods, hosedtubing, nonwovens, (b	521	Household Textiles	p	0.333
13330040	Textile quilted prods, hosedtubing, nonwovens, (b	941	Sports and recreational equipme	p	0.333
13330060	Textile tarpaulins (incl canvas), sails, tents, annex	543	Other non-durable household pr	p	0.705
13330060	Textile tarpaulins (incl canvas), sails, tents, annex	941	Sports and recreational equipme	p	0.235
13330110	Floor-cloths, dishcloths, dusters and similar clear	521	Household Textiles	p	0.235
13330110	Floor-cloths, dishcloths, dusters and similar clear	543	Other non-durable household pr	p	0.705
13330120	Textile life jackets, life-belts, sleeping bags, parac	521	Household Textiles	p	0.433
13330120	Textile life jackets, life-belts, sleeping bags, parac	942	Games, toys and hobbies	p	0.561
13340060	Wadding, powder puffs, pads, cotton wool, gauze	521	Household Textiles	p	0.355
13340060	Wadding, powder puffs, pads, cotton wool, gauze	542	Personal care products	p	0.645
13340080	Articles of bonded fibre or yarn fabrics (excl labels	512	Carpets and other floor coverings	p	0.035
13340080	Articles of bonded fibre or yarn fabrics (excl labels	521	Household Textiles	p	0.206
13340080	Articles of bonded fibre or yarn fabrics (excl labels	431	Maintenance and repair of the dv	p	0.433
13340080	Articles of bonded fibre or yarn fabrics (excl labels	941	Sports and recreational equipme	p	0.206
13400010	Hosiery (incl pantyhose, stockings, tights and soc	311	Garments for men	p	0.234
13400010	Hosiery (incl pantyhose, stockings, tights and soc	312	Garments for women	p	0.583
13400010	Hosiery (incl pantyhose, stockings, tights and soc	313	Garments for infants and childre	p	0.123
13400020	Pullovers, jumpers, sweaters and cardigans - knitt	311	Garments for men	p	0.234
13400020	Pullovers, jumpers, sweaters and cardigans - knitt	312	Garments for women	p	0.583
13400020	Pullovers, jumpers, sweaters and cardigans - knitt	313	Garments for infants and childre	p	0.123
13510010	Dustcoats, mens and boys trousers (excl suit), sho	311	Garments for men	p	0.234
13510010	Dustcoats, mens and boys trousers (excl suit), sho	312	Garments for women	p	0.583
13510010	Dustcoats, mens and boys trousers (excl suit), sho	313	Garments for infants and childre	p	0.123
13510020	Men's & boys' suits or uniforms (incl trousers for su	311	Garments for men	p	0.261
13510020	Men's & boys' suits or uniforms (incl trousers for su	313	Garments for infants and childre	p	0.110
13510030	Women's and girls' dresses, skirts, slacks, shorts, t	312	Garments for women	p	0.519
13510030	Women's and girls' dresses, skirts, slacks, shorts, t	313	Garments for infants and childre	p	0.110
13510040	Shirts and blouses (with collars)	311	Garments for men	p	0.234
13510040	Shirts and blouses (with collars)	312	Garments for women	p	0.583
13510040	Shirts and blouses (with collars)	313	Garments for infants and childre	p	0.123
13510050	T-shirts and tank tops	311	Garments for men	p	0.234
13510050	T-shirts and tank tops	312	Garments for women	p	0.583
13510050	T-shirts and tank tops	313	Garments for infants and childre	p	0.123

13510060	Swimwear; sweatsuits, tracksuits, jogging suits, le	311	Garments for men	p	0.234
13510060	Swimwear; sweatsuits, tracksuits, jogging suits, le	312	Garments for women	p	0.583
13510060	Swimwear; sweatsuits, tracksuits, jogging suits, le	313	Garments for infants and children	p	0.123
13510080	Underwear	311	Garments for men	p	0.234
13510080	Underwear	312	Garments for women	p	0.583
13510080	Underwear	313	Garments for infants and children	p	0.123
13510090	Outer nightwear (incl dressing gowns and robes) a	311	Garments for men	p	0.234
13510090	Outer nightwear (incl dressing gowns and robes) a	312	Garments for women	p	0.583
13510090	Outer nightwear (incl dressing gowns and robes) a	313	Garments for infants and children	p	0.123
13510100	Waterproof, plastic or rubber trousers, overalls, co	311	Garments for men	p	0.234
13510100	Waterproof, plastic or rubber trousers, overalls, co	312	Garments for women	p	0.583
13510100	Waterproof, plastic or rubber trousers, overalls, co	313	Garments for infants and children	p	0.123
13510110	Plastic (unsupported film) clothing other than wate	311	Garments for men	p	0.234
13510110	Plastic (unsupported film) clothing other than wate	312	Garments for women	p	0.583
13510110	Plastic (unsupported film) clothing other than wate	313	Garments for infants and children	p	0.123
13510120	Wetsuits and other rubber clothing and accessori	311	Garments for men	p	0.227
13510120	Wetsuits and other rubber clothing and accessori	312	Garments for women	p	0.451
13510120	Wetsuits and other rubber clothing and accessori	313	Garments for infants and children	p	0.095
13510120	Wetsuits and other rubber clothing and accessori	331	Accessories	p	0.227
13510130	Fur and sheepskin clothing and clothing accesso	311	Garments for men	p	0.227
13510130	Fur and sheepskin clothing and clothing accesso	312	Garments for women	p	0.451
13510130	Fur and sheepskin clothing and clothing accesso	313	Garments for infants and children	p	0.095
13510130	Fur and sheepskin clothing and clothing accesso	331	Accessories	p	0.227
13510140	Hats and other headgear (excl safety, rubber or pl	311	Garments for men	p	0.227
13510140	Hats and other headgear (excl safety, rubber or pl	312	Garments for women	p	0.451
13510140	Hats and other headgear (excl safety, rubber or pl	313	Garments for infants and children	p	0.095
13510140	Hats and other headgear (excl safety, rubber or pl	331	Accessories	p	0.227
13510150	Safety headgear; textile belts for clothing; plastic	311	Garments for men	p	0.227
13510150	Safety headgear; textile belts for clothing; plastic	312	Garments for women	p	0.451
13510150	Safety headgear; textile belts for clothing; plastic	313	Garments for infants and children	p	0.095
13510150	Safety headgear; textile belts for clothing; plastic	331	Accessories	p	0.227
13510170	Clothing and clothing accessories nec	311	Garments for men	p	0.227
13510170	Clothing and clothing accessories nec	312	Garments for women	p	0.451
13510170	Clothing and clothing accessories nec	313	Garments for infants and children	p	0.095
13510170	Clothing and clothing accessories nec	331	Accessories	p	0.227
13520010	Footwear with uppers and outer soles of rubber or	321	Footwear for men	p	0.230
13520010	Footwear with uppers and outer soles of rubber or	322	Footwear for women	p	0.557
13520010	Footwear with uppers and outer soles of rubber or	323	Footwear for infants and children	p	0.213
13520020	Footwear with uppers of leather and outer soles of	321	Footwear for men	p	0.230
13520020	Footwear with uppers of leather and outer soles of	322	Footwear for women	p	0.557
13520020	Footwear with uppers of leather and outer soles of	323	Footwear for infants and children	p	0.213
13520030	Sports footwear	321	Footwear for men	p	0.230
13520030	Sports footwear	322	Footwear for women	p	0.557
13520030	Sports footwear	323	Footwear for infants and children	p	0.213
13520040	Footwear with uppers of leather and outer soles of	321	Footwear for men	p	0.230
13520040	Footwear with uppers of leather and outer soles of	322	Footwear for women	p	0.557
13520040	Footwear with uppers of leather and outer soles of	323	Footwear for infants and children	p	0.213
13520050	Footwear nec (incl steel capped footwear)	321	Footwear for men	p	0.230
13520050	Footwear nec (incl steel capped footwear)	322	Footwear for women	p	0.557
13520050	Footwear nec (incl steel capped footwear)	323	Footwear for infants and children	p	0.213
13520060	Soles of or out from rubber or rubber composition	321	Footwear for men	p	0.230
13520060	Soles of or out from rubber or rubber composition	322	Footwear for women	p	0.557
13520060	Soles of or out from rubber or rubber composition	323	Footwear for infants and children	p	0.213
15240010	Toilet, tissues, serviettes, towels & similar paper fo	542	Personal care products	p	0.432
15240010	Toilet, tissues, serviettes, towels & similar paper fo	543	Other non-durable household pr	p	0.568
16110070	Trade advertising material or commercial catalogu	922	Newspapers, magazines and sta	p	0.500
16110070	Trade advertising material or commercial catalogu	922	Newspapers, magazines and sta	p	0.500
17010030	Gas oil or fuel oil (excl motor spirit and kerosene)	443	Gas and other household fuels	p	0.163
17010030	Gas oil or fuel oil (excl motor spirit and kerosene)	713	Automotive fuel	p	0.831
17090100	Brake and hydraulic fluid	543	Other non-durable household pr	p	0.536
17090100	Brake and hydraulic fluid	712	Spare parts and accessories for	p	0.404
18110020	Hydrogen, rare gases, nitrogen, medicinal gases	543	Other non-durable household pr	p	0.555
18110020	Hydrogen, rare gases, nitrogen, medicinal gases	611	Pharmaceutical products	p	0.445
18120100	Ethers, alcohol peroxides, ether peroxides, epoxi	543	Other non-durable household pr	p	0.555
18120100	Ethers, alcohol peroxides, ether peroxides, epoxi	611	Pharmaceutical products	p	0.445

18410010	Pharmaceutical goods, for human use (excl w add	543	Other non-durable household pr	p	0.555
18410010	Pharmaceutical goods, for human use (excl w add	611	Pharmaceutical products	p	0.445
18910010	Photographic, film, cloth, plates (sensitised), phot	543	Other non-durable household pr	p	0.479
18910010	Photographic, film, cloth, plates (sensitised), phot	912	Audio, visual and computing med	p	0.321
18910010	Photographic, film, cloth, plates (sensitised), phot	941	Sports and recreational equipme	p	0.200
18990040	Other chemical products nec	541	Cleaning and maintenance prod	p	0.166
18990040	Other chemical products nec	431	Maintenance and repair of the dv	p	0.834
19120020	Plastic table and kitchenware (incl disposable cup	533	Glassware, tableware and house	p	0.228
19120020	Plastic table and kitchenware (incl disposable cup	543	Other non-durable household pr	p	0.772
19190090	Synthetic rubber products and other polymer prod	431	Maintenance and repair of the dv	p	0.652
19190090	Synthetic rubber products and other polymer prod	942	Games, toys and hobbies	p	0.348
20290040	Tableware, ornamental pottery and domestic ware	533	Glassware, tableware and house	p	0.228
20290040	Tableware, ornamental pottery and domestic ware	543	Other non-durable household pr	p	0.772
20290050	Ceramic goods nec	533	Glassware, tableware and house	p	0.228
20290050	Ceramic goods nec	431	Maintenance and repair of the dv	p	0.772
22400060	Sheet metal products nec	511	Furniture	p	0.528
22400060	Sheet metal products nec	431	Maintenance and repair of the dv	p	0.472
22990200	Fabricated metal products (incl ladders) nec	511	Furniture	p	0.463
22990200	Fabricated metal products (incl ladders) nec	533	Glassware, tableware and house	p	0.122
22990200	Fabricated metal products (incl ladders) nec	431	Maintenance and repair of the dv	p	0.415
23990020	Transport equipment, parts and accessories nec	712	Spare parts and accessories for	p	0.619
23990020	Transport equipment, parts and accessories nec	941	Sports and recreational equipme	p	0.381
24110020	Photographic goods nec (excl sensitised photogr	543	Other non-durable household pr	p	0.479
24110020	Photographic goods nec (excl sensitised photogr	912	Audio, visual and computing med	p	0.321
24110020	Photographic goods nec (excl sensitised photogr	941	Sports and recreational equipme	p	0.200
24190040	Watches (incl metal watch straps), watch cases, c	331	Accessories	p	0.312
24190040	Watches (incl metal watch straps), watch cases, c	511	Furniture	p	0.688
24190060	Professional or scientific instruments, apparatus c	531	Major household appliances	p	0.676
24190060	Professional or scientific instruments, apparatus c	532	Small electric household applian	p	0.324
24190070	Surveying, physical or chemical analysis and othe	531	Major household appliances	p	0.676
24190070	Surveying, physical or chemical analysis and othe	532	Small electric household applian	p	0.324
24190100	Professional and scientific equipment nec	531	Major household appliances	p	0.676
24190100	Professional and scientific equipment nec	532	Small electric household applian	p	0.324
24210090	Electronic machines with a calculating device (inc	531	Major household appliances	p	0.217
24210090	Electronic machines with a calculating device (inc	532	Small electric household applian	p	0.104
24210090	Electronic machines with a calculating device (inc	911	Audio, visual and computing equ	p	0.678
24220020	Mobile, cellular and car phones (excl parts), radio	531	Major household appliances	p	0.217
24220020	Mobile, cellular and car phones (excl parts), radio	532	Small electric household applian	p	0.104
24220020	Mobile, cellular and car phones (excl parts), radio	911	Audio, visual and computing equ	p	0.678
24220030	Satellite receivers (excl parts)	531	Major household appliances	p	0.217
24220030	Satellite receivers (excl parts)	532	Small electric household applian	p	0.104
24220030	Satellite receivers (excl parts)	911	Audio, visual and computing equ	p	0.678
24220040	Remote monitoring alarm systems	532	Small electric household applian	p	0.133
24220040	Remote monitoring alarm systems	911	Audio, visual and computing equ	p	0.867
24220050	Intercom equipment	532	Small electric household applian	p	0.133
24220050	Intercom equipment	911	Audio, visual and computing equ	p	0.867
24220060	Parts for radio and television studio equipment, tra	531	Major household appliances	p	0.217
24220060	Parts for radio and television studio equipment, tra	532	Small electric household applian	p	0.104
24220060	Parts for radio and television studio equipment, tra	911	Audio, visual and computing equ	p	0.678
24220080	Telecommunication equipment parts (incl parts fo	532	Small electric household applian	p	0.133
24220080	Telecommunication equipment parts (incl parts fo	911	Audio, visual and computing equ	p	0.867
24290020	Radio receiving sets (incl car radios and clock rad	532	Small electric household applian	p	0.133
24290020	Radio receiving sets (incl car radios and clock rad	911	Audio, visual and computing equ	p	0.867
24290030	Sound and video recording and reproducing equi	531	Major household appliances	p	0.133
24290030	Sound and video recording and reproducing equi	532	Small electric household applian	p	0.064
24290030	Sound and video recording and reproducing equi	543	Other non-durable household pr	p	0.388
24290030	Sound and video recording and reproducing equi	911	Audio, visual and computing equ	p	0.415
24290040	Loudspeakers and audio-frequency electric amp	531	Major household appliances	p	0.133
24290040	Loudspeakers and audio-frequency electric amp	532	Small electric household applian	p	0.064
24290040	Loudspeakers and audio-frequency electric amp	543	Other non-durable household pr	p	0.388
24290040	Loudspeakers and audio-frequency electric amp	911	Audio, visual and computing equ	p	0.415
24290050	Electric or electronic alarm systems (excl remote n	532	Small electric household applian	p	0.133
24290050	Electric or electronic alarm systems (excl remote n	911	Audio, visual and computing equ	p	0.867
24290080	Other audio and video equipment and accessorie	531	Major household appliances	p	0.217
24290080	Other audio and video equipment and accessorie	532	Small electric household applian	p	0.104

24290080	Other audio and video equipment and accessories	911	Audio, visual and computing equipment	p	0.678
24290090	Parts for television and radio receiving sets, sound	531	Major household appliances	p	0.133
24290090	Parts for television and radio receiving sets, sound	532	Small electric household appliances	p	0.064
24290090	Parts for television and radio receiving sets, sound	543	Other non-durable household products	p	0.388
24290090	Parts for television and radio receiving sets, sound	911	Audio, visual and computing equipment	p	0.415
24290100	Electronic equipment and parts nec	531	Major household appliances	p	0.133
24290100	Electronic equipment and parts nec	532	Small electric household appliances	p	0.064
24290100	Electronic equipment and parts nec	543	Other non-durable household products	p	0.388
24290100	Electronic equipment and parts nec	911	Audio, visual and computing equipment	p	0.415
24320030	Cold, discharge, arc, ultra violet, infra-red and other	532	Small electric household appliances	p	0.141
24320030	Cold, discharge, arc, ultra violet, infra-red and other	431	Maintenance and repair of the dwelling	p	0.859
24390060	Electric motors, generators, electric generating sets	531	Major household appliances	p	0.217
24390060	Electric motors, generators, electric generating sets	532	Small electric household appliances	p	0.104
24390060	Electric motors, generators, electric generating sets	543	Other non-durable household products	p	0.635
24390090	Relays and relay sets for radio, telephones and tele	532	Small electric household appliances	p	0.074
24390090	Relays and relay sets for radio, telephones and tele	543	Other non-durable household products	p	0.448
24390090	Relays and relay sets for radio, telephones and tele	911	Audio, visual and computing equipment	p	0.479
24390100	Electrical apparatus to switch, protect/connect circuit	531	Major household appliances	p	0.217
24390100	Electrical apparatus to switch, protect/connect circuit	532	Small electric household appliances	p	0.104
24390100	Electrical apparatus to switch, protect/connect circuit	911	Audio, visual and computing equipment	p	0.678
24390130	Electric soldering and welding (incl arc) irons, gun	531	Major household appliances	p	0.676
24390130	Electric soldering and welding (incl arc) irons, gun	532	Small electric household appliances	p	0.324
24390160	Electrical insulators nec and other electrical equipment	531	Major household appliances	p	0.676
24390160	Electrical insulators nec and other electrical equipment	532	Small electric household appliances	p	0.324
24410010	Solid fuel or gas barbecues	531	Major household appliances	p	0.676
24410010	Solid fuel or gas barbecues	532	Small electric household appliances	p	0.324
24410020	Domestic stoves, ovens and rangehoods (incl gas)	531	Major household appliances	p	0.676
24410020	Domestic stoves, ovens and rangehoods (incl gas)	532	Small electric household appliances	p	0.324
24410030	Domestic refrigerators and freezers	531	Major household appliances	p	0.676
24410030	Domestic refrigerators and freezers	532	Small electric household appliances	p	0.324
24410050	Clothes washing machines, drying cabinets, tumble	531	Major household appliances	p	0.676
24410050	Clothes washing machines, drying cabinets, tumble	532	Small electric household appliances	p	0.324
24490010	Domestic gas, electric, solid fuel, oil, spirit fired space	531	Major household appliances	p	0.676
24490010	Domestic gas, electric, solid fuel, oil, spirit fired space	532	Small electric household appliances	p	0.324
24490020	Domestic soil heating apparatus	531	Major household appliances	p	0.676
24490020	Domestic soil heating apparatus	532	Small electric household appliances	p	0.324
24490030	Domestic solar hot water collectors, systems and	531	Major household appliances	p	0.676
24490030	Domestic solar hot water collectors, systems and	532	Small electric household appliances	p	0.324
24490040	Domestic gas and other non-electric water heaters	531	Major household appliances	p	0.676
24490040	Domestic gas and other non-electric water heaters	532	Small electric household appliances	p	0.324
24490050	Domestic electric water heaters or hot water systems	531	Major household appliances	p	0.676
24490050	Domestic electric water heaters or hot water systems	532	Small electric household appliances	p	0.324
24490060	Domestic room air conditioners and coolers (excl	531	Major household appliances	p	0.676
24490060	Domestic room air conditioners and coolers (excl	532	Small electric household appliances	p	0.324
24490080	Domestic fans (incl table, floor, wall, window, ceiling)	531	Major household appliances	p	0.676
24490080	Domestic fans (incl table, floor, wall, window, ceiling)	532	Small electric household appliances	p	0.324
24490090	Electro-thermic appliances nec	531	Major household appliances	p	0.676
24490090	Electro-thermic appliances nec	532	Small electric household appliances	p	0.324
24490100	Sewing machines, vacuum cleaners, food mixers	531	Major household appliances	p	0.676
24490100	Sewing machines, vacuum cleaners, food mixers	532	Small electric household appliances	p	0.324
24520010	Complete air conditioning units nec (incl ducting and	531	Major household appliances	p	0.676
24520010	Complete air conditioning units nec (incl ducting and	532	Small electric household appliances	p	0.324
25910020	Jewellery and silverware	331	Accessories	p	0.281
25910020	Jewellery and silverware	533	Glassware, tableware and household	p	0.163
25910020	Jewellery and silverware	543	Other non-durable household products	p	0.555
25910030	Imitation jewellery (excl incorporating precious metals)	331	Accessories	p	0.632
25910030	Imitation jewellery (excl incorporating precious metals)	533	Glassware, tableware and household	p	0.368
25920020	Other articles for funfair or table games (incl billiard)	941	Sports and recreational equipment	p	0.439
25920020	Other articles for funfair or table games (incl billiard)	942	Games, toys and hobbies	p	0.561
25990120	Manufacturing nec (incl non-textile based sutures)	533	Glassware, tableware and household	p	0.171
25990120	Manufacturing nec (incl non-textile based sutures)	542	Personal care products	p	0.440
25990120	Manufacturing nec (incl non-textile based sutures)	912	Audio, visual and computing media	p	0.389
44000010	Accommodation services	931	Domestic holiday travel and accommodation	p	0.519
44000010	Accommodation services	932	International holiday travel and accommodation	p	0.481
45000020	Beverage serving service	171	Restaurant meals	p	0.517
45000020	Beverage serving service	172	Take away and fast foods	p	0.483
48200020	Long distance water transport services for passenger	931	Domestic holiday travel and accommodation	p	0.519
48200020	Long distance water transport services for passenger	932	International holiday travel and accommodation	p	0.481

48200030	Rental or hire of water vessel with operator	931	Domestic holiday travel and accom	p	0.519
48200030	Rental or hire of water vessel with operator	932	International holiday travel and accom	p	0.481
49000030	Air passenger transport services	931	Domestic holiday travel and accom	p	0.519
49000030	Air passenger transport services	932	International holiday travel and accom	p	0.481
49000040	Rental or hire of aircraft with operator	931	Domestic holiday travel and accom	p	0.519
49000040	Rental or hire of aircraft with operator	932	International holiday travel and accom	p	0.481
50100010	Scenic and sightseeing transport services	931	Domestic holiday travel and accom	p	0.519
50100010	Scenic and sightseeing transport services	932	International holiday travel and accom	p	0.481
52100040	Support services to water transport nec (5211-521	811	Postal services	p	0.025
52100040	Support services to water transport nec (5211-521	931	Domestic holiday travel and accom	p	0.506
52100040	Support services to water transport nec (5211-521	932	International holiday travel and accom	p	0.463
52200010	Airport operations and other air transport support	931	Domestic holiday travel and accom	p	0.519
52200010	Airport operations and other air transport support	932	International holiday travel and accom	p	0.481
52910010	Customs agency services	811	Postal services	p	0.050
52910010	Customs agency services	932	International holiday travel and accom	p	0.950
52990010	Other transport support services nec	811	Postal services	p	0.025
52990010	Other transport support services nec	931	Domestic holiday travel and accom	p	0.506
52990010	Other transport support services nec	932	International holiday travel and accom	p	0.463
52990020	Support services for road transport nec (incl taxi r	715	Other services in respect of vehic	p	0.197
52990020	Support services for road transport nec (incl taxi r	721	Urban transport fares	p	0.108
52990020	Support services for road transport nec (incl taxi r	931	Domestic holiday travel and accom	p	0.361
52990020	Support services for road transport nec (incl taxi r	932	International holiday travel and accom	p	0.334
66190020	Transport equipment rental or hire (incl ship & boa	946	Other recreation activities and cu	p	0.306
66190020	Transport equipment rental or hire (incl ship & boa	931	Domestic holiday travel and accom	p	0.634
66390010	Other goods and equipment rental hire nec (incl a	534	Tools and equipment for house a	p	0.193
66390010	Other goods and equipment rental hire nec (incl a	946	Other recreation activities and cu	p	0.807
67110020	Residential caravan park operation and residentia	931	Domestic holiday travel and accom	p	0.519
67110020	Residential caravan park operation and residentia	932	International holiday travel and accom	p	0.481
72200010	Travel agency and tour arrangement services	931	Domestic holiday travel and accom	p	0.519
72200010	Travel agency and tour arrangement services	932	International holiday travel and accom	p	0.481
80200030	Special school education services	1011	Preschool and primary education	p	0.164
80200030	Special school education services	1012	Secondary education	p	0.396
80200030	Special school education services	1013	Tertiary education	p	0.440
82200010	Educational support services	1011	Preschool and primary education	p	0.164
82200010	Educational support services	1012	Secondary education	p	0.396
82200010	Educational support services	1013	Tertiary education	p	0.440
87100010	Child care services	551	Child care	p	0.570
87100010	Child care services	1011	Preschool and primary education	p	0.430
90010010	Performing arts operation nec (incl theatre restaur	171	Restaurant meals	p	0.721
90010010	Performing arts operation nec (incl theatre restaur	946	Other recreation activities and cu	p	0.279
94290010	Other machinery and equipment repair and maint	531	Major household appliances	p	0.180
94290010	Other machinery and equipment repair and maint	714	Maintenance and repair of vehic	p	0.601
94290010	Other machinery and equipment repair and maint	941	Sports and recreational equipme	p	0.219
94990010	Other repair and maintenance nec	332	Cleaning, repair and hire of clothi	p	0.164
94990010	Other repair and maintenance nec	941	Sports and recreational equipme	p	0.836

#### Appendix 4: Some notation used and reference year comparison for HFCE and HES weights

$$\text{Lowex price index, } P_{Lo}(p^0, p^t, q^b) = \frac{\sum_{i=1}^n p_i^t q_i^b}{\sum_{i=1}^n p_i^0 q_i^b} = \sum_{i=1}^n \left(\frac{p_i^t}{p_i^0}\right) s_i^{0b}$$

$b, 0$  and  $t = \text{time periods}$

$$s_i^{0b} = \frac{\sum_{i=1}^n p_i^0 q_i^b}{\sum_{i=1}^n p_i^0 q_i^b} = \frac{p_i^b q_i^b (p_i^0 / p_i^b)}{\sum_{j=1}^n [p_j^b q_j^b (p_j^0 / p_j^b)]}, \quad b < 0 < t$$

$p_i^t = \text{current period price for item } i$

$p_i^0 = \text{price reference period price for item } i$

$q_i^0 = \text{price reference period quantity for item } i$

$s_i^0 = \text{price reference period expenditure shares for item } i$

$s_i^b = \text{period } b \text{ expenditure shares for item } i$

Figure 10: Annual percentage changes and reference years for HFCE and HES weights.

