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**Assessing the Quality of the Expenditure Data Collected in  
the Self-Completion Questionnaire**

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## 1. Introduction

The HILDA Survey is, in part, designed to help analyse living standards in Australia. It thus follows that consideration needs to be given to collecting data on not just income, which is standard in socio-economic surveys, but on household expenditure. From the very inception of the HILDA Survey, consideration has indeed been given to the collection of detailed household expenditure data. Household expenditure was, for example, identified as one of the main candidate topics to be covered as part of the household interview component of the study (the Household Questionnaire, or HQ) in Wave 1. However, during testing phases it was determined that collection of expenditure was either too costly in interview time (especially when respondents felt they had to consult records), or generated poor quality data (in part because of respondents being encouraged to give rough estimates without recourse to records). Ultimately, the only items on which expenditure data were collected in Wave 1 were housing (rent and mortgage payments), child care, groceries and meals eaten out.

At the time of development of the survey instruments for Wave 1, little consideration was given to including expenditure questions in the self-completion questionnaire (SCQ), despite it offering the possibility of overcoming both the time and quality constraints that exist with personal interviewing. That is, there are no time constraints with a self-administered questionnaire, and for this reason data quality may also be increased if respondents are more likely to consult records. Of course, there is still a cost – either the SCQ form will need to be longer (increasing response burden and potential reducing SCQ response rates) or other items would need to be removed.

In Wave 5, a decision was made to introduce a more extensive battery of items about household expenditure than existed previously. Apart from housing and child care, which continued to be collected as part of the HQ, all expenditure items were collected in the SCQ.<sup>1</sup> Specifically, respondents were asked to provide information on the household's weekly expenditure on each of four items, monthly expenditure on each of five items, and annual expenditure on each of nine items. In Wave 6, some modifications were implemented to address perceived shortcomings in the data produced by the Wave 5 SCQ. This resulted in the SCQ containing five weekly expenditure items, five monthly expenditure items and fifteen annual expenditure. From Wave 6 to Wave 9, the expenditure questions did not change. In this paper, we examine the quality of the expenditure data collected since the Wave 6 approach was adopted.

The primary motivation for the collection of expenditure data is interest in the level of households' *consumption* rather than their expenditure per se. This in part explains the differential time frames for measurement of expenditure. Expenditure on non-durables purchased on a reasonably regular basis are obtained for weekly or monthly time frames, whereas for durables and other items typically bought infrequently and/or irregularly, annual expenditure is obtained. Nevertheless, even if all items of household expenditure are captured by the survey, measured expenditure will not equal consumption. This is because of the existence of in-kind provision of consumption goods and services, such as occurs to a significant extent with health and education, and also because many durables, such as motor vehicles, electrical appliances and furniture, are consumed over periods longer than one year. However, given the focus of this paper is on the quality of the expenditure data, rather than on its ability to measure consumption, we restrict our attention to how well the HILDA Survey measures household expenditure over the time frames it adopts.

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<sup>1</sup> The HQ questions on groceries and meals eaten out were retained in Wave 5, but SCQ questions on these items were also included.

To do this, in Section 2 we first consider how comprehensive the expenditure data are in theory. Despite the motivation being the measurement of household consumption, it was recognised early on that the need to obtain expenditure data in a succinct manner in the SCQ meant comprehensive expenditure data was not possible. Given that the usefulness of the household expenditure data to some extent hinges on how complete a measure of expenditure it provides, it is relevant to identify the proportion of expenditure the survey *attempts* to measure and the components that are not measured. This is undertaken by analysis of the ABS Household Expenditure Survey (HES) conducted in 2003-04 (the most recent survey for which data are currently available). While HES is a survey of a sample of households and therefore confronts many of the same issues in the measurement of household expenditure as the HILDA Survey, it is clearly the best available external benchmark on household expenditure in Australia. The ABS makes considerable efforts to obtain accurate estimates of household expenditure, including issuing respondents with a ‘shopping diary’ in which they are to record all expenditures over a two week period.

In Sections 3, 4 and 5, we then consider the quality of the expenditure information that is actually collected. Why might the quality of the expenditure data be deficient? Accurate expenditure data are difficult to obtain for any household survey because of the difficulty respondents have providing the information. It is, quite simply, difficult for individuals to recall and aggregate all of the many expenditures made in a household. One response to this is to adopt the ‘shopping diary’ method of collection used by the ABS for HES, although this is less useful for measuring individual households’ expenditure on durables and other irregularly-purchased items. Quality issues may also arise from the number and nature of the expenditure questions asked of respondents. In general, one might expect more questions, and the tailoring of questions to suit the nature of the expenditure item, to produce better quality data. Indeed, concerns about both these aspects of the expenditure questions in Wave 5 underpinned some of the changes made to the SCQ in Wave 6. Nonetheless, space constraints in the SCQ, and the limitations imposed by the nature of the instrument (compared, for example, with personal interview) mean that efforts to improve data quality may not have been completely successful.

We take two approaches to assessing the quality of the expenditure data collected. First, we consider Waves 6 to 8 of the HILDA SCQ data in isolation, in Section 3 examining non-response to the SCQ expenditure questions, and in Section 4 examining disagreement within the household among those households with more than one person responding to the household expenditure questions. Second, in Section 5, we compare the estimates obtained from the HILDA SCQ data with estimates obtained from comparable HES data.

## **2. Scope of the expenditure data collected**

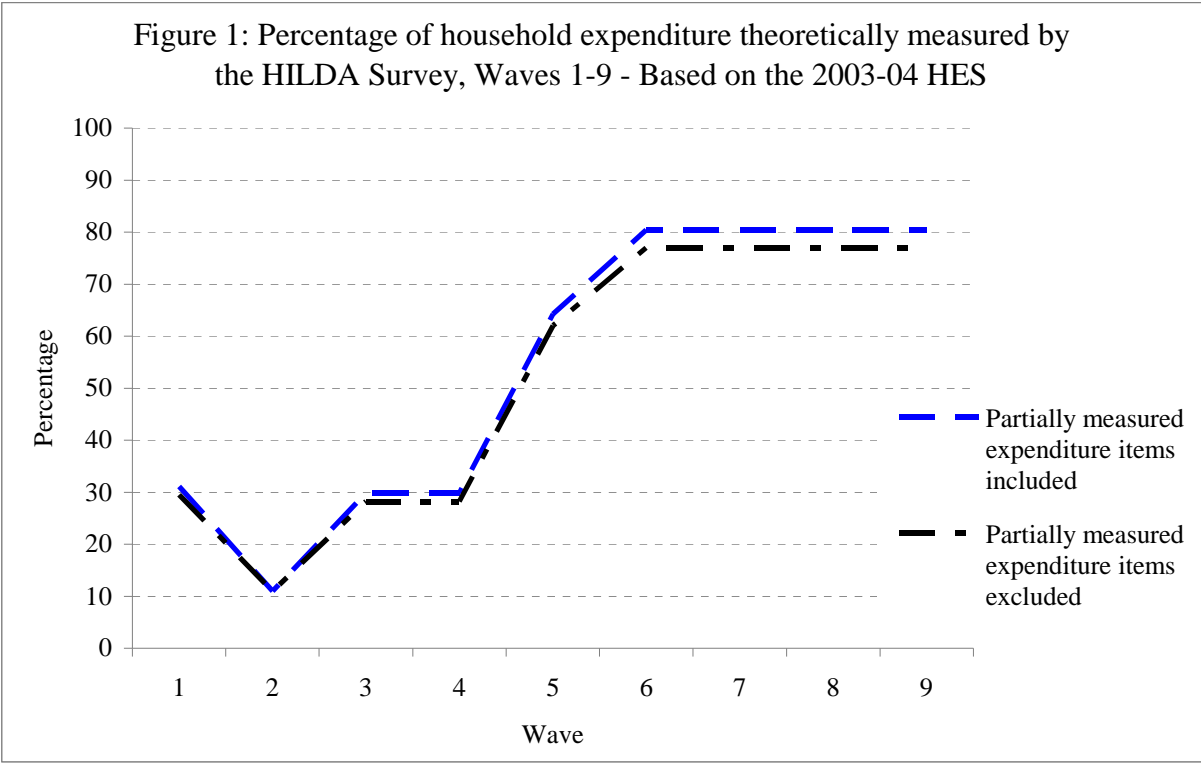
Although the primary focus of this paper is on the quality of the expenditure data collected in the SCQ since Wave 6, an important part of this assessment is to consider the broader question of the scope or coverage of all expenditure data collected in the HILDA Survey, which includes information gathered in the HQ.

Figure 1 presents summary information on the scope of the expenditure data collected by the HILDA Survey. The figure plots the proportion of household expenditure theoretically measured by HILDA in each wave, based on the 2003-04 HES. That is, in each wave, the value of the HES expenditure items that are in principle measured by HILDA is expressed as a proportion of total household expenditure in 2003-04. Note that only HES data is used in producing figure; all that varies over the eight waves is the expenditure items included in the

numerator of the calculation. Total expenditure (the denominator) equals the sum of all items of expenditure on goods and services in the HES data set.<sup>2</sup>

The HES expenditure data are highly disaggregated – there are approximately 300 items distinguished in the publicly released data – but even so, some expenditure items have components that are theoretically measured by the HILDA Survey and other components that are not measured. Two lines are therefore drawn in Figure 1, which can be thought of as lower and upper bounds on the proportion of expenditure in principle measured. The upper bound includes all expenditure items distinguished in HES that are fully or partially measured by HILDA, while the lower bound excludes items only partially measured by HILDA. For example, the item ‘toiletries and cosmetics’ is partially measured by HILDA, since part of this expenditure item will be picked up in reported grocery expenditure (e.g., shampoo, soap, toothpaste), but the non-grocery component of this expenditure item will not be captured (e.g., most cosmetics).

In interpreting Figure 1, note that the HES data will not provide an entirely accurate description of the composition of consumption in years other than 2003-04. Income growth, relative price changes, changes in community preferences, new products as a result of technological change, and a host of other factors will produce changes to the composition of consumption over time. Thus, strictly speaking, the figure shows the proportion of household expenditure theoretically measured by the HILDA Survey when the 2003-04 expenditure composition as measured by HES applies.



<sup>2</sup> Notably, this excludes ‘Purchase of selected dwelling or other property (excluding mortgage repayments but including outright purchase, deposit, net of sales)’ and ‘Superannuation and annuities’, which more closely correspond to savings or investments rather than goods or services. However, following ABS practice, expenditures on home renovations are included in the expenditure measure, even though a component of this may be considered an investment.

As is clear from the figure, and as discussed in the Introduction, at least some expenditure information has been collected in every wave. In Wave 1, expenditures on housing, child care, grocery, meals and tobacco were measured. In Wave 2, only housing and child care expenditure were measured, while in Waves 3 and 4, grocery and meals expenditures were once again measured. The big change came in Wave 5, when the decision to attempt to capture a substantial proportion of household expenditure was made. This resulted in a substantial increase in the proportion of household expenditure theoretically measured, from about 30% to about 65%. The refinements introduced in Wave 6, further increased the scope of the expenditure questions to up to 80% of total expenditure, since when the expenditure questions have remained essentially unchanged.

While efforts to increase the scope of the household expenditure questions have been successful, it remains the case that at least 20% of household expenditure is, by design, not measured by the HILDA Survey. Whether this represents sufficient coverage to allow reliable inferences on household consumption will at least in part depend on the extent to which the included 80% of expenditure is correlated with the remaining 20% of expenditure.<sup>3</sup> The 2003-04 HES data show a correlation coefficient for the correlation between the expenditure items included in the HILDA Survey in Waves 6 to 9 and the expenditure items excluded to be 0.43 when partially measured items are excluded, and 0.44 when partially measured items are included. Thus, while positively associated, the correlation is far from perfect.

Table 1 examines in more detail the HES expenditure items *not* captured from Wave 6 onwards. For each of 31 categories of expenditure not measured by the HILDA Survey, the table presents the mean value as well as its share of total 2003-04 HES expenditure on goods and services. Table A1 in the Appendix contains a full itemisation of the HES expenditure items contained in each category. The last row of Table 1 also presents the total value and share of expenditure of HES expenditure items partially measured in HILDA. Table A2 itemises the HES expenditure items contained in this category.

No single item in Table 1 accounts for an especially large proportion of total expenditure, the single largest item being council and water rates and related charges, accounting for 2.5% of household expenditure. This to a significant extent reflects the attempt in the design of the HILDA questionnaire to parsimoniously capture most of the important expenditure components. The one notable exception is that a number of items in Table 1 fall under the 'recreation and sport' banner. Almost all of Items 13 and 16-23, and substantial parts of Items 5 and 24, fit in this category. Collectively, they account for 6.5% of household expenditure. In Wave 5, there was an attempt to measure this expenditure, but apparent under-reporting led to the removal of this item from subsequent waves.

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<sup>3</sup> Even if all household expenditure is measured, accuracy of assessments of household consumption will depend on the extent to which household expenditures over the time frames measured correspond to consumption. For example, consumption of durables may not be well measured by annual expenditure, while consumption of goods and services provided in-kind is not measured at all by expenditure, and may be poorly correlated with measured expenditure on other goods and services.

Table 1: Annualised value of expenditure items not collected in the HILDA Survey Waves 6-9, as measured by the 2003-04 HES (December 2006 prices)

	Mean (\$)	Proportion of total expenditure (%)
1. Rates, water, land tax, etc.	1,255	2.5
2. Cleaning, repair and hire of clothing and footwear	18	0.0
3. Floor coverings	286	0.6
4. Household linen, textiles and window coverings	151	0.3
5. Paintings, ornaments, tableware, glassware, cooking utensils, etc.	330	0.7
6. Gardening and power tools	219	0.4
7. Phones, household tools, etc.	228	0.5
8. Gardening products, swimming pool chemicals	221	0.4
9. Postal charges, public phone calls	75	0.1
10. Household services	226	0.4
11. Repair, maintenance and hire of household durables	220	0.4
12. Therapeutic appliances, hospital/nursing home charges, etc.	207	0.4
13. Purchase of bicycle	7	0.0
14. Compulsory registration of vehicle	128	0.3
15. Driving-related and other transport-related expenses	329	0.7
16. Computer games and software, CDs, DVDs, etc.	373	0.7
17. Books, newspapers, magazines	476	0.9
18. Photographic film, optical goods, professional photography	117	0.2
19. Musical instruments and accessories	38	0.1
20. Toys, sports equipment and recreational equipment	449	0.9
21. Gambling	310	0.6
22. Sporting fees and charges	371	0.7
23. Entertainment expenses	567	1.1
24. Animal expenses	294	0.6
25. Hair and personal care services	387	0.8
26. Stationery	204	0.4
27. Watches, clocks, jewellery, handbags	249	0.5
28. Interest on loans and credit cards	788	1.6
29. Miscellaneous fees	713	1.4
30. Cash gifts, donations to charity	362	0.7
31. Fines and miscellaneous services	247	0.5
All excluded items	9,848	19.6
All items partially collected	1,709	3.4

### 3. Non-response to the SCQ household expenditure questions

Table 2 shows household-level non-response rates for the SCQ expenditure items for responding households (that is, households with at least one Person Questionnaire (PQ) respondent) in Waves 6, 7 and 8. It shows the percentage of households with no expenditure items collected in the SCQ and the percentage with at least one expenditure item missing. Between 28.5% and 30% of households are missing at least some expenditure data each wave. In Wave 6, nearly 14% of responding households had no SCQ expenditure information. The majority of this is attributable to the failure of any household members to return the SCQ, but it is not by any means the entire explanation: 40% (5.5/13.7) of households with no SCQ expenditure data had at least one person return the SCQ. Of some concern is that the incidence of the complete absence of expenditure data rose over the three waves, from 13.7% in Wave 6 to 15.5% in Wave 7 and 17.2% in Wave 8. Growth in non-return of the SCQ appears to be the driver of this trend.

Table 2: Household-level rates of non-response for SCQ expenditure items – Households with at least one PQ respondent (%)

	Wave 6	Wave 7	Wave 8
<i>Households missing all SCQ expenditure items</i>			
No SCQ for household	8.2	10.1	11.6
At least one SCQ for household	5.5	5.4	5.6
Total	13.7	15.5	17.2
Households with partial SCQ expenditure data	14.8	13.5	12.8
Households missing at least one SCQ expenditure item	28.5	29.1	30.0

Table 3 further examines household-level non-response to the SCQ expenditure questions, presenting non-response rates for each of the 25 individual expenditure items, restricting to households providing at least some SCQ expenditure data. Items bought regularly and by most households, such as groceries and motor vehicle fuel, have relatively low rates of non-response. Conversely, items purchased relatively infrequently, such as motor vehicles and furniture, or not purchased by a number of households, such as public transport and taxis and children’s clothing, tend to have a higher rate of non-response. Overall, however, differences in non-response rates across items are not a particularly important feature of responses to the SCQ expenditure items. Among households to provide a response for at least one SCQ expenditure item, response rates are at least 95.9% for every item in Wave 6, at least 96.6% for every item in Wave 7 and at least 96.3% for every item in Wave 8.



Table 3: Household-level non-response for each expenditure item collected in the SCQ – Households providing a response to at least one SCQ expenditure question (%)

	Wave 6	Wave 7	Wave 8
1. Groceries	1.0	1.2	1.0
2. Alcohol	2.0	1.9	1.9
3. Cigarettes and tobacco	2.9	2.7	2.2
4. Public transport and taxis	3.8	3.4	2.8
5. Meals eaten out	1.7	1.5	1.6
6. Motor vehicle fuel	1.1	1.4	1.4
7. Men's clothing and footwear	2.4	2.4	2.3
8. Women's clothing and footwear	3.2	3.1	2.5
9. Children's clothing and footwear	4.1	3.4	3.6
10. Telephone rent and calls, internet charges	1.2	1.4	1.2
11. Holidays and holiday travel costs	1.7	2.1	2.0
12. Private health insurance	2.3	2.4	2.4
13. Other insurance	2.4	2.6	2.8
14. Fees paid to health practitioners	2.8	2.6	2.8
15. Medicines, prescriptions and pharmaceuticals	2.7	2.7	2.8
16. Electricity, gas bills and other heating fuel	2.8	2.6	2.8
17. Repairs, renovation and maintenance to home	2.9	2.6	2.8
18. Motor vehicle repairs and maintenance	2.5	2.1	2.5
19. Education fees	3.2	2.7	3.0
20. Buying brand new vehicles	3.6	3.3	3.4
21. Buying used vehicles	3.4	3.1	3.3
22. Computers and related services	2.5	2.6	2.8
23. Audio visual equipment	2.9	2.8	2.9
24. Household appliances	3.2	2.8	3.0
25. Furniture	3.5	3.4	3.7

**4. Within-household differences in reported household expenditure**

The SCQ is administered to every household member over 15 years of age and the expenditure questions ask every respondent with ‘any responsibility for the payment of household bills, such as electricity, gas, water and council rates’ to report total household expenditure on each expenditure item. Since many households will have more than one person with some responsibility for household bills, this creates the opportunity to compare responses to the household expenditure questions across members of the same household. In particular, within-household disagreement about household expenditure provides a data quality measure that at the very least tells us about the quality of the information provided by households with two or more respondents to the SCQ expenditure questions. Within-household disparities in reports of expenditure will almost certainly be associated with inaccuracies in estimates of the household’s expenditure. The approach taken by the HILDA data managers in producing household expenditure estimates is to take the mean of reported expenditure for each item. Only in the unlikely event that respondent errors are exactly offsetting will the mean reported expenditure equal actual expenditure of the household.

Table 4 shows that approximately one-quarter of households have multiple responses to at least one SCQ expenditure item, and – depending on the wave – between 16.5% and 18% of households have multiple responses to all SCQ expenditure items. Analysis of within-household disparities in reported expenditure will therefore provide some information about the quality of expenditure data obtained from one-quarter of households. However, it is not unreasonable to believe that quality issues in multiple-respondent households will also to some extent apply to other households. This is because within-household disagreement is indicative of the level of uncertainty and measurement error that exists in the household expenditure data more broadly. Having said that, it is difficult to know the extent to which such wider applicability does in fact hold. For example, households with only one respondent are more likely to have only one person unambiguously responsible for household expenditure decisions, who may therefore have greater certainty about the household’s expenditure.<sup>4</sup>

Table 4: Proportion of responding households with multiple responses to the SCQ household expenditure questions (%)

	Wave 6	Wave 7	Wave 8
All SCQ expenditure items	18.0	16.9	16.5
At least one SCQ expenditure item	29.4	27.4	26.0

Table 5 shows the proportion of all (responding) households with two or more responses to each SCQ expenditure item. There is no clear pattern of some expenditure items being more or less prone to multiple responses than others. Although the proportion of households with two or more responses to all SCQ expenditure questions is only 18% or less, for each individual question approximately 25% of households have multiple responses.

<sup>4</sup> Note, however, that this does not necessarily mean the quality of expenditure data is higher in households with only one respondent to the expenditure questions, since it may be that the ability to average across multiple responses within the household reduces measurement error compared with households with only one response.

Table 5: Proportion of households with more than one person reporting the amount for each SCQ expenditure item (%)

	Wave 6	Wave 7	Wave 8
1. Groceries	28.0	26.5	25.1
2. Alcohol	27.2	25.7	24.5
3. Cigarettes and tobacco	26.8	25.1	24.2
4. Public transport and taxis	26.3	24.6	23.9
5. Meals eaten out	27.4	25.8	24.9
6. Motor vehicle fuel	27.5	26.1	24.7
7. Men's clothing and footwear	26.5	25.4	24.1
8. Women's clothing and footwear	26.6	25.5	24.0
9. Children's clothing and footwear	26.0	24.6	23.5
10. Telephone rent and calls, internet charges	27.4	26.0	24.7
11. Holidays and holiday travel costs	27.6	25.9	24.3
12. Private health insurance	27.1	25.4	24.1
13. Other insurance	27.0	25.1	23.8
14. Fees paid to health practitioners	27.1	25.4	23.9
15. Medicines, prescriptions and pharmaceuticals	27.2	25.6	24.2
16. Electricity, gas bills and other heating fuel	26.9	25.2	23.9
17. Repairs, renovation and maintenance to home	26.6	25.1	23.9
18. Motor vehicle repairs and maintenance	27.1	25.5	24.2
19. Education fees	26.6	25.2	23.9
20. Buying brand new vehicles	26.1	24.8	23.5
21. Buying used vehicles	26.4	25.0	23.6
22. Computers and related services	26.9	25.3	24.0
23. Audio visual equipment	26.7	25.1	23.9
24. Household appliances	26.4	25.0	23.7
25. Furniture	26.4	24.7	23.5

Table 6 examines the extent of within-household disagreement about expenditure on each of the 25 SCQ items, presenting the mean and median percentage difference in reported expenditure for all within-household pairwise comparisons available for each expenditure item. Thus, a household with two responses (A and B) to an expenditure question will contribute one comparison (of A with B), while a household with three responses (A, B and C) will contribute three comparisons (A with B, A with C and B with C) and a household with four responses (A, B, C and D) will contribute six comparisons (A with B, A with C, A with D, B with C, B with D and C with D). The percentage difference is calculated as the value of the difference in reported expenditure divided by the midpoint of the two expenditure values. Note that households with all respondents reporting zero expenditure on an item are excluded from the analysis of that item – that is, disparities are only examined where at least one household member reports a non-zero expenditure on the item.

It is clear that, when a household has expenditure on an item, there is a great deal of disagreement about the level of expenditure on that item. The mean percentage difference is at least 30% for every expenditure item and is over 100% for many items. While the mean can be affected by a small number of extremely large differences, the median cannot, and yet it is still very large for all items. In most cases, the median difference is greater than 50%. Expenditure on groceries is the least prone to disagreement, the median difference being approximately 14%, suggesting measurement error is relatively low for this item. Median differences are also relatively low for private health insurance, other insurance, telephone and internet charges and energy bills. Whether measured by mean or median differences, disagreement is extremely high for durables – vehicles, computers, audio visual equipment,

household appliances and furniture – implying low data quality is an acute problem for these items.

Table 6: Within-household disparities in reported expenditure on each SCQ expenditure item – Mean and median difference (%)

	Wave 6		Wave 7		Wave 8	
	Mean	Median	Mean	Median	Mean	Median
1. Groceries	34.5	14.3	35.7	14.3	31.5	13.3
2. Alcohol	74.3	50.0	74.5	50.0	71.5	46.1
3. Cigarettes and tobacco	98.5	66.7	96.8	66.7	90.6	50.0
4. Public transport and taxis	103.7	70.3	111.1	114.3	109.3	107.7
5. Meals eaten out	61.7	40.0	59.0	40.0	61.6	40.0
6. Motor vehicle fuel	61.3	40.0	58.5	35.3	59.8	40.0
7. Men's clothing and footwear	94.8	66.7	93.5	66.7	94.2	66.7
8. Women's clothing and footwear	103.0	85.7	99.5	82.4	98.7	82.4
9. Children's clothing and footwear	85.7	66.7	90.6	66.7	83.8	66.7
10. Telephone rent and calls, internet charges	58.4	34.9	55.4	28.6	55.0	28.6
11. Holidays and holiday travel costs	69.3	40.0	72.3	40.0	70.0	33.3
12. Private health insurance	62.7	18.2	67.7	20.2	62.3	18.2
13. Other insurance	62.9	28.6	65.3	28.6	62.9	28.6
14. Fees paid to health practitioners	89.3	66.7	85.4	66.7	81.6	66.7
15. Medicines, prescriptions and pharmaceuticals	81.9	66.7	77.0	66.7	75.4	63.9
16. Electricity, gas bills and other heating fuel	59.1	28.6	63.2	28.6	57.9	22.2
17. Repairs, renovation and maintenance to home	91.3	66.7	93.4	66.7	90.6	66.7
18. Motor vehicle repairs and maintenance	75.7	50.0	78.4	50.0	76.2	50.0
19. Education fees	101.2	85.7	100.9	85.7	100.9	85.7
20. Buying brand new vehicles	116.9	200.0	108.3	163.6	125.4	200.0
21. Buying used vehicles	115.1	200.0	119.4	200.0	122.3	200.0
22. Computers and related services	101.9	85.7	106.8	107.7	106.8	100.0
23. Audio visual equipment	117.1	184.6	113.2	133.6	107.8	107.7
24. Household appliances	112.0	175.0	104.9	100.0	112.6	148.9
25. Furniture	109.5	115.8	107.8	107.7	114.8	163.6

In Table 7, we restrict to households with two or more responses to all SCQ expenditure items and compare total reported SCQ expenditure across respondents within the same household. As in Table 6, all available within-household pairwise comparisons are made and the ‘disparity’ measure is the (absolute) difference in total reported expenditure as a proportion of the midpoint of the two reported values. The table presents the mean, median and 10<sup>th</sup>, 25<sup>th</sup>, 75<sup>th</sup> and 90<sup>th</sup> percentiles of the distribution of this measure in each wave.

In Waves 6 and 7, the mean difference in reported total expenditure was approximately one-third and the median difference was approximately one-fifth. Differences were on average slightly lower in Wave 8. Comparing Tables 6 and 7, mean and median differences are considerably smaller for aggregate expenditure than for most individual items, implying disagreement is not typically characterised by one respondent being consistently higher or consistently lower than the other respondent. That is, differences across individual expenditure items are to some extent offsetting. Nonetheless, disparities in aggregate reported SCQ expenditure are frequently very large. For 50% of within-household comparisons, the difference is at least 17%; for 25% of comparisons, the difference is at least 46%; and for 10% of comparisons, it is at least 81%.

Table 7: Distribution of within-household differences in reported aggregate SCQ expenditure – Households with two or more responses to all items (%)

	Mean	Median	10 <sup>th</sup> percentile	25 <sup>th</sup> percentile	75 <sup>th</sup> percentile	90 <sup>th</sup> percentile
Wave 6	33.7	19.5	0.3	5.1	47.9	92.0
Wave 7	33.5	19.6	0.3	5.0	48.1	86.9
Wave 8	30.7	16.7	0.1	3.6	46.6	81.4

## 5. Comparisons between the HILDA and HES expenditure data

In this section we compare the household expenditure estimates obtained from the HILDA SCQ with estimates for comparable expenditure items obtained from the 2003-04 HES. HES provides a useful external benchmark for the HILDA data, but it should be appreciated that there are important differences in the expenditure concept adopted by the two surveys that can lead to legitimate differences in estimates. The HILDA Survey questions are designed to obtain a measure of the general or typical level of expenditure of each household. HES, by contrast, is designed to obtain a measure of surveyed households' actual expenditure (over time frames that vary according to the expenditure type). In practice, the main distinction between the two approaches is that a number of items for which HES obtains actual expenditure over a two-week period (using a shopping diary), HILDA obtains 'average' expenditure (per week or per month). A further difference is that HILDA obtains annual expenditure for a number of items which HES measures over shorter intervals of time, including home repairs and maintenance, consumer durables, holidays and health services, all of which are measured by HES over a three-month period. These differences imply greater within-household variability in expenditure on these items – particularly 'lumpy' items such as consumer durables – in the HES data, meaning we should expect greater dispersion in the distribution of household expenditure in the HES data than in the HILDA data. However, mean (annualised) expenditure on each item should nonetheless in principle be similar for the two data sources.<sup>5</sup>

Table 8 examines the distribution of total household expenditure measured by the HILDA SCQ, comparing annualised HILDA estimates with alternative annualised HES estimates for comparable expenditure items. The table presents comparisons for four alternative sets of HES estimates to allow consideration of sensitivity of results to the inclusion of HES items partially measured by HILDA and to the method of adjusting HES estimates for the nearly three-year gap between the 2003-04 HES and the Wave 6 HILDA Survey. In the first two HES panels, HES estimates are indexed to the overall Consumer Price Index (CPI). In the second two HES panels, the estimates are indexed to changes in nominal growth in overall household disposable income per capita. The first approach simply updates HES for the overall change in the price level, while the second approach additionally accounts for the increase in household expenditure that will in general accompany growth in real incomes.

Population weights are used to produce both the HES and HILDA estimates. Correspondingly, the HILDA estimates are derived using the imputed expenditure data. Differences in means statistically significant at the 5% level are indicated in the table, on the assumption that the HILDA and HES samples are independent, with standard errors of estimates for the HILDA sample estimated using a Taylor Series approach to account for the

<sup>5</sup> Seasonality in reported expenditures is a potential issue in comparisons of HILDA and HES, but effects should be minimal. HILDA asks for *typical* expenditure for the relatively few items measured over intervals less than one year, while HES is conducted over the course of an entire year, so that on average seasonal effects should be zero.

complex sample design and standard errors for the HES sample estimated using the jack-knife method, using the 60 replicate weights provided with the unit record data for the sample.

As expected, household expenditure is more dispersed in the HES data than in the HILDA data. For example, the first comparison panel shows that, comparing the HILDA estimates with the HES estimates, the 10<sup>th</sup> percentile is 18.7% higher, the median is 5.4% higher and the 90<sup>th</sup> percentile is only 0.5% higher. As noted, this is explicable by differences in the expenditure concept adopted by the two surveys.

With regards to the mean value of expenditure, if the HES data are simply indexed for inflation, on average the HILDA expenditure data look quite similar to the HES data. Mean expenditure for the HILDA data is slightly above the HES mean when partially measured items are excluded from HES, and slightly below the HES mean when these partially measured items are included in HES. Allowing for effects of income growth suggests that the HILDA data do tend to understate expenditure to some extent. However, while differences are statistically significant, the mean is only somewhere between 4.6% and 9.2% less than the HES mean for the same group of expenditure items.

Table 8: Distribution of annualised expenditure on items collected in the HILDA SCQ, Wave 6 of the HILDA Survey and 2003-04 HES

	Mean	Median	10th percentile	90th percentile
HILDA	\$33,869	\$27,246	\$10,745	\$62,550
HES indexed to CPI				
HES excluding partially measured items	\$33,083	\$25,852	\$9,052	\$62,218
<i>Difference from HILDA (HILDA minus HES)</i>	2.4%	5.4%	18.7%	0.5%
HES including partially measured items	\$34,764	\$27,418	\$9,567	\$65,015
<i>Difference from HILDA (HILDA minus HES)</i>	-2.6%	-0.6%	12.3%	-3.8%
HES indexed to nominal income growth				
HES excluding partially measured items	\$35,516	\$27,754	\$9,718	\$66,794
<i>Difference from HILDA (HILDA minus HES)</i>	-4.6%*	-1.8%	10.6%	-6.4%
HES including partially measured items	\$37,321	\$29,434	\$10,271	\$69,797
<i>Difference from HILDA (HILDA minus HES)</i>	-9.2%*	-7.4%	4.6%	-10.4%

Note: \* indicates difference in mean between HILDA and HES is statistically significant at the 5% level.

Table 9 examines 21 HILDA SCQ expenditure items individually, comparing the annualised mean of each item from Wave 6 of the HILDA Survey with the annualised mean obtained from the 2003-04 HES. Table A5 in the Appendix presents the HES expenditure items contained within each of the HILDA SCQ expenditure items.<sup>6</sup> As in Table 9, the table

<sup>6</sup> The three items 'men's clothing and footwear', women's clothing and footwear' and 'children's clothing and footwear' available in the HILDA SCQ have been combined together because HES does not classify all clothing and footwear items into one of these categories. New and used motor vehicle purchases are likewise combined together because they are not distinguished in HES. The two items 'computers and related devices and 'audiovisual equipment' are also combined together because the examples given to respondents in the HILDA SCQ of items to include in each category place some audiovisual equipment in the 'computers and related' category.

presents comparisons for four alternative sets of HES estimates to allow consideration of sensitivity of results to the inclusion of HES items partially measured by HILDA and to the method of updating HES estimates to the December quarter 2006. In the first two columns, HES estimates are simply indexed to the overall CPI. In the second two columns, a more sophisticated approach is taken, with HES estimates indexed to changes in the group CPI applicable to the expenditure item as well as to real growth in overall household disposable income per capita.<sup>7</sup> This approach accounts for differential changes in prices across expenditure items, as well as the general increase in household expenditure associated with growth in real incomes. Note, however, that substitution effects of relative price changes will lead to overstatement of growth in expenditure of items with high price growth and understatement of growth in expenditure of items with low price growth.

The table indicates the significant differences in estimates of means at the 5% level, taking into account the sampling variability in both HILDA and HES.<sup>8</sup>

The table reveals that underlying the reasonably good match between HILDA and HES in aggregate mean household expenditure is considerable variability across expenditure items. Similar to the findings in Section 4 in respect of disagreement within the household, there is clearly some offsetting of under- and over-reporting of individual expenditure items mitigating the overall difference in estimates of mean expenditure. For most items, there are statistically significant differences in mean expenditure between HILDA and HES. Most of these differences indicate under-reporting in HILDA, but there is apparent over-reporting for several important items. As one would expect, including partially measured items in HES estimates, by increasing the HES estimates for the affected expenditure categories, increases the apparent extent of under-reporting or reduces the extent of apparent over-reporting. For similar reasons, indexing HES estimates by the group CPI and real income leads to increases in apparent under-reporting or reductions in apparent over-reporting, although this is not always the case. In particular, clothing and footwear under-reporting is *lower* when HES is updated based on the group CPI and real income growth, because the CPI for clothing and footwear actually decreased between 2003-04 and December 2006.

Taking into account all four estimates of HILDA-HES differences for each expenditure category, apparent under-reporting of expenditure is greatest for repairs, renovations and maintenance to the home (between 46% and 50%), furniture (between 39% and 40%), health insurance (between 24% and 32%), other insurance (between 21% and 46%), household appliances (between 31% and 32%) and education fees (between 20% and 30%). Apparent over-reporting is greatest for motor vehicle fuel (between 15% and 25%), holidays (between 17% and 19%) and vehicle purchase (between 9% and 19%). However, the apparent over-

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<sup>7</sup> The CPI groups used for the expenditure items are as follows (*HILDA item(s) – CPI group*): (1) *Groceries and (5) Meals eaten out* – Food; (2) *Alcohol and (3) Cigarettes and tobacco* – Alcohol and tobacco; (4) *Public transport and taxis, (6) Motor vehicle fuel, (16) Motor vehicle repairs and maintenance and (18) Buying vehicles (new and used combined)* – Transportation; (7) *Clothing and footwear* – Clothing and footwear; (8) *Telephone rent and calls* – Communication; (9) *Holidays and holiday travel costs and (19) Electronic devices* – Recreation; (10) *Private health insurance, (12) Fees paid to health practitioners and (13) Medicines* – Health; (14) *Electricity, gas and other heating fuel and (15) Repairs, renovation and maintenance to home* – Housing; (17) *Education fees* – Education; (20) *Household appliances and (21) Furniture* – Household contents and services. Other insurance was indexed using the overall CPI because the ‘Financial and insurance services’ CPI group commenced in June 2005, after the 2003-04 HES was conducted.

<sup>8</sup> Standard errors of differences in means are derived from the estimated standard errors of the HES and HILDA estimated means and on the assumption that the HES and HILDA samples are independent. Standard errors of HES estimates of means are provided by the ABS in the HES spreadsheets available on the ABS web site (Catalogue Number 6530.0, downloadable at [http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6530.02003-04%20\(Reissue\)?OpenDocument](http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6530.02003-04%20(Reissue)?OpenDocument) as at 30/3/2010). Standard errors of the HILDA estimates are calculated using the Taylor series approach, which takes into account the complex survey design..

reporting of motor vehicle fuel may be overstated, even when the HES data are adjusted based on real income growth and change in the transportation CPI group, since petrol prices probably increased by more than the transportation CPI between 2003-04 and December 2006.

It is difficult to gauge the accuracy of the most important expenditure category, groceries, because of the lack of concordance with the HES expenditure categories. However, consistent with the findings in Section 4, it would seem on balance that this is one of the better-measured expenditure items. If the HES estimates are updated for changes in food prices and real income, which is likely to be more appropriate than simply adjusting for overall inflation, we find that the HILDA estimate of mean grocery expenditure is slightly above the HES estimate when partially measured items are excluded from the HES calculation, and slightly below the HES estimates when partially measured items are included in the HES calculation. This is, of course, what would be expected if the HILDA estimate was accurate. Other expenditure items that are relatively close in estimated means to the adjusted HES estimates are cigarettes and tobacco, public transport and taxis, telephone and internet charges, motor vehicles repair and maintenance and electronic devices.

Table 9: HILDA Survey SCQ expenditure items: Wave 6 estimates compared with 2003-04 HES estimates

	Wave 6 HILDA Survey mean (\$)	Difference between Wave 6 HILDA mean and 2003-04 HES mean (HILDA minus HES, %)			
		HES indexed by overall CPI only		HES indexed by group CPI and real income	
		Excluding partially measured items from	Including partially measured items in	Excluding partially measured items from	Including partially measured items in
		HES	HES	HES	HES
1. Groceries	8,091	18.8*	2.5*	5.7*	-8.7*
2. Alcohol	1,289	-2.2	-2.2	-10.2*	-10.2*
3. Cigarettes and tobacco	655	0.3	0.3	-8.0	-8.0
4. Public transport and taxis	332	6.6	6.6	-1.7	-1.7
5. Meals eaten out	2,174	-8.6*	-8.6*	-18.6*	-18.6*
6. Motor vehicle fuel	2,322	25.1*	25.1*	15.3*	15.3*
7. Clothing and footwear	1,622	-16.9*	-16.9*	-12.8*	-12.8*
8. Telephone rent and calls, internet charges	1,717	2.2	2.2	2.4	2.4
9. Holidays and holiday travel costs	2,343	19.4*	19.4*	16.6*	16.6*
10. Private health insurance	760	-23.9*	-23.9*	-32.1*	-32.1*
11. Other insurance	1,090	-21.0*	-42.0*	-26.4*	-45.9*
12. Fees paid to health practitioners	749	-7.7	-8.1	-17.7*	-18.1*
13. Medicines, prescriptions and pharmaceuticals	404	-23.6*	-28.7*	-31.9*	-36.4*
14. Electricity, gas bills and other heating fuel	1,169	-12.3*	-12.3*	-20.0*	-20.0*
15. Repairs, renovation and maintenance to home	2,168	-46.3*	-46.3*	-51.0*	-51.0*
16. Motor vehicle repairs and maintenance	835	7.8	7.8	-0.7	-0.7
17. Education fees	824	-19.6*	-19.6*	-29.7*	-29.7*
18. Buying vehicles (new and used combined)	3,428	19.2*	18.3*	9.8	9.0
19. Electronic devices	879	1.6	-5.6	-0.8	-7.8
20. Household appliances	460	-31.0*	-31.0*	-32.4*	-32.4*
21. Furniture	559	-38.8*	-38.8*	-40.1*	-40.1*

Note: \* HILDA estimate significantly different from HES estimate at the 5% level.



### *Differences by household type*

In Table 10, differences in the quality of the data by household type are considered. The table presents percentage differences between HILDA and HES estimates of mean total expenditure on the Wave-6 HILDA SCQ expenditure items. Estimates are based on HES expenditure indexed for nominal growth in income per capita, both with and without expenditure items partially measured by the HILDA Survey.

Motivating analysis by household type is the suspicion that the quality of household expenditure data will be lower in larger and more disparate households. Table 10 shows that there is indeed a clear pattern in HILDA estimates relative to HES estimates across the household types, with the HILDA estimates declining relative to the HES estimates as the household type becomes larger and/or more disparate. Notably, however, these comparisons suggest a predisposition towards over-reporting expenditure in HILDA, with mean expenditure in single person households, and to a lesser extent in sole parent households, greater for HILDA than HES, despite indexing HES expenditure for nominal income growth. Mean estimates for couples without children or with only dependent children are similar for HILDA and HES, while mean estimated expenditure for couples with both dependent and non-dependent children and for other household types – which include lone parent and couple families with other persons living with them, households with multiple families and group households – is approximately 25% lower in HILDA than in HES.

**Table 10: HILDA and HES comparisons of mean total expenditure by household type**

	Wave 6 HILDA Survey mean (\$)	Difference between Wave 6 HILDA mean and 2003-04 HES mean (HILDA minus HES, %)	
		Excluding partially measured items from HES	Including partially measured items in HES
Single person	21,509	21.0*	15.5*
Couple only	35,064	-1.9	-6.5*
Couple, dep children only	46,493	-3.0	-7.7*
Lone parent	25,763	13.1*	7.5
Couple, dep & non-dep children only	41,842	-21.3*	-25.5*
Other	31,362	-25.0*	-28.6*

Note: \* HILDA estimate significantly different from HES estimate at the 5% level.

## **6. Summary and conclusion**

The absence of comparable ‘gold standard’ external benchmarks constrains assessments of the quality of the household expenditure data produced by the HILDA Survey. However, the analysis presented in this paper provides some useful indications of the strengths and weaknesses of the data. In general, the findings suggest that some degree of caution should be exercised by researchers using the expenditure data.

In terms of the scope of the data collected, HILDA attempts to measure less than 80% of household expenditure, and while this is positively correlated with the remaining 20% or so of expenditure, the correlation coefficient is less than 0.5.

Non-response is also a significant issue for the SCQ expenditure data, more so than income and wealth because of its collection in the SCQ, and more so than other SCQ items because of the potential for household members to choose not to respond on the basis that they do not have responsibility for any household purchases. It is also concerning that non-response increased between Wave 6 and Wave 8, a trend to be hoped does not continue.

In terms of the quality of the data actually collected, the HILDA SCQ appears to on average do a reasonable job of measuring total household expenditure on the items it seeks to measure. However, this overall performance belies the evidence found of significant overall measurement error as well as specific problems of measurement of individual expenditure items. Substantial within-household disagreement on household expenditure is evident among households that have multiple respondents to the SCQ questions, implying considerable measurement error in the data. With respect to individual expenditure items, comparisons with the 2003-04 HES suggest substantial problems of under-reporting of expenditure on some items and over-reporting of expenditure on others. However, it should also be emphasised that there are considerable differences in quality evident across the expenditure items. The most problematic items are those purchased irregularly, most notably durables and home renovations, repairs and maintenance. Regularly purchased items appear to be somewhat better measured. In particular, there are indications that grocery expenditure, the single biggest expenditure item and accounting for approximately one quarter of household expenditure, is relatively well measured.

## 7. Appendix

Table A1: HES expenditure items not collected in the HILDA Survey, Waves 6-9

<b>1. Rates, water, land tax, etc.</b>	
0101030001 Rate payments (selected dwelling) nfd	1302040101 Local government rates (other property)
0101030101 Water & sewerage rates & charges (selected dwelling)	1302040102 Land tax (other property)
0101030201 Local government rates (selected dwelling)	1302040201 Water & sewerage rates (other property)
0101030202 Land tax (selected dwelling)	1302040301 Rent payments (other property)
0101070201 Body Corporate Payments (selected dwelling)	1302049901 Body corporate payments (other property)
1302040001 Rate payments (other property) nfd	1302049999 Payments for other property nec
<b>2. Cleaning, repair &amp; hire of clothing &amp; footwear</b>	
0603010101 Dry cleaning & laundering of clothes	0603010301 Footwear repairs & alterations
0603010201 Clothing repairs & alterations	0603010401 Hire of clothing & footwear
<b>3. Floor coverings</b>	
0701010601 Carpets	0701010901 Floor tiles
0701010701 Floor rugs, mats & matting	0701011001 Other floor coverings
0701010801 Vinyl & other sheet floor coverings	
<b>4. Household linen, textiles &amp; window coverings</b>	
0702010101 Bed linen	0702010601 Table & kitchen linen
0702010201 Blankets & travelling rugs	0702010701 Curtains
0702010301 Bedspreads & continental quilts	0702010801 Blinds
0702010401 Pillows & cushions	0702010901 Other household textiles
0702010501 Towels & face washers	0702019999 Household linen & furnishings (excl. ornamental) nec
<b>5. Paintings, ornaments, tableware, glassware, cooking utensils, etc.</b>	
0702020101 Paintings, carvings & sculptures	0704010301 Cutlery
0702029999 Ornamental furnishings nec	0704010401 Cooking utensils
0704010101 Tableware	0704010501 Cleaning utensils
0704010201 Glassware	0704019999 Glassware, tableware, cutlery & household utensils nec
<b>6. Gardening &amp; power tools</b>	
0705010101 Lawnmowers (incl. electric)	0705010301 Other hand & power tools
0705010201 Gardening tools	
<b>7. Phones, household tools, etc.</b>	
0705019901 Mobile phones	0705019999 Tools & other household durables nec
0705019902 Telephone handset (purchase)	0801010101 Nails, screws & other fasteners
0705019904 Answering machines	
<b>8. Gardening products, swimming pool chemicals</b>	
0801010601 Trees, shrubs & plants	0801010801 Swimming pool chemicals
0801010701 Other gardening products	
<b>9. Postal charges, public phone calls</b>	
0801020101 Postal charges	
<b>10. Household services</b>	
0801040101 Pest control services	0801040401 Home help services
0801040201 Gardening services	0801040499 Housekeeping & cleaning services (incl. ironing) nec
0801040301 Private rubbish removals	0801049901 Security services
0801040400 Housekeeping & cleaning services (incl. ironing) nfd	0801049999 Household services nec
<b>11. Repair, maintenance &amp; hire of household durables</b>	
0801060101 Carpet cleaning	0801060401 Repair & maintenance of tools
0801060201 Repair & maintenance of soft furnishings	0801069999 Repair & maintenance of household durables nec
0801060301 Repair & maintenance of audiovisual equipment & personal computers	0801070101 Hire of tools
0801060399 Repair & maintenance of household appliances nec	0801079999 Hire of household durables nec
<b>12. Therapeutic appliances, hospital/nursing home charges, etc.</b>	
0903020101 Surgical dressings	0999990101 Hospital & nursing home charges
0903020201 Therapeutic appliances & equipment (excl. hire)	0999990201 Hire of therapeutic appliances
<b>13. Purchase of bicycle</b>	
1001020301 Purchase of bicycle	
<b>14. Compulsory registration of vehicle</b>	
1001040101 Compulsory registration of motor vehicle (other than motor cycle)	1001040301 Compulsory registration of motor cycle, caravan & trailer

Table A1 continued: HES expenditure items not collected in the HILDA Survey, Waves 6-9

<b>15. Driving-related &amp; other transport-related expenses</b>	
1001060301 Driver's licence	1001069901 Road tolls
1001060401 Parking fees	1001069999 Vehicle charges (incl. hire of accessories) nec
1001060501 Driving lessons	1001080201 Air fares (excl. holiday)
1001060601 Subscription to motor organisations	1001080301 Removalists charges
1001060701 Vehicle hire & leasing expenses (non-holiday)	1001089999 Fare & freight charges (excl. holidays & public transport) nec
<b>16. Computer games &amp; software, CDs, DVDs, etc.</b>	
1101030100 TV games & computer software nfd	1101030401 Pre-recorded compact discs & records (audio)
1101030101 Computer software - games	1101030501 Audio cassettes & tapes
1101030102 Computer software (excl. games)	1101039901 Blank computer media
1101030199 TV games & computer software nec	1101039999 Blank & pre-recorded media nec
1101030201 Blank video cassettes & video discs	1102020301 Hire of video cassette tapes & TV/computer games
1101030301 Pre-recorded video cassettes & video discs	
<b>17. Books, newspapers, magazines</b>	
1101040101 Books	1101040301 Magazines & comics
1101040201 Newspapers	1101049999 Books, newspapers, magazines & other printed material nec
<b>18. Photographic film, optical goods, professional photography</b>	
1101050201 Photographic film & chemicals (incl. developing)	1101050501 Studio & other professional photography
1101050301 Sunglasses (excl. prescription)	1102030101 Repair of optical & photographic equipment
1101050401 Other optical goods	
<b>19. Musical instruments &amp; accessories</b>	
1101050601 Musical instruments & accessories	
<b>20. Toys, sports equipment &amp; recreational equipment</b>	
1101050901 Toys	1101051198 Sports equipment nec
1101051001 Camping equipment	1101059901 Above ground pool
1101051100 Sports equipment nfd	1101059902 Art & craft materials
1101051101 Fishing equipment	1101059999 Recreational & educational equipment nec
1101051102 Golf equipment (excl. specialist sports shoes)	1102020401 Hire of sports equipment
1101051103 Specialist sports shoes	1102029999 Hire of recreational & educational equipment nec
1101051104 Water sport, snow sport & skating equipment	1102030201 Repair of sports equipment
1101051105 Bats, sticks, racquets & balls for field & court games	1102039999 Repair of recreational & educational equipment (excl. audiovisual equipment) nec
<b>21. Gambling</b>	
1102010000 Gambling nfd	1102010501 Blackjack, roulette & other casino-type games
1102010101 Lottery tickets	1102010601 TAB - betting (excl. animal racing)
1102010201 Lotto type games & instant lottery (scratch cards)	1102010701 Club & casino broadcast gaming
1102010301 TAB, on course betting & related	1102019999 Gambling nec
1102010401 Poker machines & ticket machines	
<b>22. Sporting fees &amp; charges</b>	
1102040101 Health & fitness studio charges	1102040501 Green fees
1102040201 Sporting club subscriptions	1102040601 Sports lessons
1102040301 Squash court hire charges	1102040701 Spectator admission fees to sport
1102040401 Ten pin bowling charges	1102049999 Sports fees & charges nec
<b>23. Entertainment expenses</b>	
1102050101 Cinema fees & charges	1102990101 Day trips & other excursions
1102050200 Live theatre fees & charges nfd	1102990201 Amusement arcade machines
1102050201 Music concert fees & charges	1102990301 Culture course
1102050299 Live theatre fees & charges nec	1102990302 Recreation course
1102050301 Dance & nightclub fees & charges	1102990303 Life education program
1102050401 National park fees & charges	1102990399 Culture & recreation lessons (excl. sports lessons) nec
1102050402 Zoo fees & charges	1102999901 Pay TV fees
1102050501 Art gallery & museum fees & charges	1102999905 Charges for physical recreation nec
1102050601 Clubs & association subscriptions (excl. sports clubs)	1102999998 Recreational & educational services nec
<b>24. Animal expenses</b>	
1104010000 Animal expenses nfd	1104019901 Animal fees (incl. registration)
1104010101 Animal purchases	1104019902 Animal care & grooming
1104010301 Veterinary charges	1104019903 Animal health products
1104010401 Animal minding charges	1104019999 Animal expenses nec

Table A1 continued: HES expenditure items not collected in the HILDA Survey, Waves 6-9

<b>25. Hair &amp; personal care services</b>	
1201020000 Hair services nfd	1201020201 Hair services (female)
1201020101 Hair services (male)	1201029999 Personal care services nec
<b>26. Stationery</b>	
1301010000 Stationery equipment nfd	1301010301 Cards, envelopes & forms
1301010101 Pens	1301019999 Stationery equipment nec
1301010201 Paper & writing pads	
<b>27. Watches, clocks, jewellery, handbags</b>	
1301990101 Watches	1301990201 Jewellery
1301990102 Clocks (incl. timers)	1301990301 Travel goods, handbags, umbrellas, wallets & related
<b>28. Interest on loans &amp; credit cards</b>	
0101070101 Loans for alterations & additions - interest component	1302010299 Loans - interest component (excl. housing loans) nec
1302010201 Loans for vehicle - interest component	1302010301 Interest payments on credit card purchases
1302010202 Loans for holiday - interest component	1302010401 Interest payments on credit card cash advances
<b>29. Miscellaneous fees</b>	
1302050000 Fees nfd	1302050502 Financial institution charges & fees on financial institution accounts
1302050101 Union dues, professional association subscriptions	1302050599 Duties, taxes & charges on financial institution accounts nec
1302050201 Legal fees	1302059901 Fees nec - government
1302050301 Accountant & tax agent fees	1302059902 Fees nec - private
1302050401 Lease payments (excl. vehicle leases)	
1302050501 Government duties, taxes & charges on financial institution accounts	
<b>30. Cash gifts, donations to charity</b>	
1302990200 Cash gifts, donations to charity nfd	1302990202 Cash gifts, donations to churches, synagogues & related
1302990201 Cash gifts, donations to family or friends	1302990299 Cash gifts, donations to charity nec
<b>31. Fines &amp; miscellaneous services</b>	
1302990401 Fines	1302999901 Counselling services
1302990601 Personal advertising & related	1302999902 Delivery charges not associated with a specific good
1302990701 Non-holiday accommodation	1302999998 Miscellaneous services nec
1302990801 Repair of miscellaneous goods	

Table A2: HES expenditure items partially collected in Waves 6-9 of the HILDA Survey

0801010000 Household non-durables nfd	1301999999 Miscellaneous goods nec
0801019999 Household non-durables nec	1001040103 Combined compulsory registration & insurance of motor vehicle (other than motor cycle)
0903000000 Medicines, pharmaceutical products & therapeutic appliances nfd	1001040303 Combined compulsory registration & insurance of motor cycle, caravan & trailer
0903029999 First aid supplies, therapeutic appliances & equipment nec	1101050101 Photographic equipment (excl. film & chemicals)
0999999999 Other medical care & health expenses nec	1101050702 Registration & insurance of boat
120101 Toiletries & cosmetics	1101050799 Boat purchase, parts & operation nec
1301990401 Ice	1101050802 Registration & insurance of aircraft
1301999902 Baby goods (excl. clothing)	1101050899 Aircraft purchase, parts & operation nec
1301999903 Christmas decorations	

**Table A3: HES expenditure items collected in Waves 6-9 of the HILDA Survey**

0101010101 Rent payments	1001040302 Compulsory insurance of motor cycle, caravan & trailer
0101020101 Mortgage repayments - interest component (sel. dwelling)	1001040401 Other insurance of motor cycle, caravan & trailer
010104 Home &/or contents insurance	100105 Vehicle parts & accessories purchased separately
010105 Repairs & maintenance (contractors)	100106 Vehicle servicing & other charges
010106 Repairs & maintenance - materials	100107 Public transport fares
02 Domestic fuel & power	1001080101 Taxi fares
03 Food & non-alcoholic beverages	110101 Audiovisual equipment & parts
04 Alcoholic beverages	1101020101 Home computer equipment (incl. pre-packaged software)
05 Tobacco products	1101050701 Purchase of boat
06 Clothing & footwear (excl. 0603)	1101050801 Purchase of aircraft
0701010201 Bedroom furniture	1102020101 Hire of television
0701010301 Lounge/dining room furniture	1102020201 Hire of video cassette recorder
0701010401 Outdoor/garden furniture	1102999902 Internet charges (account)
0701010501 Other furniture	1102999903 Internet charges (not account)
0703 Household appliances	1103 Holiday expenses
0801010201 Household soaps & detergents	11040102 Animal food
0801010301 Household polishes	1302010101 Mortgage repayments - interest (other property)
0801010401 Other household cleaning agents	130202 Education fees for primary & secondary school
0801010501 Household paper products (excl. stationery)	130203 Fees paid to other education providers
0801010901 Foodwraps (excl. paper)	1302040401 Insurance (other property)
080103 Telephone charges	1302990501 Personal belongings insurance
080105 Child care services	1302990901 Travel insurance - selected payments
080108 Household appliance repairs insurance	1601010301 Additions & extensions
090101 Health insurance	1601010401 Internal renovations
0902 Health practitioner's fees	1601010501 Insulation
0903 Medicines, pharm. products & therapeutic appliances (excl. 090302)	1601010601 In-ground swimming pool
100101 Purchase of motor vehicle	1601010701 Outside building
1001020101 Purchase of caravan (other than selected dwelling)	1601010801 Landscape contractor
1001020201 Purchase of trailer	1601010901 Other outside improvements
100103 Motor vehicle fuel, lubricants & additives	1601019999 Capital housing costs nec
1001040102 Compulsory insurance of motor vehicle (excl. motor cycle)	1701010201 Life insurance
1001040201 Other insurance of motor vehicle (other than motor cycle)	

**Table A4: HES expenditure items collected in the HILDA Survey Waves 1-5 (used to produce Figure 1)**

Wave 1	010101 (rent payments), 010102 (mortgage repayments – interest component), 03 (food and non-alcoholic drinks), 080105 (child care services) and 05 (tobacco products). 120101 (toiletries and cosmetics) is included in the partially measured items.
Waves 2-4	010101 (rent payments), 010102 (mortgage repayments – interest component), 03 (food and non-alcoholic drinks) and 080105 (child care services). 120101 (toiletries and cosmetics) is included in the partially measured items.
Wave 5	As per Waves 6-8, but with the removal of 010104 (home insurance), 07 (furniture), 080108 (household appliance repairs insurance), 100101 (purchase of motor vehicle), 100102 (purchase of other vehicle), 100104 (vehicle registration and insurance), 100105 (vehicle parts and accessories), 100106 (vehicle servicing), 11010501-11010509 (purchase of boat, aircraft), 1102999902 (internet charges), 1102999903 (internet charges – not account), 1302040401 (other property insurance), 1302990901 (travel insurance), and 1701010201 (life insurance) and with the addition of 110105 (recreational and educational equipment), 110202 (hire of recreational and educational equipment), 110203 (repair of recreational and educational equipment), 110201 (gambling), 110204 (sports fees and charges), 110205 (entertainment) and 110299 (recreational and educational services).

Table A5: HES expenditure items contained in each HILDA (Waves 6-9) SCQ expenditure item

Fully measured	Partially measured
<b>1. Groceries</b> 03 Food and non-alcoholic beverages (excluding 0311 Meals in restaurants, etc.) 0801010201 Household soaps & detergents 0801010301 Household polishes 0801010401 Other household cleaning agents 0801010501 Household paper products (excl. stationery) 0801010901 Foodwraps (excl. paper) 11040102 Animal food	0801010000 Household non-durables nfd 0801019999 Household non-durables nec 120101 Toiletries and cosmetics 1301990401 Ice 1301999902 Baby goods (excl. clothing) 1301999903 Christmas decorations 1301999999 Miscellaneous goods nec
<b>2. Alcohol</b> 04 Alcoholic beverages	
<b>3. Cigarettes and tobacco</b> 05 Tobacco products	
<b>4. Public transport and taxis</b> 100107 Public transport fares 1001080101 Taxi fares	
<b>5. Meals eaten out</b> 0311 Meals in restaurants, etc.	
<b>6. Motor vehicle fuel</b> 100103 Motor vehicle fuel, lubricants & additives	
<b>7. Clothing and footwear</b> 06 Clothing & footwear (excluding 0603 Cleaning, repair and hire of clothing)	
<b>8. Telephone rent and calls, internet charges</b> 080103 Telephone charges 1102999902 Internet charges (account) 1102999903 Internet charges (not account)	
<b>9. Holidays and holiday travel costs</b> 1103 Holiday expenses	
<b>10. Private health insurance</b> 090101 Health insurance	
<b>11. Other insurance</b> 010104 Home &/or contents insurance 080108 Household appliance repairs insurance 1001040102 Compulsory insurance of motor vehicle (excl. motor cycle) 1001040201 Other insurance of motor vehicle (other than motor cycle) 1001040302 Compulsory insurance of motor cycle, caravan & trailer 1001040401 Other insurance of motor cycle, caravan & trailer 1302040401 Insurance (other property) 1302990501 Personal belongings insurance 1302990901 Travel insurance - selected payments 1701010201 Life insurance	1001040103 Combined compulsory registration & insurance of motor vehicle (other than motor cycle) 1001040303 Combined compulsory registration & insurance of motor cycle, caravan & trailer 1101050702 Registration & insurance of boat 1101050802 Registration & insurance of aircraft
<b>12. Fees paid to health practitioners</b> 0902 Health practitioner's fees	0999999999 Other medical care & health expenses nec
<b>13. Medicines, prescriptions and pharmaceuticals</b> 0903 Medicines, pharm. products & therapeutic appliances (excluding 090302 Therapeutic appliances & equipment, etc. and 0903000000 Medicines, pharmaceutical products & therapeutic appliances nfd)	0903000000 Medicines, pharmaceutical products & therapeutic appliances nfd 0903029999 First aid supplies, therapeutic appliances & equipment nec
<b>14. Electricity, gas bills and other heating fuel</b> 02 Domestic fuel & power	
<b>15. Repairs, renovation and maintenance to home</b> 010105 Repairs & maintenance (contractors) 010106 Repairs & maintenance - materials 1601010301 Additions & extensions 1601010401 Internal renovations 1601010501 Insulation 1601010601 In-ground swimming pool 1601010701 Outside building 1601010801 Landscape contractor 1601010901 Other outside improvements 1601019999 Capital housing costs nec	
<b>16. Motor vehicle repairs and maintenance</b> 100105 Vehicle parts & accessories purchased separately 100106 Vehicle servicing & other charges	

Table A5 continued: HES expenditure items contained in each HILDA SCQ expenditure item

<p>17. Education fees  130202 Education fees for primary &amp; secondary school  130203 Fees paid to other education providers</p>	
<p>18. Buying vehicles (new and used combined)  100101 Purchase of motor vehicle  1001020101 Purchase of caravan (other than selected dwelling)  1001020201 Purchase of trailer  1101050701 Purchase of boat  1101050801 Purchase of aircraft</p>	<p>1101050799 Boat purchase, parts &amp; operation nec  1101050899 Aircraft purchase, parts &amp; operation nec</p>
<p>19. Electronic devices  110101 Audiovisual equipment &amp; parts  1101020101 Home computer equipment (incl. pre-packaged software)  1102020101 Hire of television  1102020201 Hire of video cassette recorder</p>	<p>1101050101 Photographic equipment (excl. film &amp; chemicals)</p>
<p>20. Household appliances  0703 Household appliances</p>	
<p>21. Furniture  0701010201 Bedroom furniture  0701010301 Lounge/dining room furniture  0701010401 Outdoor/garden furniture  0701010501 Other furniture</p>	