Working Party on Financial Statistics

ANALYTICAL MEASURES ON HOUSEHOLD INCOME, SAVING AND WEALTH

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This document has been prepared by Amanda Seneviratne (Australian Bureau of Statistics) and will be presented under item 9 of the draft agenda

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ANALYTICAL MEASURES ON HOUSEHOLD INCOME, SAVING AND WEALTH

Introduction

1. The Australian Bureau of Statistics (ABS) publishes on an annual and quarterly basis a household balance sheet and associated analytical measures of household income, consumption, saving and wealth. The household analytical measures illustrate the link between the income account and balance sheet with a particular emphasis on the role of holding gains and losses.

2. The ABS has published a quarterly household financial balance sheet for over 20 years and annual household balance sheet and analytical measures for over 10 years and recently (in September Quarter 2013) extended the estimates on a quarterly basis by producing for the first time a household balance sheet including non-financial assets and the analytical household measures. This paper is an update of the two articles published in the Australian System of National Accounts (ASNA), cat. no. 5204.0 in 2001-02 ("Saving, Borrowing, Investment and Wealth") and in 2002-03 ("New Analytical Measures of Income and Wealth"), and includes tables and graphs with the quarterly household data.

3. Saving, investment, borrowing and lending, change in net worth and net worth itself for the nation and for each institutional sector are linked by a series of accounting identities in the system of national accounts. This paper explores these accounting identities in relation to the household sector, and emphasise real holding gains and losses and the addition of these and other changes in wealth to traditional measures of household income and saving.

Derivation of Net Saving from the Financial Account

4. Conceptually, the capital account's 'net lending/net borrowing' and financial account's 'change in financial position' should be the same, but in practice there are discrepancies due to differences in the source data used and differences in the methods of estimation. The discrepancy in the ASNA is shown as 'net errors and omissions' in the financial account to distinguish it from the discrepancy between the income and expenditure measures of GDP, see Table 1.
Table 1: Household Capital and Financial Account, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14

<table>
<thead>
<tr>
<th>Household Capital Account</th>
<th>JQ13</th>
<th>SQ13</th>
<th>DQ13</th>
<th>MQ14</th>
<th>JQ14</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Saving</td>
<td>17.6</td>
<td>31.6</td>
<td>27.1</td>
<td>19</td>
<td>17.4</td>
<td>92.1</td>
</tr>
<tr>
<td>Consumption of fixed capital</td>
<td>20.1</td>
<td>20.2</td>
<td>20.3</td>
<td>29.5</td>
<td>20.6</td>
<td>81.6</td>
</tr>
<tr>
<td>Net Capital transfers</td>
<td>1.7</td>
<td>0.9</td>
<td>1.1</td>
<td>1</td>
<td>2</td>
<td>4.9</td>
</tr>
<tr>
<td>Gross saving and capital transfers</td>
<td>36.4</td>
<td>52.6</td>
<td>40.6</td>
<td>37.5</td>
<td>40</td>
<td>170.8</td>
</tr>
<tr>
<td>Gross fixed capital formation</td>
<td>31.7</td>
<td>32.1</td>
<td>33.3</td>
<td>29.7</td>
<td>33.5</td>
<td>128.6</td>
</tr>
<tr>
<td>Changes in inventories</td>
<td>-0.8</td>
<td>-1.5</td>
<td>2.4</td>
<td>0.2</td>
<td>-1</td>
<td>0.1</td>
</tr>
<tr>
<td>Acquisitions less disposals of non-produced non-financial assets</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Net lending (+)/lending (-)</td>
<td>6.5</td>
<td>22</td>
<td>12.6</td>
<td>7.6</td>
<td>7.5</td>
<td>49.9</td>
</tr>
<tr>
<td>Total capital accumulation and net lending (+)/borrowing (-)</td>
<td>39.4</td>
<td>52.6</td>
<td>48.5</td>
<td>37.5</td>
<td>40</td>
<td>178.6</td>
</tr>
<tr>
<td>Net errors and omissions</td>
<td>3.8</td>
<td>0.9</td>
<td>4.6</td>
<td>7.9</td>
<td>-3.7</td>
<td>15.7</td>
</tr>
</tbody>
</table>

ABS, Australian National Accounts: Financial Accounts, June Quarter 2014, cat. no. 5232.0

5. These relationships within the national accounting framework make it possible to derive a measure of net saving by an alternative route that starts from the change in financial position in the financial account. This is shown in Table 2.

Table 2: Household Net Saving Derived from Financial Transactions, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14

<table>
<thead>
<tr>
<th>Household Financial Account</th>
<th>JQ13</th>
<th>SQ13</th>
<th>DQ13</th>
<th>MQ14</th>
<th>JQ14</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net change in financial position</td>
<td>12.3</td>
<td>28.9</td>
<td>17.4</td>
<td>15.5</td>
<td>3.8</td>
<td>65.6</td>
</tr>
<tr>
<td>Net acquisition of financial assets</td>
<td>41</td>
<td>41.5</td>
<td>44.9</td>
<td>34.6</td>
<td>48.5</td>
<td>157.5</td>
</tr>
<tr>
<td>Currency and deposits</td>
<td>6.4</td>
<td>22.7</td>
<td>21.3</td>
<td>9.9</td>
<td>0.2</td>
<td>92</td>
</tr>
<tr>
<td>Short term securities</td>
<td>0.2</td>
<td>-0.3</td>
<td>-0.1</td>
<td>1.8</td>
<td>-1.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Long term securities</td>
<td>0.1</td>
<td>-0.1</td>
<td>0.2</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Loans and placements</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Equity</td>
<td>-12.7</td>
<td>-4.6</td>
<td>-0.9</td>
<td>0.3</td>
<td>-4.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Insurance technical reserves</td>
<td>30.6</td>
<td>18.5</td>
<td>24.6</td>
<td>24.8</td>
<td>42.1</td>
<td>110</td>
</tr>
<tr>
<td>Other accounts receivable</td>
<td>7.1</td>
<td>-4.9</td>
<td>-0.2</td>
<td>-1.2</td>
<td>2</td>
<td>-4.3</td>
</tr>
<tr>
<td>Net incurrence of liabilities</td>
<td>28.7</td>
<td>12.6</td>
<td>27.5</td>
<td>19.1</td>
<td>42.7</td>
<td>191.9</td>
</tr>
<tr>
<td>Short term securities</td>
<td>-0.6</td>
<td>-0.5</td>
<td>-0.6</td>
<td>-0.9</td>
<td>-0.8</td>
<td>-2.9</td>
</tr>
<tr>
<td>Loans and placements</td>
<td>23.9</td>
<td>10.9</td>
<td>26.2</td>
<td>21.5</td>
<td>36.9</td>
<td>191.5</td>
</tr>
<tr>
<td>Other accounts payable</td>
<td>6.4</td>
<td>-3.8</td>
<td>1.9</td>
<td>-1.5</td>
<td>6.6</td>
<td>3.2</td>
</tr>
</tbody>
</table>

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6. These two measures provide largely independent measures of saving. Errors in the estimates of household disposable income or final consumption expenditure affect the value of saving derived in the conventional method. Errors in the estimates of change in financial position, gross fixed capital formation, capital transfers, changes in inventories and acquisitions less disposals of non-produced non-financial assets will affect the alternate measure of saving.

7. A 25 year comparison of the two approaches to measuring household net saving is shown in the Graphs 1 and 2 below. The financial transactions approach yields a higher level and a more volatile series for net saving relative to GDP over much of the period from 1988-89 through to early 2000s, but since then, the conventional approach has been marginally higher for most years up to 2009-10. During the
period and just before the global financial crisis (March 2008), the conventional approach measured a higher net saving relative to GDP. From 2009-10, the financial transaction approach has displayed a higher saving relative to GDP, and the volatility of the series has subdued to be more on par with the conventional method. Differences in year-to-year movements emphasise the need for caution in interpreting short term data for saving. However, the comparison provides evidence that both measures of saving are quite robust, and that over the longer term the patterns are similar for household saving.

Graph 1

**COMPARISON OF HOUSEHOLD NET SAVING MEASURES, $B**

![Graph 1 showing comparison of household net saving measures, $B.]

Income

8. The concept of household disposable income used in the ASNA is directly linked to the measure of production. Household disposable income can be generated either directly by participating in the process of production or indirectly through the redistributive process (taxation, social security benefits, etc.). Holding gains and losses, capital transfers and flows categorised as other changes in volume are excluded from the national accounts' income measures but they form part of the change between closing and opening
net worth in the household balance sheet. If these other changes in wealth were added to current estimates of income, then analytical measures of household income and saving could be derived. These would be more consistent with the concepts often described in economic theory where 'income' is defined as

'...the maximum that a household...can consume without reducing its real net worth' (2008 SNA, paragraph 8.25)

9. The calculation of an alternative income series based primarily on adding real holding gains to the traditional national accounts income measure seems a simple step. However, there is an important debate over the validity of treating real holding gains in the same manner as gross disposable income. The impact of real holding gains on economic activity may not be equivalent to income received in cash or in kind. Arguably, if a real holding gain accrues due to an increase in the price of a particular asset, then if many agents wish to realise this gain and attempt to ‘cash out’ at the same time, the price may fall and the size of the realised gain may be smaller than the imputed real holding gain. In addition, the realisation of a holding gain may lead to the payment of tax, which would reduce the amount of funds available to the asset holder. Thus, the measures introduced here should not be seen as replacing or ‘correcting’ the traditional income and saving measures in the national accounts. Rather they are provided to give users an alternative view of the available information.

10. Before the alternative analytical measures of household income and saving are introduced, the relationships between national accounts identities are illustrated so as to clearly demonstrate how the analytical measures are derived.

Relationship between Net Saving and Change in Net Worth (Wealth)

11. Household net worth is shown in the household balance sheet. It is the difference between the value of financial and non-financial assets and its liabilities, the difference between opening net worth and closing net worth, represents change in net worth, its composition in shown in the Table 3 below. Net capital formation is the net addition to the capital stock after allowing for the consumption of fixed capital. Other changes in volume refer mainly to additions less depletions in natural resource stocks. Revaluations, which are the main contributor to the change in net worth, reflect the impact of price changes on asset values.

Table 3: Household Change in Net Worth, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14

<table>
<thead>
<tr>
<th></th>
<th>JQ13</th>
<th>SQ13</th>
<th>DJQ12</th>
<th>MQ14</th>
<th>JK14</th>
<th>JK13-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening net worth</td>
<td>7043.9</td>
<td>7054</td>
<td>7284.6</td>
<td>7551.6</td>
<td>7683.2</td>
<td>7064</td>
</tr>
<tr>
<td>Net capital formation</td>
<td>10.8</td>
<td>10.4</td>
<td>15.4</td>
<td>9.4</td>
<td>11.9</td>
<td>47.1</td>
</tr>
<tr>
<td>Financial Transaction</td>
<td>12.3</td>
<td>28.9</td>
<td>17.4</td>
<td>15.5</td>
<td>3.8</td>
<td>65.6</td>
</tr>
<tr>
<td>Acquisition less disposables of non produced non-financial assets</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other change in volume</td>
<td>6.3</td>
<td>6.3</td>
<td>6.4</td>
<td>6.4</td>
<td>6.4</td>
<td>25.5</td>
</tr>
<tr>
<td>Revaluation</td>
<td>-9.3</td>
<td>174.7</td>
<td>227.9</td>
<td>100.5</td>
<td>75.1</td>
<td>578.2</td>
</tr>
<tr>
<td>Other differences (a)</td>
<td>0</td>
<td>0.3</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Closing net worth</td>
<td>7054</td>
<td>7264.6</td>
<td>7551.6</td>
<td>7683.2</td>
<td>7760.6</td>
<td>7750.6</td>
</tr>
<tr>
<td>Change in Net worth = Closing Net worth less Opening net worth</td>
<td>20.1</td>
<td>220.6</td>
<td>287</td>
<td>131.6</td>
<td>97.4</td>
<td>716.6</td>
</tr>
</tbody>
</table>

(a) includes some minor differences in treatment of stock and flow concepts and rounding errors

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12. Using data items in the relationships in the household capital, financial and net worth accounts (illustrated above), the relationship between net worth and net saving is derived and presented in Table 4.
Table 4: Household Net Saving and Change in Net Worth, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14

<table>
<thead>
<tr>
<th></th>
<th>JQ13</th>
<th>SQ13</th>
<th>DJQ13</th>
<th>MQ14</th>
<th>JQ14</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross disposable income</td>
<td>248.4</td>
<td>268.9</td>
<td>275.4</td>
<td>253</td>
<td>259.7</td>
<td>10.6</td>
</tr>
<tr>
<td>less Total final consumption expenditure</td>
<td>270.7</td>
<td>216.9</td>
<td>228.0</td>
<td>218.6</td>
<td>221.7</td>
<td>8.8</td>
</tr>
<tr>
<td>less Consumption of fixed capital</td>
<td>20.1</td>
<td>20.2</td>
<td>20.3</td>
<td>20.5</td>
<td>20.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Equals Net Saving</td>
<td>17.6</td>
<td>31.5</td>
<td>27.1</td>
<td>16</td>
<td>17.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Closing net worth</td>
<td>7084.6</td>
<td>7284.6</td>
<td>7551.0</td>
<td>7683.2</td>
<td>7780.8</td>
<td>777.7</td>
</tr>
<tr>
<td>less Opening net worth</td>
<td>7043.9</td>
<td>7064.7</td>
<td>7284.6</td>
<td>7551.6</td>
<td>7683.2</td>
<td>776.7</td>
</tr>
<tr>
<td>equals change in net worth</td>
<td>20.1</td>
<td>228.0</td>
<td>287</td>
<td>131.6</td>
<td>67.4</td>
<td>7.7</td>
</tr>
<tr>
<td>less Revaluation of which</td>
<td>-9.3</td>
<td>174.7</td>
<td>237.9</td>
<td>100.6</td>
<td>75.1</td>
<td>7.8</td>
</tr>
<tr>
<td>real holding gains and losses</td>
<td>-7.0</td>
<td>144.5</td>
<td>174.1</td>
<td>86</td>
<td>11.6</td>
<td>7.6</td>
</tr>
<tr>
<td>neutral holding gains and losses</td>
<td>62.3</td>
<td>30.2</td>
<td>53.8</td>
<td>145</td>
<td>63.4</td>
<td>5.4</td>
</tr>
<tr>
<td>less Net Capital transfers</td>
<td>1.7</td>
<td>0.8</td>
<td>1.1</td>
<td>1.4</td>
<td>1.2</td>
<td>0.0</td>
</tr>
<tr>
<td>less other change in volume</td>
<td>0.9</td>
<td>6.3</td>
<td>6.4</td>
<td>6.4</td>
<td>6.4</td>
<td>0.0</td>
</tr>
<tr>
<td>less Net errors and omissions</td>
<td>3.0</td>
<td>6.3</td>
<td>4.6</td>
<td>7.9</td>
<td>7.9</td>
<td>0.0</td>
</tr>
<tr>
<td>less Other differences (a)</td>
<td>0.3</td>
<td>0.1</td>
<td>-0.1</td>
<td>-0.2</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Equals Net Saving</td>
<td>17.6</td>
<td>31.5</td>
<td>27.1</td>
<td>16</td>
<td>17.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>

(a) includes some minor differences in treatment of stocks and flow concepts and rounding errors.

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13. Table 4 highlights the role of net saving as a determinant of the real change in net worth (which is the change in net worth abstracting from price changes), but also illustrates that the major difference between change in net worth and net saving in any particular accounting period is the revaluation item. The next section discusses revaluations, usually referred to as holding gains and losses, in more depth.

**Holding gains and losses**

14. Nominal holding gains and losses result from changes in the value of assets and liabilities due solely to changes in their prices. They exclude the decline in value due to the use of assets in production, which is recorded in the national accounts as consumption of fixed capital. Nominal holding gains and losses can arise from all assets and liabilities whose values are not fixed in nominal terms. Gains and losses arising from price changes in land, building, inventories, equity and tradeable securities are the most significant in Australia.

15. The 2008 System of National Accounts, (2008 SNA) defines neutral holding gains over a period as:

'...the increase in the value of an asset that would be required, in the absence of transactions and other changes in volume of assets, to maintain command over the same amount of goods and services as at the beginning of the period.' (2008 SNA, paragraph 12.75)

And real holding gains as:

'...the amount by which the value of an asset increases over the period, in the absence of transactions and other changes in volume of assets.' (2008 SNA, paragraph 12.76).

16. Real holding gains are derived residually by deducting neutral holding gains from nominal holding gains. It should be noted that real holding gains and losses can also apply to assets and liabilities whose values are fixed over time, such as cash, deposits and loans. Even though their nominal values do not change, their real values in terms of purchasing power do vary with the general price change in the economy.
There is no unique measure of real and neutral holding gains and losses. Their magnitude depends to a large extent on the rate of inflation used. In the ASNA, the domestic final demand implicit price deflator (DFD IPD) has been used as the indicator of movement in general prices for estimates in household real and neutral holding gains and losses. It could be argued that the price measure should be specific to the goods and services that are purchased by the asset holder. For the household sector, this could suggest the use of the household final consumption expenditure implicit price deflator or a composite deflator including changes in land and dwelling prices. However, a sector specific price deflator was not chosen as it would imply that the real holding gain or loss on an identical asset (for example equity in a particular company) would differ depending on the sector in which it was held.

Appendix A provides detail on the derivation of nominal, neutral and real holding gains.

Graphs 3 and 4 below plot the revaluation account and the decomposition by asset type of real holding gains and losses for the household sector.
20. Graph 4 illustrates household real holding gains by type of asset and liabilities. The graph shows that the significant household real holding gains and losses are produced by land and dwelling estimates and financial assets and liabilities. Described below in detail is how the financial assets and liability and land and dwelling revaluations and other changes in volume (OCV) are derived.

**Financial assets and liabilities**

- Domestic currency, deposits and loans, and other accounts receivable and payable are not subject to any nominal holding gains or losses as they are denominated in domestic currency. However, although the nominal holding gains are zero, the neutral holding gains on currency are not. Under inflation, neutral holding gains are positive and so the associated real holding gains are negative and of an equal size.

- Bond price changes that are attributable to changes in market rates of interest constitute price and not volume changes. Therefore, they generate nominal holding gains or losses for both the issuers and the holders of the bonds. An increase in interest rates generates a nominal holding gain for the issuer of the bond and an equal nominal holding loss for the holder of the bond, and vice versa in the case of a fall in interest rates.

- Nominal holding gains or losses may accrue on bills of exchange and one name paper in the same way as for bonds. As short-term securities with much shorter times to maturity, the holding gains generated by interest rate changes are generally much smaller than on bonds with the same face values.

- For quoted shares and investment fund shares and units, market prices exist for example from stock exchange data and therefore holding gains and losses can be calculated.

- For unquoted forms of equity, holding gains and losses are calculated as the difference between closing minus opening levels less transactions.

- Majority of the holding gains and losses for household financial assets are derived from insurance technical reserves (ITR) from pension funds and life insurance. In the ASNA, ITR are derived residually from the balance sheets of the pension fund and life insurance sectors. It follows that if reasonably accurate stock and flows of the assets and repayable liabilities are calculated for pension funds and life insurance, and accurate measure of ITR and the related revaluations may be derived.

- Other changes in volume of financial assets and liabilities – write-offs or write-downs of bad debts by creditors; changes in the actuarially determined value of defined benefit pension schemes; and breaks in series caused by changes in reporting.

**Residential Land and dwelling**

- For residential land, the ASNA uses data compiled for the ABS Residential Property Price Index (RPPI) on the value of residential dwelling stock, which includes the value of land. The estimate for residential land is the RPPI value of the dwelling stock, minus the capital estimates of the value of dwellings derived by the Perpetual Inventory Model.

- In principle, where transactions in residential buildings occur, the land component should be reported separately from the building component. However, in practice, the total sales value is recorded as gross fixed capital formation (GFCF). The value of transfer costs involved in the transaction (such as stamp duties, agents' commissions and lawyers' fees) is included in GFCF.
The holding gains and losses for residential land dwelling are calculated as the difference between closing minus opening levels less GFCF and other volume changes.

Residential land volume change is defined as change due to land improvement measures. Urban land is more economically valuable than rural land because of the higher utility provided to urban dwellers. As urban boundaries expand and land is rezoned for urban use, it can therefore be argued that the volume of the resource changes because it is now available for higher value uses. The volume estimates for land are therefore compiled by assuming that land volumes do change over time. In practice, it is difficult to distinguish between price and volume changes for land. Consequently, the growth in the volume of land has been estimated by assuming that the volume of residential land grows at one-third of the rate of growth in the volume of overlying dwelling construction.

The Analytical Measures

21. In the ASNA framework, holding gains and losses are included in the balance sheet when estimating the value of closing assets and liabilities, but they are excluded from the income accounts and therefore from estimates of income and saving. 2008 SNA recognises that real holding gains are an economic variable in their own right that could be taken into account alongside income for the purposes of analysing consumption or capital formation. It states that:

'...It can be argued that real holding gains ought to be assimilated with income as defined in the SNA to obtain a more comprehensive measure of income, but there is no consensus on this. Apart from the practical difficulty of estimating real holding gains and losses, it is likely that their impact on economic behaviour is not the same as that of income received in cash or in kind.' (2008 SNA, paragraph 12.92)

22. The series published for the household sector in the ASNA supplement the traditional estimates of household gross disposable income and net saving by adding in a number of items, real holding gains and losses, net capital transfers and other changes in volume. In total, these additions are referred to as ‘other changes in real net wealth’ which, when added to gross disposable income and net saving, give the analytical measures. The measures are presented in ASNA ensuring that the accounting links between the analytical measures of net saving and income and the change in net worth are made explicit.

23. Table 5 and 6; and Graphs 5, 6 and 7 below show the effect of adding ‘other changes in real net wealth’ to household gross disposable income and net saving.

Table 5: Household Gross Disposable Income plus Other Changes in Real Net Wealth, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14

<table>
<thead>
<tr>
<th></th>
<th>Q113</th>
<th>Q213</th>
<th>Q313</th>
<th>Q413</th>
<th>M014</th>
<th>JQ14</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross disposable income</td>
<td>248.4</td>
<td>296.7</td>
<td>275.4</td>
<td>253</td>
<td>259.7</td>
<td>1056.8</td>
<td></td>
</tr>
<tr>
<td>plus Other changes in real net wealth</td>
<td>-63.6</td>
<td>151.8</td>
<td>181.5</td>
<td>93.4</td>
<td>20.1</td>
<td>446.7</td>
<td></td>
</tr>
<tr>
<td>Real holding gains and losses</td>
<td>-71.6</td>
<td>144.5</td>
<td>174.1</td>
<td>86</td>
<td>11.7</td>
<td>416.3</td>
<td></td>
</tr>
<tr>
<td>Net Capital transfers</td>
<td>1.7</td>
<td>0.8</td>
<td>1.1</td>
<td>1</td>
<td>2.3</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Other change in volume</td>
<td>6.3</td>
<td>6.3</td>
<td>6.4</td>
<td>6.4</td>
<td>5.4</td>
<td>25.5</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Household Gross Disposable Income plus Other Changes in Real Net Wealth

ABS, Australian National Accounts: Financial Accounts, June Quarter 2014, cat. no. 5232.0
Graph 5

Table 6: Household Net Saving plus Other Changes in Real Net Wealth, current prices, original, June Quarter 2013 - June Quarter 2014 and 2013-14.

<table>
<thead>
<tr>
<th></th>
<th>JQ13</th>
<th>SQ13</th>
<th>DQ13</th>
<th>MQ14</th>
<th>JQ14</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Saving</td>
<td>17.5</td>
<td>31.6</td>
<td>27.1</td>
<td>16.0</td>
<td>17.4</td>
<td>92.1</td>
</tr>
<tr>
<td>plus Other changes in real net worth</td>
<td>53.5</td>
<td>151.6</td>
<td>181.6</td>
<td>93.4</td>
<td>20.1</td>
<td>445.7</td>
</tr>
<tr>
<td>Real holding gains and losses</td>
<td>-71.6</td>
<td>144.5</td>
<td>174.1</td>
<td>86</td>
<td>11.7</td>
<td>416.3</td>
</tr>
<tr>
<td>Net Capital transfer</td>
<td>1.7</td>
<td>0.8</td>
<td>1.1</td>
<td>1</td>
<td>2</td>
<td>4.9</td>
</tr>
<tr>
<td>Other change in volume</td>
<td>8.3</td>
<td>6.3</td>
<td>6.4</td>
<td>6.4</td>
<td>6.4</td>
<td>25.5</td>
</tr>
<tr>
<td>Net saving plus other changes in real net wealth</td>
<td>-46.0</td>
<td>183.2</td>
<td>298.7</td>
<td>109.4</td>
<td>37.5</td>
<td>538.8</td>
</tr>
</tbody>
</table>

ABS, Australian National Accounts: Financial Accounts, June Quarter 2014, cat. no. 5232.0

Graph 6
Graph 7
CLOSING NET WORTH, $B

Graph 8
HOUSEHOLD NET SAVINGS RATIO

Trends in Household Income, Saving and Wealth

24. Graphs 3-8 presented above provide some insight into household behaviour related to income, consumption, saving and wealth in Australia in the last 25 years. Some of the drivers behind this behaviour has been documented by the Reserve Bank of Australia in articles and speeches (see references in the bibliography), and is referred to below in the analysis.
Late 1980s to 2006-07

- Household net saving ratio declined from the late 1980s down to nearly zero in 2002-03, and increased up to 2.5% in 2006-07. Prior to the early 1990s, household had little leverage, in part due to the effect of high nominal interest rates in an environment of high inflation. From the early 1990s interest rates gradually started to decline, and by mid 2000s, annual rates were between 6-7%. From the early 1990s financial liberalisation and innovation (e.g. deregulation of banking operations) that had gradually occurred in Australia from the 1970s to the mid-1980s showed their effects through increased availability of credit for investment in housing and to a lesser extent for investment in the financial markets. The result was a lengthy period of rising household leverage, rising house prices, high levels of confidence, a strong sense of general rising prosperity, declining saving from current income and strong growth in consumption. He early 1990s saw Australia introduced the Superannuation (Pension Fund) Guarantee Scheme, which in turn increased financial flows into pension funds, and overall household financial assets. The effects on consumption and saving seen during this period may be described as the "wealth effects" on household behaviour.

- Some of the driving factors related to the decline in household saving can be seen in graphs 3 and 4 which show the increase in real holding gains for this period driven by land and dwelling, and financial assets. The overall wealth effects can be seen when other changes in real net wealth is added to gross disposable income and net saving, graphs 5 and 6.

2007-08 to 2013-14

- With the onset of the global financial crisis and with the improvements in the Terms of trade (from 2003-04 to 2009-10) the previous trends in household income, saving and wealth changed. Household income began to rise at a higher pace to consumption, and this was reflected in increased net saving ratios. The global financial crisis resulted in a decline in the global availability of credit, and in Australia this led to financial institutions implementing stricter lending criteria, which resulted in a decline in household borrowing. Overall household behaviour indicated a much more cautious household sector in a period of uncertainty during the global financial crisis.

- Specifically when the global financial crisis hit Australia, graph 7 shows the decline in net worth from March 2008. However, the transmission of the crisis through the real net wealth effects may be observed in graphs 3 and 4, the losses in real holding gains, and specifically real holding losses in financial assets (insurance technical reserve and equity) and land and dwellings. Similarly, but to a smaller effect, the crisis instigated by the Greek debt crisis may be seen in Australia with real holding losses in 2011 (losses in both financial and land and dwelling assets), and in June quarter 2013 the graph shows losses in real holding gains, driven by significant losses in financial assets. The overall wealth effects during the global financial crisis, the Greek debt crisis and the losses in financial assets in June Quarter 2013 on households can be seen when other changes in real net wealth is added to gross disposable income and net saving, graphs 5 and 6.

Conclusion

The tables showing analytical measures of income, saving and wealth have been included in the ASNA since 2002-03 to aid analyses where it may be useful to adopt alternative combinations of data items to those used in the standard national accounts measures. In particular, items from the other changes in assets account relating to real holding gains and losses on assets and liabilities and net additions to natural resources have been added to the traditional national accounts measures of income and saving. They may aid in the analysis of consumption and saving behaviour. They are also more consistent with
concepts of income and saving often described in economic theory. Nevertheless, the standard measures used in the national accounts remain relevant for most types of analyses.

While the analytical measures presented in the paper move towards providing some information at the aggregate level on the drivers of household consumption, saving and wealth accumulation behaviour. To obtain more conclusive information on the drivers of households, it would be more useful to study some of the changes in household behaviour at the micro level. The ABS released for the first time (3 October 2014), time series indicators of the distribution of income, consumption and wealth for Australian households in the context of the Australian National Accounts (Australian National Accounts, Distribution of Household Income, Consumption and Wealth, 2003-04 to 2011-12, cat no 5204.0.55.011). The time series data covers the period 2003-04 to 2011-12, and the results are based on ABS household survey and the ASNA. The questions that can be answered from this dataset may be broadly categorised to those related to a household group's (i) contribution to growth in income (consumption, gross saving and net worth) and (ii) material living standards, such questions as:

- which household group benefitted from the increase in gross disposable income, and their components such as interest and dividend receivable during the period 2003-04 to 2011-12;

- what was the saving behaviour of household groups before, during and after the global financial crisis;

- which household groups are investing in insurance technical reserves, and over time which household groups are benefitting from growth in pension fund technical reserves; and

- for household groups, what is the contribution of residential dwelling and land to growth overtime in net worth per household.
References

1. ABS, Australian National Accounts: Financial Accounts, June Quarter 2014, cat. no. 5232.0

2. ABS, Australian System of National Accounts, 2001-02, cat. no. 5204.0 ‘Saving, Borrowing, Investment and Wealth’


Appendix

Nominal holding gains

Total holding gains in the revaluation account are equal to the sum of real and neutral holding gains. In the ASNA, total holding gains are derived as a balancing item once opening and closing stocks, net capital formation, other changes in volume and net financial transactions have been taken into account. 2008 SNA allows for total holding gains to be estimated both directly and as a residual. The direct estimate (referred to in this paper as “nominal holding gains” (NOM)) is calculated as:

\[ \text{NOM} = q^*(p_c - p_o) \]  

(A)

Where \( q^* \) is a fixed quantity,

\( p_c \) is the price of the asset at the end of the period

and \( p_o \) is the price of the asset at the beginning of the period.

In order to separately analyse the change in price on a fixed quantity, \( q^* \) needs to be defined. The definition chosen in this paper is the quantity at closing, which is equal to quantities at opening, plus the net of quantities acquired and disposed of during the period. It is necessary to separate the price and volume components of the transaction flows in order to reconcile the revaluation account with nominal holding gains. This can be achieved with the following assumptions:

1. Transactions that occur during the period are continuous and equal with respect to volumes. Effectively, if we knew that the opening and closing quantities were different by twenty units, this assumption allocates the twenty units equally across the four quarters, with five units in each quarter. This allows for the price component in the transaction flows that occur during the period to be removed and replaced with the prices prevailing at the opening of the period.

2. The various assets and liabilities available at opening are also available at closing and vice versa. Effectively, this means that no asset or liability variety is entirely destroyed during the period and that no new asset or liability variety is introduced during the period. This assumption serves to control the quality of assets and liabilities. It is unlikely to hold in practice, but it is considered that violations of this assumption are not significant enough to warrant special treatment.

3. Prices are either monotonically increasing or decreasing through time. This facilitates the conversion of average period prices to prices at opening and closing.

\[ \text{NOM} = q^*(p_c - p_o) \]  

(i)

Where \( q^* \) is a fixed quantity,

\( p_c \) is the price of the asset at the end of the period

and \( p_o \) is the price of the asset at the beginning of the period.
Nominal holding gains as defined above can be obtained using the information available in the balance sheet and accumulation accounts:

The opening balance : \( p_o q_o \)
The closing balance : \( p_c q_c \)
and Transactions occurring during the period; \( sp_i q_i \)

where \( p_i q_i \) are transactions recorded at the value at which they occur at the time at which they occur \((i = 1, 2, \ldots)\) during the period.

Holding gains can accrue to quantities held at opening as well as quantities acquired during the period. In order to capture the full price effect \((p_c - p_o)\) on assets held during a period, the value of the transactions that are acquired during the period are deflated to opening period prices. This is so that quantities acquired during the period can be treated as if they were acquired at opening. This alters the expression for nominal holding gains to being:

\[
\text{Closing Balance} - (\text{Opening Balance} + \text{Deflated Transactions}) = \text{Nominal Holding Gains}
\]

The information available in the balance sheet and accumulation accounts can then be manipulated to reflecting the 2008 SNA formula for the direct estimation of nominal holding gains. Deflating the value of the transactions by an average price index \((p_a)\), and then reflating them to opening period prices \((p_o)\) removes the individual transaction prices \((p_i)\).

\[
\begin{align*}
(p_c q_c - (p_c q_o + [p_c/p_a x sp_i q_i])) & = q^*(p_c - p_o) \\
(p_c q_c - (p_c q_o + p_o Sq_i)) & = q^*(p_c - p_o) \\
(p_c q_c - p_o (q_o + Sq_i)) & = q^*(p_c - p_o)
\end{align*}
\]

If the following assumption is made for \(q^*\):

\[
q^* = q_c = q_o + Sq_i
\]

then it can be substituted into equation (v) to give:

\[
\begin{align*}
(p_c q^* - p_c q_o) & = q^*(p_c - p_o) \\
q^*(p_c - p_o) & = q^*(p_c - p_o)
\end{align*}
\]

Neutral and real holding gains

Once nominal holding gains are derived, they can be allocated between their real and neutral components. 2008 SNA defines neutral holding gains (NHG) as

'...the increase in the value of an asset that would be required, in the absence of transactions and other changes in volume of assets, to maintain command over the same amount of goods and services as at the beginning of the period.' (2008 SNA, 12.75, p. 248)

and real holding gains (RHG) as

'...the amount by which the value of an asset increases over the period, in the absence of transactions and other changes in volume of assets.' (2008 SNA, 12.76, p. 248).
Neutral holding gains are calculated as:

$$\text{NHG} = q^* p_o (r_t / r_o - 1)$$  \hspace{1cm} \text{(B)}$$

Where \( p_o \) represents opening period prices, \( q^* \) is derived, and \( r_t / r_o \) represent the movement in the general price level.

Once neutral holding gains have been calculated, real holding gains can be residually derived as:

$$\text{RHG} = \text{NOM} - \text{NHG}$$  \hspace{1cm} \text{(C)}$$

The revaluation account and the calculated nominal holding gains are not identical in value, because the former is calculated as a residual, while the latter is calculated directly, however the two methods derive estimates that are very similar. In order to maintain consistency with figures derived in the revaluation account, the proportion of RHG and NHG to NOM are applied to derived revaluation account.