



Retail Prices Index: Review of the Basket of Goods and Services

Introduction

To ensure that the Retail Prices Index (RPI) remains representative of consumer spending patterns the items that are priced in compiling the index and their associated weights¹ are reviewed approximately every five years, following the completion of a Household Expenditure Survey² (HES – see Annex for description of survey).

This paper³ describes the review process and explains how and why the various items in the RPI basket are chosen.

The shopping basket

The most useful way to think about the RPI is to imagine a 'shopping basket' containing the various goods and services on which people typically spend their money. As the prices of the various items in the basket change over time, so does the total cost of the basket. The current total cost of the basket is compared with the total cost a year earlier, showing how much the total cost has changed over the twelve month period. The annual change in the RPI therefore represents the changing cost of this representative shopping basket between one year and the next.

In principle, the cost of the basket should be calculated with reference to all consumer goods and services purchased by all households, and the prices measured in every shop or outlet that supplies them. In practice this is impossible so the RPI is calculated by collecting a sample of prices for a selection of representative goods and services from a range of Jersey retail outlets and service providers.

Prices are collected for more than 500 representative goods and services from outlets throughout the Island. Multiple price quotations are obtained for the vast majority of goods and services (the only exceptions are those such as TV licences which have a single supplier) meaning that the RPI is calculated from around 2,500 separate price quotations in total.

Technically the RPI is a fixed quantity (Laspeyres-type) price index; it represents the changing cost of the same basket of goods and services over time. In practice, this is achieved by holding constant the sample of representative goods and services for which prices are collected each quarter and applying a fixed set of weights to price changes for each of the items such that their influence on the overall index reflects their importance in the typical household budget. In this way, changes in the RPI reflect only changes in prices, and not ongoing variations in consumer purchasing patterns⁴.

¹ Weights are best thought of as the proportion of each pound that the average household spends on each good or service that makes up the RPI.

² Jersey Household Expenditure Survey is for 2004/05

³ This paper draws upon the ONS publication 'Consumer Prices Index and Retail Prices Index: The 2006 Basket of Goods and Services'

⁴ Whereas constantly including the change in consumer purchasing patterns is a requirement of a cost of living index.

However, to ensure the contents of the RPI basket of goods and services and the associated expenditure weights remain representative of actual spending they are reviewed where necessary on completion of each round of the Household Expenditure Survey. The HES provides a detailed insight into the way Jersey residents live in terms of the range of goods and services purchased and how that differs by household structure, income and tenure. It involves the analysis of detailed expenditure information from over 1,000 households covering in excess of 300,000 individual purchases. The detailed expenditure is then grouped into broader headings in order to produce a breakdown of how, on average, a household spends their money.

The HES provides the information needed to ensure that the items included in the RPI continue to reflect the items that people are buying and that the weights (or relative importance of individual items in the index) accurately reflect their importance in households' budgets. The relevance of items is maintained by looking at the items that are purchased through the HES data and seeing if new items that are more representative i.e. more popular than existing items in the RPI list or new ways of buying goods have emerged.

Representative items

It is both impractical and unnecessary to measure price changes of every item bought by every household to compile the RPI; instead over 500 representative items are selected. Some individual goods and services are included in the basket in their own right (where average household expenditure is large or they are items that the vast majority of households buy), examples include car purchase, petrol and utility charges such as those for telephone and electricity supply.

However, more commonly, it is necessary to select a sample of specific goods and services called *representative items* that can give a reliable measure of price movements for a broader range of similar items. For example, price changes for a power drill will, in general, be representative of price changes for other power tools.

For each section, a number of items are selected for pricing whose price movements, taken together, will provide a very good indication of the overall change in prices for the section as a whole. For example, there are 16 representative items in the 'DIY materials' section, from paint brushes to wood, which are used each quarter to give an overall estimate of price changes for all DIY goods.

Selecting the representative items

A number of factors are taken into account when choosing representative items, including overall importance in the average household budget, the range of items that comprise the section and the availability of robust year round price quotes. These factors are described below.

The number of items chosen to represent each section within the RPI depends both on the weight (i.e. expenditure) of the section and also the variability of price changes of the various items that could be selected to represent the section (reflecting the diversity of products available).

Intuitively, it makes sense to choose more items in sections where spending is high, as these sections will have greater influence on the overall index. However, it is more important to choose more items in sections that are made up of diverse products. The price movements of all the items will be very different and so prices will be

needed for many more representative items to get a reliable overall estimate of price change for the section (thus minimising sampling variability).

For example, there are almost 20 items representing fruit products in the RPI basket, reflecting the greater diversity in type and variety of fruit available for purchase and the subsequent considerable variation in price changes for these different fruits, as well as between fruits sold in different shops. In contrast, where price movements of all possible items in the section are very similar, as in the case of cigarettes, it is sufficient to collect prices for only a few (although a mix of brands is still required).

The fact that so many representative items are chosen for the fruit section, despite spending on fruit being relatively low, highlights the fact that the variation between items within a section is a big factor in determining the number of representative items used. For example, in the case of the 'petrol and oil' section it is sufficient to monitor just three representative items: unleaded petrol, diesel and engine oil. While total household spending in this area is high, the three items provide a reliable estimate of price changes for all fuel and lubricant products.

Analysing the HES data helps to highlight those areas of the index which might benefit most from improved coverage, for example where new items have become common in household expenditure such as internet access or digital photograph processing. Conversely, it also helps to highlight areas where there is scope to remove items from the basket without any significant loss of precision in the index. This balance is important as it keeps the overall size of the basket manageable ensuring that the index continues to be produced in an efficient and timely manner.

The aim of the review process is to ensure that all significant items or distinct markets are explicitly represented in the basket. Equally it is important to include items where spending is currently low but it is likely that in future they will become more commonly purchased by average households. For example, while spending on music downloads is relatively low, it has been introduced in the basket to represent an 'up and coming' market.

Of course, the items must also be easily obtainable by price collectors, to ensure that estimates of price change are based on an adequate number of price quotes collected throughout the Island. Since the RPI is based on the cost of a fixed basket of goods and services in between rounds of the HES, ideally items should also be available for purchase for several years.

Within each section there is usually a point at which selecting the exact items becomes a matter of relatively fine judgement. For example, a selection of specific household appliances has been chosen to represent spending on small electrical goods, including irons and kettles. However, other representations would clearly be possible and equally valid.

Weights

The other essential element of the RPI review process is to ensure the weights (or the proportion of each pound spent that is spent on an item) accurately reflects average household spending. Weights are needed in the RPI to ensure that items that account for more of a household budget (e.g. housing costs) are given more importance in the index. Without weighting items, and thus sections and groups, the change in the price of a kilogram of cheese would have the same impact on the RPI as an increase in the Bank of England's base rate

As for the item review, the data used to update the weights is the Household Expenditure Survey (HES). In the report on the survey total expenditure is broken down into 13 groups broadly based on the Classification of Individual Consumption by Purpose (COICOP), the classification system used on Household Budget Surveys (HBS) across the EU. Whilst these groups are similar to the groups used in the RPI, there is not a direct one-to-one mapping. Therefore, the primary task in reviewing the weights is to reclassify average weekly household expenditure according to RPI items and then aggregate these values to section and groups and hence derive the weights (or proportion of total average spending) accounted for by each RPI group. The new group weights are shown in chart 1.1, whilst table 1.1 shows a comparison of old and new group weights

Chart 1.1 Revised RPI group weights (2006)

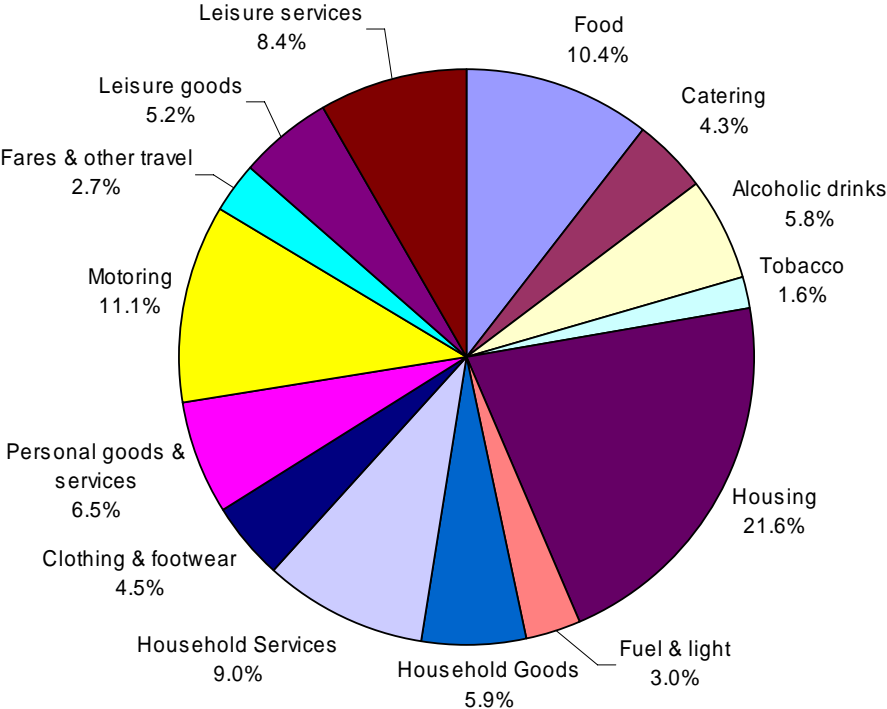


Table 1.1 Comparison of old and new RPI group weights

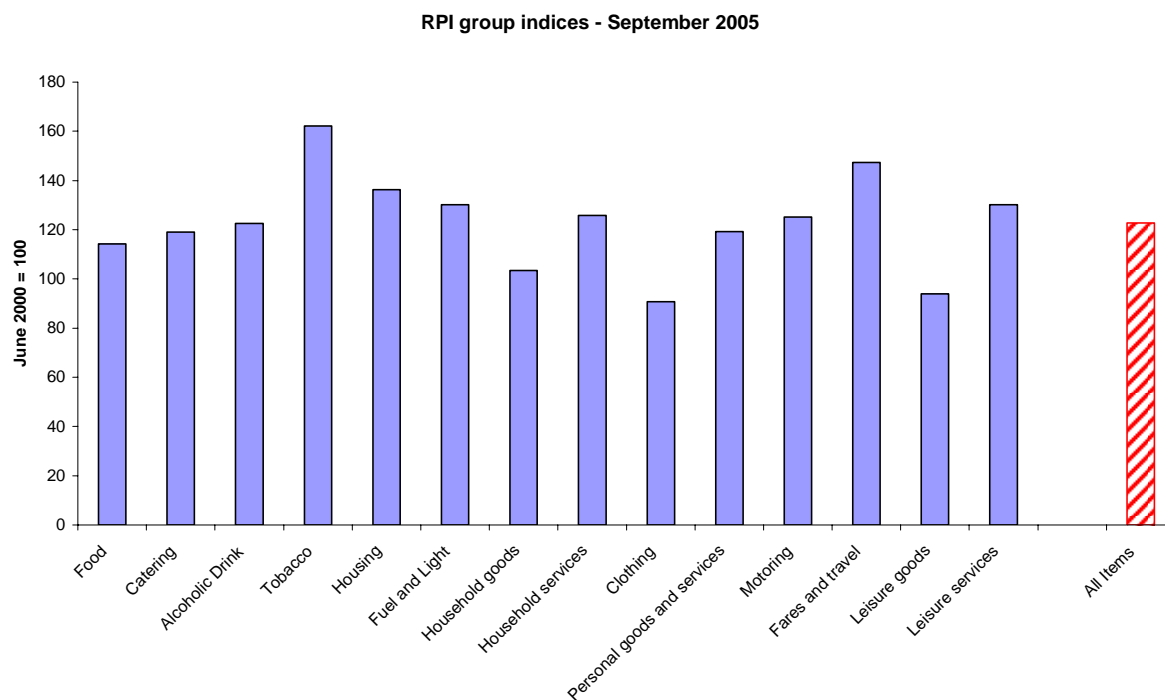
	2000 weights	2006 weights	Notes
Food	11.5	10.4	
Catering	5.4	4.3	
Alcoholic drinks	6.0	5.8	
Tobacco	2.1	1.6	
Housing	20.1	21.6	
Fuel & light	3.4	3.0	
Household goods	6.2	5.9	
Household services	5.4	9.0	Now includes school fees
Clothing & footwear	5.5	4.5	
Personal goods & services	5.3	6.5	
Motoring	10.3	11.1	
Fares & other travel	2.5	2.7	
Leisure goods	4.9	5.2	
Leisure services	11.6	8.4	School fees removed
All groups	100.0	100.0	

The group weights will change for a variety of reasons. As noted in table 1.1 the largest changes are due to the reclassification of school fees as a household service, rather than a leisure service. This change moves the Jersey RPI group definitions into line with those used in the UK, but will have no impact on the overall RPI as school fees were and still will be included in the index.

Weights will also change as a result of changes to shopping habits and the relative movement in prices of goods and services. Chart 1.2 shows the value of each of the RPI group level indices and the all items RPI in September 2005 (the end point of data collection for the HES). This shows that some groups have seen prices rise by more than average (as measured by the all items index) and hence everything being equal it is likely that expenditure on the group will have increased, whilst the reverse will be true for groups that have seen lower than average falls. Hence the weights for Clothing, Household goods and Food, which have seen below average price increases, have fallen, whilst those for Housing and Motoring have risen.

Of course it is not simply the price change that changes the weight it is also changes in the way people live and the development of new products that people want to buy. Thus although tobacco prices have increased by significantly more than the overall rate of inflation, because fewer people are now smoking the average expenditure (and hence the group weight) has fallen. Technological change can also have a major impact, especially for Leisure goods and services. Most people now have mobile phones and a lot have broadband computer access which means that not only do these items have to be added to the basket, but also that the weight of household services increases. Similarly whilst the price of existing audio-visual equipment (e.g. videos) falls new appliances are developed that people want to own and hence the expenditure on Leisure goods increases.

Chart 1.2 RPI group indices at September 2005 (June 2000 = 100)



It should also be remembered that in the same way that price changes in the representative items are used as an indication of the overall change in prices for the section as a whole so are the weights. Hence the weight given to an item or section, for example 'DIY materials', in the RPI basket reflects average household spending on all DIY products not only expenditure on the items that have been chosen to represent the section.

Changes made to the RPI basket

Table 2 gives details of the type of item changes made to the RPI basket as a result of this review. Some items have been added to improve the coverage of specific markets where spending has changed and existing items in the basket are not adequately representing price changes.

Additionally, items may have been added to diversify the range of products collected for already established items. In other cases, the new items are direct replacements for similar products that are leaving the basket. Some items have been removed to make way for new additions to the basket within the same RPI group or where a product is adequately represented by the remaining representative items. Elsewhere, there was scope to remove items from a group without any significant loss of precision in estimates of price changes overall (items with relatively low index weights).

Table 2: Examples of changes made to the RPI basket

Group	Section	Change made	Notes
Food	Biscuits & cakes	Chocolate covered biscuits moved into this section from Confectionary section	Improves distinction between chocolate bars and biscuit bars
	Other meat	Chicken nuggets added	Improves coverage of processed chicken
		Liver pate dropped	Adequately represented by remaining items
	Fish-not fresh	Kippers dropped	Low expenditure on this item
	Fish -fresh	Scallops added	Improves coverage of seafood
	Tea & coffee	Loose tea dropped	Replaced with herbal tea
	Confectionary	Chewing gum added	Improves coverage of sweets
	Fresh fruit & vegetables	Several items dropped	Reduces previous over coverage in this section – a recommendation from the ONS review
	Miscellaneous food	Instant pasta sauce and vegetarian meal added	Improves coverage of convenience foods and vegetarian foods
Alcohol	Beer - off premise sales	Bottled lager added	Improves coverage of lager
Housing	DIY materials	Screws added	To improve coverage of fixings
		Lining paper and ceiling rose dropped	Reflects changes in fashion
Household goods	Furniture	Garden furniture set added	To improve coverage of outdoor furniture
		Laminate flooring added	Reflects changes in fashion
	Electrical appliances	Filter coffee maker and food blender dropped	Well represented by remaining items
		Mobile phone added	Reflects changes in technology
	Other household equipment	Cup and saucer dropped	Replaced with mug
	Household consumables	Floor cleaner and cream cleaner dropped	Replaced with an all purpose cleaner
		Writing paper dropped	Low expenditure on this item
	Pet care	Small pet animal added	Improves coverage of pet purchases
Household services	Telephone charges	Internet connection fee added	Reflects changes in technology
	Domestic services	Satellite TV repair plan added	Improves coverage of repair services for household goods
		Window cleaner and gardener added	To improve the coverage of this section generally
	Fees and subscriptions	Interest group subscription moved out of this section	Section joins other leisure fees
		Banking charges added	Improves coverage of financial services
Clothing and footwear	Men's outerwear	Shorts added	Expands coverage of men's summer clothes
	Women's outerwear	Jacket item expanded to include fleeces	Reflects changes in fashion
	Children's outerwear	Infant's outfit age 1-2yrs added	Replaces infants dress
	Other clothing	Women's scarf added	Improves coverage of adult accessories
	Footwear	Adult's slippers added	Improves coverage of adult casual footwear
		Children's Wellington boots dropped	Well represented by remaining items

Group	Section	Change made	Notes
Personal goods and services	Personal articles	Suitcase dropped	Well represented by remaining items
	Chemist goods	Several items dropped such as hair gel, mouthwash, cleansing lotion	Reduces previous over coverage in this section – a recommendation from the ONS review
	Personal services	Beauty treatment added	To represent beauty treatment market and improve the coverage of this section more generally
Motoring	Sundry motoring costs	Batteries and car polish dropped	Items remain adequately represented by remaining items in this section
		Car wash added	To represent car valet services
Fares and other travel costs	Other travel costs	Car parking fees moved from Sundry motoring costs. Private parking fees added	Improves coverage of parking fees
Leisure goods	Audio-visual equipment	Compact disc player replaced with MP3 player	Reflects changes in technology
	CDs audio tapes etc	Music downloads added	To represent a significant growing technology market
	Toys, photographic and sports goods	Cost of printing digital photos replaces film processing	Reflects changes in technology
		Fishing rods and surfboards added	To represent outdoor sport market and improve the coverage of this section more generally
	Gardening products	Fertiliser and slug pellets dropped	Items remain adequately represented by remaining items in this section
		Barbecue added	To represent a specific market not covered by other items
Leisure services	TV licences and rentals	Video hire replaced with DVD hire	Reflects changes in technology

As mentioned above in the section on weights, in some cases, items have been moved from one section into another in order to maintain a logical classification system and to ensure consistency with the UK RPI.

It is important to remember that an item's removal from the RPI basket does not mean that people no longer buy the item. Rather, it means that a new representative item has been found which better reflects overall shopping habits or that the original coverage of a type of product was too large and could be reduced without any loss of accuracy in the measurement of overall average price changes.

Whilst a major review of the RPI basket is only possible after a Household Expenditure Survey is run, and in Jersey it is only practical to run such a survey every 5 years or so, the items in the RPI are reviewed at a headline level each year. The annual review process draws on changes that the UK's Office for National Statistics make in their annual reviews and information from a variety of sources about shopping habits. Examples of changes that have been made to the RPI in between reviews include: internet air fares introduced in 2003; and replacing a personal cassette player with an MP3 player in 2004.

Updating the RPI

The essential element of the RPI is to preserve the ability to understand price changes over time. Thus whilst it is necessary to periodically review the items and weights used to calculate the index it is also necessary to preserve the long-term nature of the index. This is achieved through a process known as chain-linking, essentially a means of linking to comparable indices with different start periods (or base years).

The current Retail Prices Index uses June 2000 as the base month (where the index is set to 100) and uses weights set in June 2000. At this stage there is no need to re-base the RPI as it is still relatively close to 100 (RPI stood at 127.5 in December 2006). However, it is necessary to link the index that is calculated using new items and weights to the old index so that the index is continuous and will still be based on June 2000=100. Introducing the new weights would mean that the index effectively gets re-set to 100, however, chain-linking enables the index containing the new weights to be tied to the existing index figure (in this case 127.5), rather than using a re-based index value starting again at 100. By linking the two indices together, a long-run chained index is produced. This can then be used to calculate percentage changes between any two quarters after the base quarter (June 2000).

Changes to the items and weights will be introduced in the March index, with the December indices chain-linked. This means to go forward in time, two index values are calculated: an index for March 2007 based on December 2006=100; and an index for December 2006 based on June 2000=100. These indices are chained together for March 2007 as follows:

$$Index_{(Mar\ 2007 / June\ 2000=100)} = \frac{Index_{(Dec\ 2006 / June\ 2000\ weights)}}{100} \times Index_{(Mar\ 2007 / Dec\ 2006\ weights)}$$

This equation produces an index which incorporates the new weights, but which is still based on June 2000 =100. The procedure ensures that the changes to the basket and weights have no impact on the changes in prices as measured by the index. Then going forward each quarter an index number is calculated using the December 2006 weights but is linked to the original index (June 2000 =100) using the constant scaling factor given above.

It is important to understand that it is not possible to 'backtrack' and use the new weights to revise past RPI figures. The past changes in the RPI are still representative of price changes in those periods, reviewing the basket simply ensures that the index keeps up to date with spending. Without regular reviews the RPI would in time become out of date.

Price collection for the new items has taken place since the September quarter to ensure that the definitions of new items are robust and that the price quotes are readily available.

Independent review of Jersey's RPI

In 2002 the RPI experts from the Office for National Statistics undertook a methods and quality review of Jersey's RPI. In their assessment, Jersey's RPI was fit for purpose, but they did make 28 generally technical and operational recommendations of ways in which the index could be improved. Two-thirds of those recommendations were introduced during 2003 and 2004. Now with the availability of the HES data it has been possible to implement the remaining recommended changes.

Annex A

Background on the Household Expenditure Survey

The Household Expenditure Survey (HES) is a random sample of 1,037 households across Jersey. The survey operated for 12 months from September 2004 to September 2005 in order to capture differences in seasonal expenditure i.e. typically higher and different expenditure in the run up to Christmas and differences between goods and services bought in winter and summer.

Each member of the sampled household aged 16 and over kept a diary of all their expenditure for two weeks and also recorded larger personal purchases that they had made over the previous 12 months. The larger items of expenditure, such as cars, computers, audio visual equipment etc, are collected over a longer reference period to ensure that these infrequently purchased items are included as they would be very unlikely to be purchased during the two week reference period.

One member of the household (the self designated head of household or reference person) also completed a record of household expenditure (i.e. spending on items that are essentially made for the entire household, such as housing costs, utility bills, major DIY, etc). In addition, in the 2004/5 survey children in the household aged 11 to 15 could also choose to keep a small diary of their own expenditure.

Once the data collection phase of the survey was completed a detailed process of data checking (the survey generated more than 300,000 individual payments) and aggregation was undertaken. Essentially the latter means that data collected from the daily diaries, where it is genuine regular weekly spending, were multiplied up by 26 to convert it into annual expenditure. The larger personal and household items were then added (these are by definition annual) and the total divided by 52 to obtain weekly expenditure. All of this process is of course undertaken at a very detailed item level.

Having calculated weekly expenditure by household, individual households are grouped together and the averages of their expenditure on all items are calculated to produce the data presented in the report of the HES. The aggregation can be at the whole household population level or by different groupings of households such as by income, tenure etc.

All expenditure is averaged across all households, including those reporting zero expenditure on a specific item. One consequence of this is that all households are deemed to pay a proportion of all costs whether or not an individual household actually uses a good or service. This is best illustrated by housing in that all sampled households are included when calculating both rent and mortgage interest, despite the fact that they are only actually likely to pay one or the other. However, as the survey and the report aims to show average spending by a given classification of households, this conceptual issue does not affect the relevance of the averages presented in terms of understanding expenditure.

As in all surveys there is sample variation around the estimates. The variation is smallest for whole population tables and largest when the estimates are for smaller groupings of the population. The sampling variation is quantified in Annex A of the HES report and whilst it does mean that little significance should be placed on very small differences in expenditure, larger differences and higher level aggregations will be robust.

The sample of the population which participated in the survey was a very close match to the population profile in terms of Parish, household composition, etc; however, all results presented in the report are weighted to reflect the actual population profile. Full details are also given in Annex A of the HES survey report.