



Australian Government

Department of Family and Community Services



HILDA PROJECT DISCUSSION PAPER SERIES NO. 3/03, OCTOBER 2003

Income and Wealth – Facilitating Multiple Approaches To Measurement and Permitting Different Levels of Aggregation

Bruce Headey

**The HILDA Project was initiated, and is funded, by the
Australian Government Department of Family and Community Services**



INTRODUCTION

The Household, Income and Labour Dynamics in Australia (HILDA) Survey began in 2001, and wave 3 is now in the field. Each year detailed questions are asked about both current income and income in the last financial year. The questions cover labour income, business and asset income, private transfers and public transfers. Moreover, in Wave 2 (conducted in 2002) HILDA included a wealth module, providing what we believe is the first major household-level survey of wealth in Australia. More specifically, detailed information was sought about household assets, including housing and other property, business assets, equity-type investments (shares etc), cash-type investments (bonds etc), trust funds, collectibles (art works etc), bank accounts and pension funds/superannuation. Information about debts was also sought, thus making possible the construction of measures of net worth – that is, assets minus debts.

The first part of this Discussion Paper deals with income, the second part with wealth. In both parts the key issues concern how to combine answers to HILDA's survey questions into aggregate measures that are flexible enough to permit governmental and academic users of HILDA to investigate a wide range of issues in public policy, demography, economics, political science, psychology, public health and sociology. As data managers we wish to offer a high quality service to users and we do not believe it is wise just to give them the raw data and say, 'You are on your own – construct your own aggregate measures'. On the other hand, the aggregate measures which we provide need to be usable for diverse purposes.

It should be noted that, like all other surveys of income, HILDA does not ask people about the taxes they pay. To do so would be futile, since most respondents would not be able to answer accurately. So taxes have to be imputed in order to obtain measures of disposable income. Tax imputation is the subject of a separate Discussion Paper. However, this paper does outline our measures of disposable income.

PART 1: INCOME

Different Approaches to Measuring and Aggregating Income

This paper proposes concepts of income for use in HILDA that will allow researchers to choose between:

- following the approach used by the Australian Bureau of Statistics (ABS);
- following the approach used in the Cornell/DIW International Equivalent File of panel studies¹;
- and a third approach that distinguishes clearly among *five key income concepts*.

The five key income concepts that make up this third approach are as follows:

1. *Market/factor income* = all income generated in factor markets. This includes labour income and asset/business/investment income. Private pension and superannuation income should be included here. Many people would argue that homeowner net rental income should also be included. However, this is debateable at a conceptual level and there is also no agreed method of calculation in Australia.
2. *Private income* = market income plus *private transfers* (child support, gifts, inheritances etc). This can also be termed *pre-government income*, as it is in the International Equivalent File.
3. *Public transfer income* = all pensions, benefits and allowances funded from general Government revenue, rather than from private contributions.
4. *Gross income* = market income + private transfers + public transfers.
5. *Disposable or net income* = gross income minus Federal income tax which we impute (but not minus employer, employee or private superannuation or insurance contributions). In principle, State and Local Government taxes should also be imputed, but this is impractical. Disposable income can also be termed *post-government income* as in the International Equivalent File.

In my view the third approach is preferable for most social, economic and especially public policy research purposes. However, we want to enable researchers to use a variety of approaches, at their choice. As a comment, I would say that the ABS approach, which we mainly used in the HILDA Wave 1 Codebook (see pp. 96-97), does not easily enable researchers to construct market income/factor income or private/pre-government income, both of which are vital concepts for research purposes. The International Equivalent File's approach, in my view, is also open to criticism in that it appears to confound market income/factor income with public transfer income in its treatment of some private pensions.

¹ This international consortium has produced files of American (PSID), Canadian (SLID), German (GSOEP) and British (BHPS) panel data, containing selected variables which, as far as possible, are defined in exactly the same way. The possibility of HILDA joining this consortium is under discussion.

The Five Income Concepts and their Building Blocks: More Detail

Market income/ factor income

The smaller building blocks we probably need to distinguish within market/factor income are as follows:

- *Labour income*: mainly income from wages and salaries. Essential for the calculation of wage rates and research on labour supply. We have also decided to include wage/salary from one's own incorporated business (es) here, following ABS. However, HILDA users will be able to separate out this component, if they wish.
- *Other employer funded labour payments*: workers compensation, accident insurance and redundancy/severance payments. Note that at the moment we include these wage bill type payments in a catch-all category of other income along with private transfers (HILDA Wave 1 Codebook, pp. 96-97). Imputed income from free employer provided housing should logically be included here (but is not calculable from current data).
- *Private superannuation/pensions*: these should be included as market income and not, as in some sources, confounded with public pensions.
- *Asset/capital income*: made up as follows.
 - a. Profits/losses from unincorporated businesses
 - b. Dividend income from incorporated businesses
 - c. Royalties
 - d. Investment income from bank interest and other cash type investments; income from shares, managed funds, property trusts and other equity type investments; income from property rented out to others.
- *Homeowner net rental income*: This will be provided as a separate income category in HILDA's Wave 2 data release, but *not* included in aggregate measures of market income, gross income and disposable income. This approach will allow users who wish to use the measure to do so, but will not imply that DFACS and the HILDA team take the view that homeowner 'rent' is a specially favoured form of income which must be recognised and included in aggregate measures. It is certainly not the case that everyone believes that homeowner 'rent' should be treated as income. Some might ask, 'Why not include imputed boat-owner rental income, or income derived from fine paintings on one's wall?' Also, it is argued that homeowners enjoy fewer tax benefits in Australia than most other Western countries, where mortgage interest is deductible. (But in Australia, as elsewhere, capital gains on one's main house are not taxed.)

Measurement is also an issue. We will follow the International Equivalent File's method of deeming that 6% of the difference between a dwelling's market value and the remaining mortgage principal (if any) can be regarded as a reasonable measure of net annual 'rental' income. For a discussion of the merits of this measure and alternative measures based on the rental value of properties, see Frick and Grabka (forthcoming).

Private income/pre-government income – adding private transfers to market income

- *Private transfers*: these should probably be shown as a separate income block (which is not done at the moment; see HILDA Codebook Wave 1, pp 96-97). Private transfers include child support payments, inheritances and gifts. Note: logically, free or subsidised housing provided as a gift by someone other than an employer or the public sector/community sector should be included here. An example would be free lodging to friends or parents or adult children (if regarded as members of separate households). However, we lack data on this type of tenure.

Gross income – private income plus public transfers

Adding in public transfers to create gross income (a concept much used by ABS) is fairly straightforward in HILDA. In Wave 2 all main public transfers are listed on page 40 of the Person Questionnaire (Financial Year data) and can be summed to give public transfer income.

Two additional public transfers should be included if possible:

- Child care benefits – we ask whether these benefits are received and can accurately impute a dollar value.
- Rent assistance – a means tested benefit which we do not ask about separately (although perhaps some respondents included it under other benefits on page 40 of the Person Questionnaire). In practice, this will probably have to be omitted. It is believed that the take-up rate is well under 100%, so attributing to respondents the assistance they could get, but in many cases don't, is not sensible.

Disposable/net income = post-government income

In order to get a measure of disposable income from gross income we impute and deduct Federal income taxes. (We do not deduct private superannuation or insurance contributions. Nor do we treat compulsory employer superannuation contributions under the national superannuation scheme as a tax on labour income).

It would be sensible to show *imputed Federal income tax* as a separate variable in the file (not done at present).

Other Issues Related to Income Measurement

Family and income units

So far in this paper I have not distinguished between the incomes of individuals and broader income units. We should probably provide researchers with aggregations to both *family units* and to ABS's rather special definition of *income units*. ABS *income units* are based on the idea that income is only shared in single person, couple and couple plus dependent child(ren) households, and not shared in families larger than that. In particular, children who live at home but who are of an age to be separate earners are treated as separate income units.

There is also a case for supplying data at the International Equivalent File's so-called 'household level'. The assumption that the File's data managers make is that everyone who lives under the same roof and shares meals also shares income, at least to some extent.

Equivalence scales

Equivalence scales are widely used, especially in poverty research, as a method of adjusting household income by household size in order to give a more valid measure of material standard of living. The reasoning is that a household of one person with a certain income is clearly going to be better off than a household of, say, four people with the same total income. The obvious adjustment is to construct household per capita income, just by dividing total income by household size. But this makes no allowance for economies of scale in larger households, nor for the fact that children are generally cheaper to keep than adults. To deal with these points governments and academics have used a wide range of 'equivalence' scales. (Government scales are rarely published, but can be inferred from adjustments to benefit levels made for households of different sizes and composition). Typically, one adult in the household is given a score of 1.0, then other adults are given a lower score (e.g., 0.5) and children are given a lower score still (e.g., 0.3). (The scale illustrated here is the current OECD equivalence scale). The household's equivalence score is then the sum of the individual scores and 'equivalent income' is constructed by dividing total household disposable income by the equivalence scores. So for example, using the OECD scale just referred to, a household of two adults and two children would have an equivalence score of 2.1 and its equivalised disposable income would be its total income (e.g. \$60,000) divided by 2.1 (\$28, 571). Each person in the household is then shown in the file as having the same equivalised income on the assumption that income is shared. This assumption is of course open to challenge, in that some research appears to show that within many households income is far from equally shared (Pahl, 1989).

We should probably supply HILDA users with several widely used equivalence scales, so that they can select their preferred one or, in their research, investigate the effects of using different scales. Possible inclusions are:

- the current OECD scale = 1.0, 0.5, 0.3.
- the old OECD scale = 1.0, 0.7, 0.5. ABS continues to use this.
- the International Experts scale = square root of income unit size. This scale was developed by a group of international scholars as a reasonable compromise among the wide range of scales used in Europe and North America. In practice, it gives equivalence scores very close to the current OECD scale.

PART 2: WEALTH, ASSETS, DEBTS AND NET WORTH

HILDA collected data on wealth for the first time in 2002. The wealth module was sponsored by the Reserve Bank of Australia (RBA), and it is hoped that this exercise will be repeated in Wave 5.

The aim is to measure **net worth** (i.e., assets minus debts). Ideally, this should perhaps be at an individual level, but in practice we have to settle for the household.² As researchers have found in many countries, it is preferable to ask about most assets in a household questionnaire, which one respondent completes on behalf of the entire household. Putting asset questions to each individual in a household might in theory enable one to measure wealth at the individual level, but in practice leads to a lot of double-counting.

Surveys usually under-estimate aggregate national household wealth (Juster et al, 1999). For example, the latest PSID estimate for the US was only 82% of the figure given by the Federal Reserve Bank, which publishes annual household balance sheets. However, more detailed checks showed that the PSID data were fairly reliable except for the wealthiest two percentiles who owned over 15 per cent of total wealth.

In Australia, estimates of national wealth are made annually by the RBA and the Australian Bureau of Statistics (ABS, *Financial Accounts*, cat. no. 5232.0), but sources there say that the estimates for households are to some extent residuals obtained after estimates of business assets have been made. Even so, the HILDA team needs to report on comparisons between the official household balance sheets and HILDA's results. A first cut is attempted below.

Previous imputations of Australian wealth based on survey data have been made by researchers at NATSEM (Bækgaard 1998; Kelly 2002). Their approach, however, was heavily based on imputing the value of assets from survey estimates of the income stream generated by those assets. No attempt appears to have been made to compare the estimates with the national aggregates reported by RBA/ABS.

Surveys have major problems with missing data relating to assets. Especially if only one person answers per household, data gaps are likely to be substantial.

For each of HILDA's asset categories (see below), 85-95% of respondents were able to provide point estimates of the value of holdings. However, just over one-third of households were unable to provide estimates for one or more categories in which the respondent said the value of holdings was non-zero. So we have complete data for 64.4% of households, which means that we certainly need to impute missing data; a task which is now underway.

Recommendations for reducing missing data in future surveys are made below.

²Most assets were covered in the Household Questionnaire, rather than the Person Questionnaire. This means that questions were answered on behalf of the whole household by one member. In general, these assets cannot be divided up among the individuals living there, and presumably not among families in households where multiple families reside.

Wealth Components

There are two main categories of assets:

- A. Financial assets
- B. Non-financial assets

We need to sum (A) + (B) and then subtract (C) debts to obtain (D) household net worth.

A. Financial Assets

Data available in HILDA on financial assets are:

Bank accounts

- a. Respondents' own bank accounts:
 - Accounts in own name only – sole accounts
 - Accounts in joint names – asking about these involved a complicated list of questions – see Question J4a to J7b in the Person Questionnaire. In constructing the variable for 'HH money in joint accounts', we need to divide the sums listed by the number of account holders in order to avoid double-counting in calculating household wealth. It is also necessary to exclude people outside the household whose name may be on joint accounts.
- b. Children's bank accounts: information about these was supplied by an adult respondent on behalf of the entire household.

Superannuation

HILDA included separate questions about the superannuation assets of retired people and non-retired people. Because we believed that non-retired people might have considerable difficulty in reporting on their super assets, we offered ranges of values for respondents who could not give exact dollar amounts. This appears to have elicited a great deal of extra valuable information, as would be expected given the experience of other panel studies, including the German Socio-Economic Panel and the American Health and Retirement Survey.

It can be argued that, because superannuation cannot be collected now (unless one has reached retirement age), then it should not be counted/weighted dollar for a dollar along with other assets. We will supply it as a separate variable for researchers to make their own choice about weighting (including zero weighting, if they prefer).

Shares and other equity-type investments

The HILDA questions about the value of shares, managed funds, property trusts and other equity-type investments asked respondents to give an exact dollar estimate. It would almost certainly reduce the number of missing cases if we gave the option of estimating within a range in future surveys.

Bonds and other cash-type investments

The same point applies to cash-type investments.

Trust funds

There are two difficulties in asking about trust funds. One is to establish who the beneficiaries are and the second is to differentiate capital (which is what is relevant for a wealth survey) from income.

Life insurance

The cash-in value of life insurance funds should be included in household wealth. This was asked in HILDA but was a difficult concept for respondents to grasp. People are probably more used to thinking about the value-at-death, or the value at term.

B. Non-Financial Assets

Housing

HILDA collects data every year on the value of the main and secondary dwellings (if any) owned by households, and also the value of outstanding mortgages and loans. We therefore derive variables reporting housing value, housing debt, and net housing equity.

Home contents/consumer durables

HILDA did not ask about the value of home contents (except collectibles; see below), but we could impute it based on the gross value of the home, or on rental values in the case of rented dwellings.

Collectibles

We asked about the value of works of art, antiques, stamps, coins etc.

Businesses

Our questions were phrased so that respondents were asked to provide **either** the gross value of up to three businesses **or** the combined value of all businesses the household owned. They were also asked about business debt.

So we can provide variables for the gross value of businesses, business debt and the net value or equity owned. (Note: we need to eliminate business partners who own a share of the business but are not members of the household in question).

Vehicles

Vehicles are the only type of consumer durable for which data were collected. We asked about boat ownership, airplanes and other recreational vehicles, as well as cars.

C. Debts

Most questions about debt were included in the Person Questionnaire rather than the Household Questionnaire, because it was felt that individuals may be quite secretive about what they owe even with members of their own family. However, **housing debt** was covered in the Household Questionnaire, along with many other questions about housing. Similarly, **business debt** was covered in a section on business ownership, business asset values and business income. The debts covered in the Person Questionnaire were:

Credit card debt

We asked about debt owed on both one person and jointly held credit cards. In calculating household wealth we eliminate the share of the debt owed on joint cards by non-household members.

HECS

HECS debts and student loans were asked about as a separate debt category.

Other personal loans

HILDA included a catch-all question about 'other personal loans' which was intended to pick up hire purchase and vehicle debts not otherwise covered, and also debts owed to friends and relatives outside one's own household.

Debts which people owe you

This question is needed to establish net debt.

Aggregate Wealth Variables

In my view we should supply HILDA users with the following aggregate wealth variables:

1. Gross and, where available (for housing and business only), net value (equity) of each separate asset.
2. Gross and net value of financial assets (with the option of either including or excluding superannuation).
3. Gross value of non-financial assets.
4. Gross value of all assets.
5. Net debt: debts owed by the household minus debts owed to the household.
6. Net worth: assets minus net debt (with the option of including or excluding superannuation assets).

How Well Do Hilda Data Match Up With RBA/ABS Data on Assets, Debts and Net Worth?

We now make a first attempt to assess how well HILDA's new household level wealth data match up with the national aggregate statistics compiled by the RBA and published in the ABS's annual *Financial Accounts*. In effect, we are here treating RBA/ABS data as a gold standard, or desirable benchmark to aim at. This seems sensible, although it is not inconceivable that in some areas HILDA data could be superior (further comments below).

It should be noted that the HILDA data, at this stage, include no imputations of assets or debts. Nor have sample weights been used in the estimates below (not yet available for 2002). This initial comparison was done simply by calculating mean levels of household assets and debts, and then multiplying by 7.5 million; this being the number of households in Australia. HILDA data could then be matched with the national aggregates given by the RBA/ABS.

The key RBA/ABS aggregates for September 2002 (the mid-point of HILDA Wave 2 data collection) are:

- Financial assets of households: \$1.074 trillion
- Non-financial assets of households excluding consumer durables (not collected in HILDA): \$2.267 trillion
- Total assets of households: \$3.341 trillion

- Household net debt: \$0.597 trillion
- Household net worth: \$2.744 trillion or \$365,867 per household.

The comparable HILDA aggregates are:

- Financial assets of households: \$0.994 trillion
- Non-financial assets of households, excluding vehicles³: \$2.060 trillion.
- Total assets of households: \$3.054 trillion
- Household debt: \$0.488 trillion
- Household net worth: \$2.566 trillion or \$342, 133 per household.

Clearly, these initial comparisons suggest that the HILDA survey did a fairly accurate job. Our estimate of the net worth of households is just 6.5% lower than the RBA/ABS estimate. Our estimate of debt appears, however, to be 20% too low and needs further investigation. Next time we should probably ask more detailed questions about debt (see recommendations below). Another possibility is that, in one sense, RBA/ABS overestimates debt by including the level of credit card debt which exists at any moment in time, but which incurs little or no interest because it is completely paid off when the first monthly bill is received. HILDA survey respondents were asked about such debt (and about first month payments) but may well have under-reported it, because people probably tend not to regard something as a debt if it incurs no interest and is just a by-product of the normal way of paying for routine purchases.

The estimates of assets are almost ‘too good’. HILDA did not sample any of the richest households in Australia – the 200th richest had assets of \$80 million in 2003, whereas HILDA’s wealthiest had \$22 million.

Suggestions for Improving the Questionnaire

1. Research in Germany, the US and Britain has found that the unfolding bracket method of asking wealth questions minimises missing data, and is superior to the point estimate approach which we mostly used. The unfolding brackets method involves progressively asking respondents to zero in on narrower and narrower bands of asset value. Finally, if the narrowest band is reached, a point estimate may be asked for. Failing that, the data managers’ best estimate is usually taken to be the middle of the narrowest band which the respondent gave.
2. Debts. In retrospect our questions about debt were probably too brief. We asked separately only about housing debt, business debt, HECS and credit card debt. The rest was covered by an ‘other’ debts question. Next time we could sensibly ask about: bank debt other than for housing and business; loans to buy cars, furniture, computers etc; debts owed to friends; debts owed to relatives not living in the same household.
3. The questionnaire should be amended to avoid double-counting of superannuation either formally held in joint names, or which partners feel is jointly ‘theirs’, even if it is not in joint names. In 2002 there were numerous

³ HILDA did not collect data on consumer durables, except for vehicles. So for purposes of comparison with RBA data HILDA’s estimates of vehicle values were removed and the RBA estimates for consumer durables were subtracted from the value of non-financial assets.

instances of partners reporting exactly the same amount of superannuation capital as each other. (We inferred that much of this was double-counting and divided the sum by two).

APPENDIX 1

COMPLETE LIST OF WEALTH VARIABLES SUGGESTED FOR THE FILE PROVIDED TO HILDA USERS

**Note: All variables are constructed at the household (HH) level, and most data were collected at the HH level. However, data on bank accounts, superannuation and financial debt (credit card debt etc) were collected at the individual level and then converted to HH level for inclusion in the HILDA users data file.

Financial assets

*The variable names are indicative only – not yet finalised.

HH equity-type investments (shares, property trusts, managed funds mainly in shares, property trusts etc) – heqinv02

HH cash-type investments (bonds, debentures, cash enhanced and cash investments) – hcainv02

HH trust accounts – htrust02

HH one person bank accounts – hobank02

HH joint bank accounts – hjbank02

HH children's bank accounts – hchbank02

HH total bank accounts – htbank02 (=previous 3 items summed)

HH insurance policy (cash-in value) – hinsur02

HH superannuation held by retired people – hsuprt02

HH superannuation held by non-retired people – hsupwk02

HH superannuation held by all people – hsuper02 (=sum of previous 2 items)

Non-financial assets

Housing

HH value of 1st dwelling – hs1val02

HH value of 2nd and other dwellings – hs2val02

HH value of all dwellings – hsval02 (sum of previous 2 items)

HH debts on 1st dwelling – hs1dt02

HH debts on 2nd and other dwellings – hs2dt02

HH debts on all dwellings – hsdebt02 (sum of previous 2 items)

HH equity in 1st dwelling – hs1eq02 (value minus debt)

HH equity in 2nd and other dwellings – hs2eq02 (value minus debt)

HH total housing equity (sum of previous 2 items)

Businesses

HH value of all businesses – hbusva02

HH debts owing on businesses – hbusdt02

HH equity in businesses – hbuseq02 (value minus debt)

Other non-financial assets

HH vehicles: cars and other vehicles – hcars02

HH collectibles – hcoll02

Debts

HH total housing debt (as above) – hsdebt02

HH business debt (as above) – hbusdt02

HH credit card debts – hccdt02

HH HECS (student loan) debt – hhecdt02

HH other loans/debts – hothdt02

Aggregate Measures

HH total financial assets – hfin02 (sum of value of all financial assets)

HH total non-financial assets – hnfin02 (sum of value of all non-financial assets)

HH total assets – htass02 (sum of previous 2 items)

HH total debts – hdebt02 (sum of all debts)

HH net worth – hnetw02 (total assets minus total debts)

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