Emphasising the Household Perspective within the Australia National Accounts

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Abstract

The ABS has progressively improved and expanded the measures and analyses of the household sector within the Australian National Accounts. This paper summarises these developments, demonstrating how they collectively support and improve our understanding of household's economic circumstances.

Recent events, including the Global Financial Crisis, have refocused attention on ensuring that the National Accounts is providing the necessary household sector data in a timely and fit-for-purpose manner. Recommendation 2 of the Stiglitz-Sen-Fitoussi report called for an emphasis on the household perspective, stating '(w)hile it is informative to track the performance of economies as a whole, trends in citizens' material living standards are better followed through measures of household income and consumption.

This paper details how the ABS has responded by: reviewing estimates of household wealth including durables, houses and land; increasing the frequency of household balance sheet to quarterly; developing analytical income measures (including holding gains as income for example); and by producing distribution measures of household income, consumption, savings and wealth in the National Accounts. The paper will describe the purpose and use of this data within the wider theme of placing emphasis on the household perspective, and will summarise the sources and methods underpinning the estimates.

Introduction

The Australian Bureau of Statistics (ABS) is responsible for compiling Australia's National Accounts; a set of high quality macroeconomic aggregates that provide vital information on the size, structure and performance of the Australian economy. While the National Accounts intends to represent all aspects of the economy, there is an absence of a complete account of the household sector, particularly changes in wealth and distribution of income.

A better representation of the household sector and issues of equity are needed to understand material well-being. In response to the Stiglitz-Sen-Fitoussi Commission (2009), the G-20 Data Gaps initiative (2009) and users of National Accounts data stressing the importance of a greater focus on the household and measures of well-being, the ABS has undertaken a number of initiatives to complement traditional measures of economic performance.

The Stiglitz-Sen-Fitoussi Commission recommendations provide a useful framework with which to assess the current provision of statistics, and areas where the provision of statistics may be enhanced. A summary of this assessment was undertaken by the ABS and used to formulate a series of developments.

Recommendation 1: When evaluating material wellbeing, look at income and consumption rather than production

The ABS already publish an extensive range of income and consumption estimates both quarterly and annually. The measure used within the ABS' Measures of Australian Progress is Real Net National Disposable Income.

No further work required.

Recommendation 2: Emphasise the household perspective

The ABS already publishes disposable income estimates which include allocation of STiK.

Analysis of real household income should be undertaken, with the aim of explaining why real household income may move differently to GDP.

Recommendation 3: Consider income and consumption jointly with wealth

The ABS produces an annual estimate of household wealth, but there is no quarterly estimate available and the scope of consumer durables was not reviewed with the implementation of the 2008 SNA

A review of 'durables' should be undertaken and quarterly household balance sheets developed

Recommendation 4: Give more prominence to the distribution of income, consumption and wealth

The ABS produces estimates of the distribution of income, consumption and wealth in its household surveys but not within the national accounts.

Increase the prominence of household distribution of income, consumption and wealth estimates by producing these within the national accounts framework.

Recommendation 5: Broaden income measures to non-market activities

The ABS had not undertaken an exercise in valuing unpaid work for some time, additionally illegal activity has not been included in the Australian national accounts.

Update estimates of Unpaid work with the latest time-use survey, re-visit the non-observed economy estimates with a particular focus on developing estimates of illegal activity.

This paper will provide an explanation of the work undertaken in response to these recommendations.
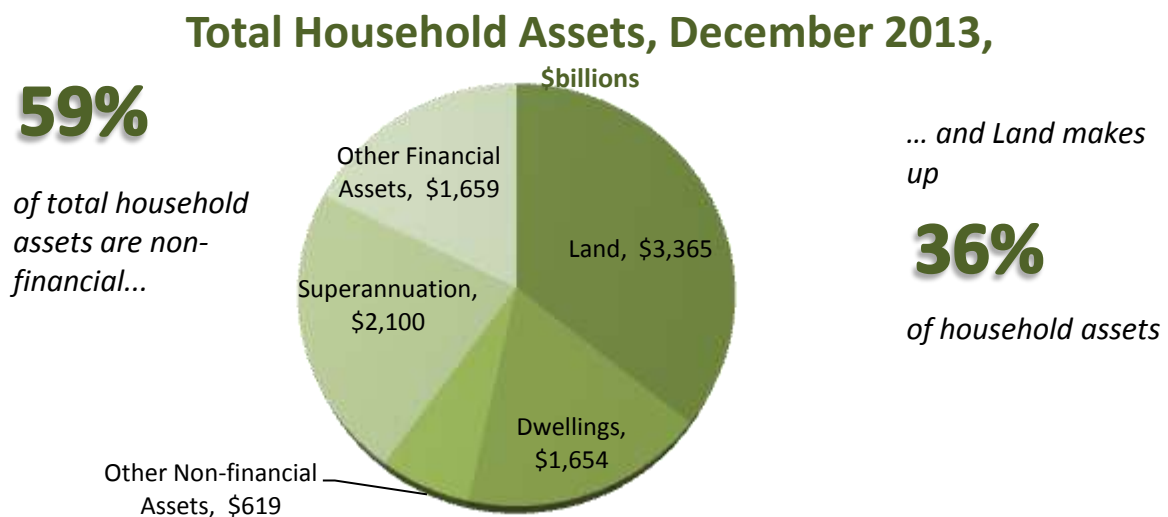
Household Wealth

Quarterly Household Balance Sheets

Changes in wealth can have a significant impact on economic behaviour including both consumption and saving: during and immediately after the Global Financial Crisis, sharp declines in household wealth were observed which coincided with changes in household consumption and saving behaviour.

During the financial crisis the only quarterly statistics on household wealth available were for stocks of financial assets and liabilities for the household sector. Omission of non-financial assets means users are unable to analyse the short-run impacts of changes in wealth on household consumption and saving via a complete balance sheet. Non-financial assets are approximately two-thirds larger than the value of financial assets, and their absence from the quarterly dataset was a significant data gap.

In the September quarter 2013, the ABS commenced publishing quarterly Household Balance Sheets by extending the scope of household assets beyond financial assets to include household non-financial assets. This move addresses a significant data gap in the household sector, with non-financial assets, such as land and dwellings, accounting for approximately two thirds of total household assets, or $5,638 billion.

The publication of these tables improved the capacity to formulate policy in response to dynamics of income, wealth, consumption and saving: users will be able to develop a deeper understanding of drivers of short run changes in household wealth, and how changes in household wealth through mechanisms such as fluctuations in property prices or equity values can in turn explain changes in household consumption and saving patterns.

Total Household Assets, December 2013, $billions

59%

of total household assets are non-financial...

Other Financial Assets, $1,659

Superannuation, $2,100

Other Non-financial Assets, $619

Land, $3,365

Dwellings, $1,654

... and Land makes up

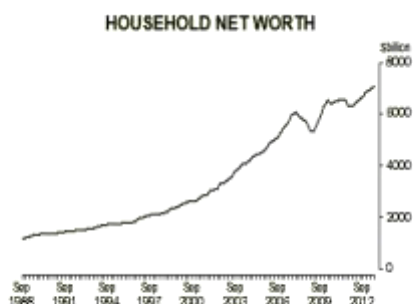**36%**

of household assets

The household balance sheet presents the household stock of assets and liabilities at a point in time, in this case quarterly. The entries at the closing balance sheet are the sum of the entries in the opening balance sheet plus transactions in the capital and financial accounts, plus entries from the

other changes in the volume of assets account and the revaluations account. The balancing item is net worth which represents the difference between total assets and total liabilities.
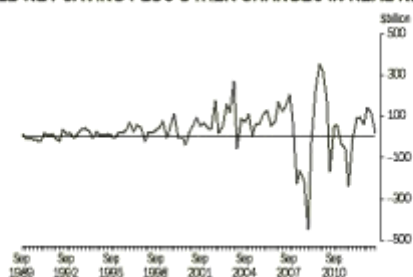
Changes in balance sheet aggregates and net worth positions are of key interest, particularly because of the potential size of holding gains relative to transactions in driving changes in net worth. Changes in wealth can have a significant impact on economic behaviour including both consumption and saving and the quarterly household balance sheet presents an opportunity for timelier observation of these changes.

The global financial crisis resulted in one of the more severe declines in household wealth; household net worth fell for five consecutive quarters beginning in March 2008. The largest decrease was in December 2008, driven by falls in the value of land, superannuation and shares and other equity. Much of the decline in household net worth is explained by other economic flows. Households tightened their belts in response, reducing growth in final consumption expenditure and increasing saving.

HOUSEHOLD NET WORTH

The publication of a complete household balance sheet has the added benefit of users being able to analyse the short-run impacts to changes in wealth and household consumption and saving through. Additionally, the quarterly household balance sheet provides the necessary information to formulate policy responses to changes in income, wealth, consumption and saving.

HOUSEHOLD NET SAVING PLUS OTHER CHANGES IN REAL NET WEALTH

Quarterly Household Balance Sheets Sources and Methods

Balance sheets present stocks of assets and liabilities as at the date for which the balance sheet is compiled. The entries for the closing balance sheet are the sum of the entries in the opening balance sheet plus transactions reflected in the accumulation accounts (the capital account and financial account), plus entries in the other economic flows accounts (the other changes in the volume of assets account and the revaluations account). The balancing item is net worth, representing the difference between total assets and total liabilities.

Non-financial produced assets: Quarterly fixed assets, plantation standing timber inventories and consumer durables (the latter is a memorandum item on the balance sheet) are derived through modelling techniques. We have chosen not to use net capital formation as a quarterly indicator as it is only representative of transactional flows, and would generate volatile quarterly movements if used as an indicator. As there are no other appropriate quarterly indicators available, we have decided to use a cubic interpolation algorithm which results in much smoother quarterly movements. This method creates a continuous time representation by fitting a cubic spline between annual observations. The function requires four years' worth of annual data to derive the quarterly series. In recent quarters, where four years of annual data is not available, the quarterly series is derived linearly. When annual data is revised, we can expect to see the quarterly series revised for the same period and one to two years either side.

Non-financial non-produced assets: Household residential land is currently derived as the residual of the Reserve Bank of Australia's value for household land and dwellings, less the ASNA estimate for dwellings. The RBA publish their value for household land and dwellings quarterly in statistical table *B20 Selected Assets and Liabilities of the Private Non-financial Sectors*. It is compiled by applying sales data supplied by a private sector contractor to ABS Census of Population and Housing data on the number of dwellings.

The ABS developed a total value of dwelling (including land) stock series that we hope to implement in the balance sheets in this year's annual national accounts. The new methodology involved combining ABS Census of Population and Housing data with mean dwelling values at the Statistical Areal Level 2 (SA2) classification. SA2 is the lowest level of the Australian Statistical Geography Standard (ASGS) for which population, health and other non-Census ABS data are generally available. The census dwelling count data is moved forward quarterly using a model based on Estimated Resident Population. The mean dwelling values are derived by the ABS using sales data from the Valuer-General's Office of each state and territory. This data is quality adjusted to exclude sales that do not represent market values. The mean dwelling values are considered complete after nine months, therefore the series is expected to be revised for the three most recent quarters with each release. The ABS total value of dwelling stock is the product of the dwelling count and the mean dwelling value.

Financial assets and liabilities: These estimates were already published for the household sector in *5232.0 Australian National Accounts: Financial Accounts*.

Durables

The ABS reviewed its estimated of household durables to ensure they were aligned with the 2008 SNA.

2008 SNA defines a consumer durable in paragraph 9.42 as *"a good that may be used for purposes of consumption repeatedly or continuously over a brief period of a year or more"*.

Listed in the Appendix A1.45 of 2008 SNA are the following line items that SNA define as consumer durables and their corresponding Classification of Individual Consumption According to Purpose (COICOP) codes.
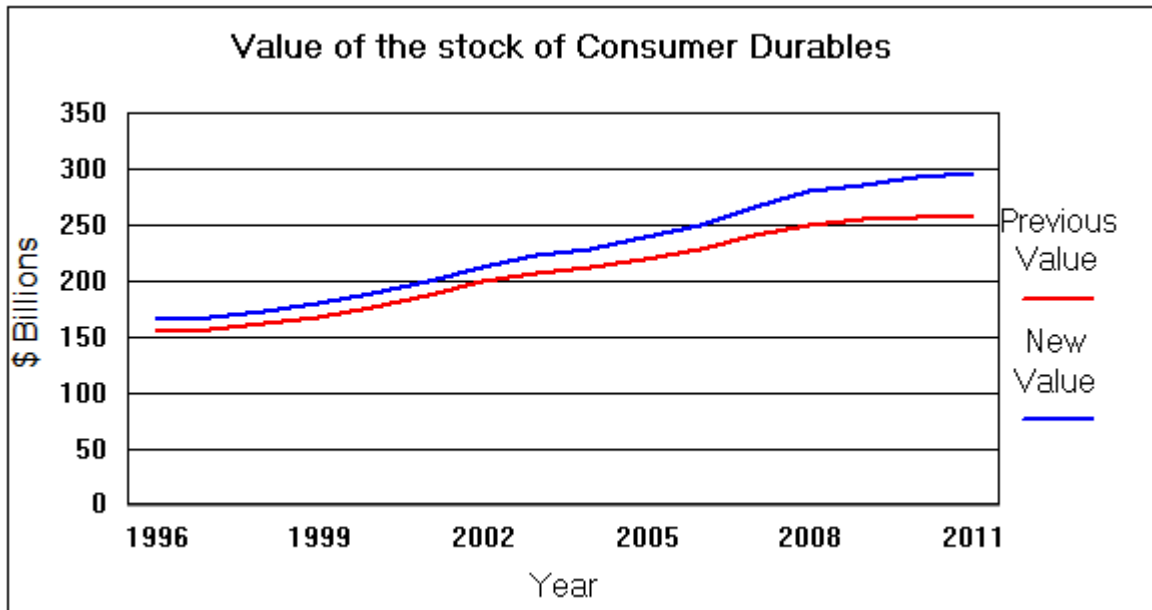
Table 1.

Furniture and household appliances

     05.1.1 - Furniture and furnishings

     05.1.2 - Carpets and floor coverings

     05.3.1 - Major household appliances whether electric or not

     05.5.1 - Major tools and equipment for house and garden

Personal transport equipment

     07.1.1 - Motor cars

     07.1.2 - Motor cycles

     07.1.3 - Bicycles

     07.1.4 - Animal drawn vehicles

Recreational and entertainment goods

     08.2.0 - Telephone and telefax equipment

     09.1.1 - Equipment for the reception, recording and reproduction of sound and pictures

     09.1.2 - Photographic and cinematographic equipment and optical instruments

     09.1.3 - Information processing equipment

     09.2.1 - Major durables for outdoor recreation

     09.2.2 - Musical instruments and major durables for indoor recreation

Other durable goods

     12.3.1 - Jewellery, clocks and watches

     06.1.3 - Therapeutic medical appliances and equipment

As a result of the review, the ASNA scope of consumer durables will more closely match the 2008 SNA definition. The item defined by 2008 SNA not included in the ASNA is animal drawn vehicles. The items not included in the 2008 SNA definition but included in the ASNA are small electric household appliances, and small tools and miscellaneous goods.
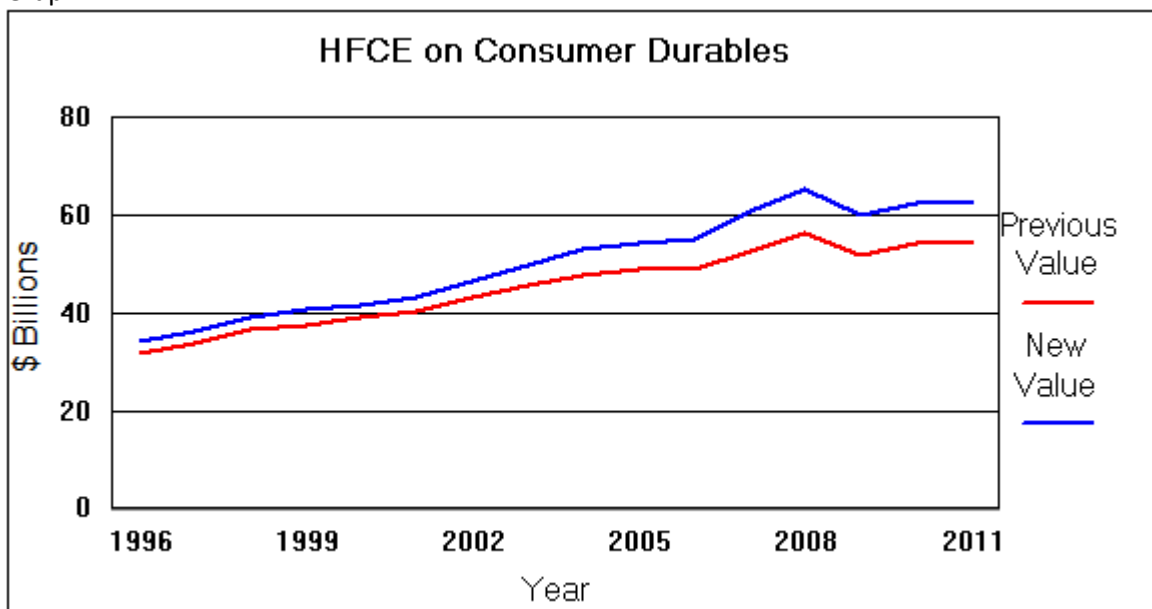
Graph 1 illustrates the value of the stock of consumer durables, before and after the alignment with the 2008 SNA of the scope of consumer durables in the ASNA. The increase in the value of the stock of consumer durables by $37.1 billion (14.3%) in 2010-11 after alignment with 2008 SNA is due to the sum of the value of the stock of audio-visual, photographic and information processing equipment; other major durables for recreation; jewellery, clocks and watches; and therapeutic appliances and equipment, being greater than the sum of the value of the stock of household textiles; glassware, tableware and household utensils; and non-durable household goods.

Graph 1.

Graph 2 illustrates the value of annual household final consumption expenditure on consumer durables, before and after the alignment with the 2008 SNA of the scope of consumer durables in the ASNA. The increase in household final consumption expenditure by $8.5 billion (15.0%) in 2010-11 after alignment with 2008 SNA on consumer durables is due to the sum of household final consumption expenditure on audio-visual, photographic and information processing equipment; other major durables for recreation; jewellery, clocks and watches; and therapeutic appliances and equipment, being greater than the sum of household final consumption expenditure on household textiles; glassware, tableware and household utensils; and non-durable household goods.
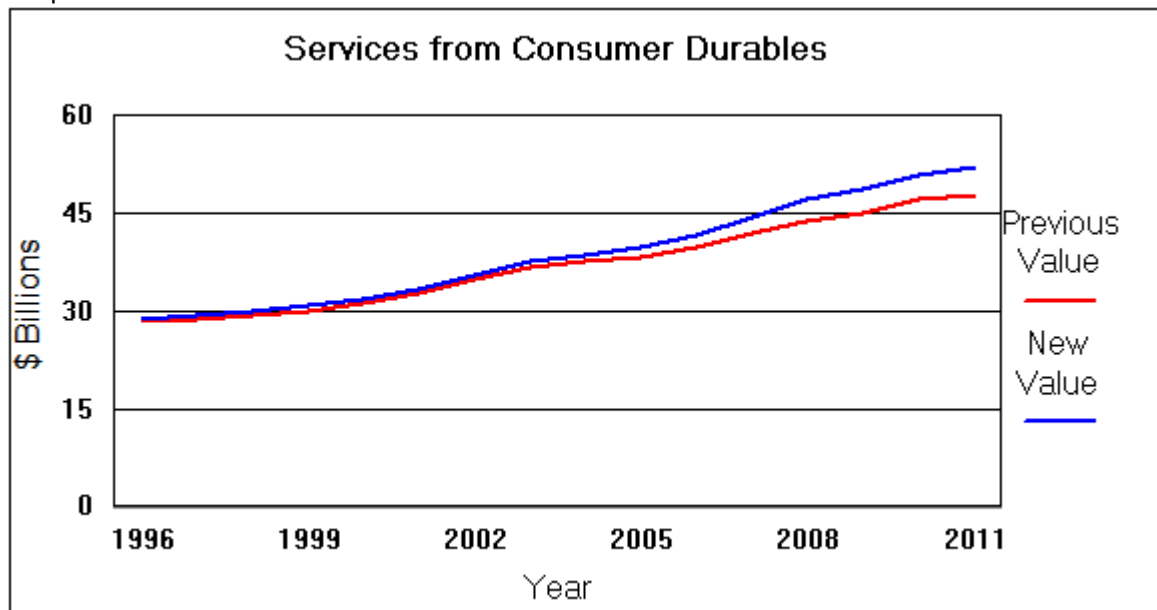
Graph 2.

Graph 3 illustrates the value of services from consumer durables, before and after the alignment with the 2008 SNA of the scope of consumer durables in the ASNA. The increase in the value of services by $4.1 billion (8.2%) in 2010-11 after alignment with 2008 SNA from consumer durables is due to the sum of the value of services from audio-visual, photographic and information processing equipment; other major durables for recreation; jewellery, clocks and watches; and therapeutic

appliances and equipment, being greater than the sum of the value of services from household textiles; glassware, tableware and household utensils; and non-durable household goods.

Graph 3.

Household Production and Income

The value of Unpaid Work and Illegal Drug Production falls outside of the current conventional measures of production, as captured by the ASNA. By its very nature, Unpaid Work conducted by Households and Illegal Drug Production are not directly measurable, or are very costly to attempt to measure. However, measuring the value of Unpaid Work and Illegal Drug Activity is a worthwhile pursuit, for when the results are combined with traditional measure of production, a more complete picture of the nation's economic activities are attained.

Non-Observed Economy

In September 2013, the ABS published an information paper entitled 'The Non-Observed Economy and Australia's GDP, 2012'. The paper included new research on an experimental estimate of the illegal drug economy of Australia. An experimental series was developed that estimated illegal drug production at 0.4% of GDP. The information paper demonstrated that not adjusting for illegal production due to the absence of regular and reliable data does not significantly understate GDP. The principal source of data was the Australian Institute of Health and Welfare National Drug Strategy Household Survey.

A major objective of this review is to estimate the magnitude of elements of the NOE which affect the national accounts, and the NOE's proportion of Gross Domestic product (GDP). This review will be repeated periodically. Adjustments to GDP will continue to be made for underground production, informal production and household production of goods for own final use, but not for illegal production due to the absence of regular and reliable data sources.

Transactions in the NOE that are not covered by estimates in the national accounts have implications for the quality of the national accounts and other business statistics. Whether legal or not, whether taxes are paid or not, economic activity generates income which forms part of the national income

To measure the economy accurately requires constructing estimates of classes of economic transactions that are difficult to measure including the NOE. The NOE is economic transactions absent from the basic data used to compile the national accounts because they are "underground, illegal, informal, contribute production for own use or are missed due to deficiencies in data collection". Statistical agencies are guided in measuring the NOE by an OECD publication titled **Measuring the Non–Observed Economy: A Handbook**, (the Handbook).

The Handbook draws on 2008 SNA definitions to define the NOE and promote a common nomenclature by outlining five components as presented in Table 2.

TABLE 2: COMPONENTS OF THE NON–OBSERVED ECONOMY

Economic Underground – Units are deliberately under/over reporting and/or do not register with the tax office	1. Underground production (cash economy) – deliberate concealment of legal activities to avoid tax payments.
	2. Illegal production – covers activities forbidden by law where there is mutual consent (e.g. illegal prostitution or illegal drug production).
	3. Informal production – broadly characterised as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons

	concerned.
Other Non–Observed Economic activity	4. Household production for own final use – includes production of crops, livestock, construction of own houses, imputed rents, and domestic services.
	5. Statistical underground – production missed due to deficiencies in data collection e.g. under coverage of enterprises, non–response, under reporting.

Using the approaches outlined in this paper, the analysis indicates that the combined adjustments to the official GDP estimates for the five components of the non–observed economy are unlikely to be greater than 3% in total. Currently, the ABS only includes estimates of **underground production and household production for own final use** within aggregate national accounts statistics.

MEASURING ILLEGAL PRODUCTION

The 2008 SNA states that illegal production should be included within the production boundary, provided a production process exists and the outputs have market demand. The Balance of Payments and International Investment Position Manual sixth edition (BPM6) is consistent with the SNA on illegal production.

The SNA classifies illegal production within two categories:

a. The production of goods or services whose sale, distribution or possession is forbidden by law;
b. Production activities that are usually legal but become illegal when carried out by unauthorized producers; for example, unlicensed medical practitioners.

Transactions for illegal products need to be recorded to obtain comprehensive measures of production and consumption, and to prevent errors appearing elsewhere in the accounts. 2008 SNA treats illegal actions that fit the characteristics of transactions (notably the characteristic that there is mutual agreement between the parties) in the same way as legal actions. Thus, although the production or consumption of certain goods such as narcotics may be illegal, market transactions in such goods should, in principle, be recorded in the national accounts. Due to the difficulty in identifying and valuing illegal transactions, no explicit estimates for such activities are made in the ASNA. However, some illegal transactions are likely to be included in the national accounts if they are reported as part of legal activities or as income for taxation purposes.

To evaluate new data sources experimental aggregates were developed to estimate size of the illegal drug economy relative to Australia's GDP. The illegal drug economy is defined as the market for transactions involving illegal drugs where there is mutual consent between parties, and is presumed to be the largest component of illegal production in Australia.

A general method for measuring the demand and supply of specific goods and services in the national accounts is to separately compile supply (production and imports) and demand (consumption and investment) source data from independent sources, and confront (compare,

contrast and reconcile differences) the two estimates. This method usually exploits the best available data, and the confrontation results in a balanced outcome with less chance of measurement errors in the national accounts. Usually, in aggregate, supply side data from producers and importers is more reliable than demand side data from consumers, investors and exporters, as there are relatively few producers and importers compared to the number of consumers and investors for most products. In cases of disagreement between supply side and demand side data it is common for supply side estimates to be greater than demand side estimates, and for balancing adjustments to be made to final or intermediate consumption, or investment, depending on the nature of the product.

Unfortunately, supply side (production and imports) data are unavailable for illegal drugs. However, there are data sources that provide information on various aspects of the demand for illegal drugs. The principal source of data is the Australian Institute of Health and Welfare (AIHW) National Drug Strategy Household Survey (NDSHS). The current ABS study estimates final consumption by drug type, and then infers production and imports using supplementary data for prices, drug purity and production costs. The survey results use some assumptions about the nature of the Australian illegal drug market to simplify the estimation methodology. The rest of this section describes the estimation model and some of the methodological issues related to the model.

SCOPE OF THE EXPERIMENTAL AGGREGATES

4.7 In Australia, there is a wide range of illegal drugs consumed including cannabis, cocaine, 3,4–methylenedioxy–N–methylamphetamine (MDMA or ecstasy), Lysergic acid diethylamide (LSD), methamphetamines, amphetamines, heroin, 'magic mushrooms', and a range of illegally purchased pharmaceuticals. The clandestine nature of the drug market, and the subsequent data scarcity, has limited the experimental estimates to the most commonly used and economically significant drugs.

The first assumption is that the economically significant illegal drugs are:

- Cannabis (categorised by crop growing method)
- Amphetamines group (categorised as either crystalline or non–crystalline)
- MDMA
- Heroin
- Cocaine.

An annual time series of consumption has been derived for the seven calendar years from 2004 to 2010.

THE GDP IDENTITY

GDP measurement methods

The three methods of measuring GDP (expenditure method, GDP(E); production method, GDP(P); income method, GDP(I)) measure the same concept. Any differences that arise between the different methods, the "statistical discrepancy", should be interpreted as measurement error, not as

a conceptual difference between the three methods. The illegal drugs estimation method exploits this equality, and thus:

$$GDP(E) = GDP(P) = GDP(I) \dots [1]$$

This **assumes** that the statistical discrepancy for the study = 0

GDP(E) Estimates

The principal sources of data are demand side, measured as expenditures.

$$GDP(E) = HFCE + GFCE + Change\_in\_inventory + GFCF + Exports - Imports \dots [2]$$

Where:

HFCE = Household final consumption expenditure
GFCE = Government final consumption expenditure
Change_in_inventory = change in inventories
GFCF = Gross fixed capital formation

The study **assumes** that:

- GFCE for illegal drugs = 0
- Change in inventory = 0. This assumption results from discussions about the nature of the Australian drug supply chain. Firstly, there is risk in keeping a substantial inventory of illegal drugs and this provides an incentive to turnover stocks quickly. Secondly, drug dealers appear to adjust to variations in demand and supply by changing the purity of the drugs, not through stock acquisition or inventory rundown, nor through price changes. Therefore, while there may be some level of inventory in the supply chain at any given time, the inventory level does not vary substantially over time, and the change in inventories will tend to zero.
- GFCF not already included in current estimates = 0. Most domestic production is in the cultivation of cannabis. The model assumes that expenditures on large agricultural implements or large scale horticultural equipment are included in current GFCF estimates. For smaller scale production, and for manufacture of amphetamines and MDMA, the "small tools" convention in SNA applies – expenditures on implements and laboratory apparatus are assumed to depreciate fully within a year. This assumption may need refinement if the trend in cannabis cultivation continues to move from "farmed" to "hydroponic".
- Exports = 0. Drug intelligence sources suggest that very little domestic product is exported because of relative prices. There may be some drugs imported and re–exported using Australia as a staging point, but this will net out in GDP estimates

This leaves HFCE and Imports as the only components of GDP(E) to be estimated for illegal drugs.

$$GDP(E)^{id} = HFCE^{id} - Imports^{id} \dots [3]$$

Where ^{id} = illegal drugs

The methods and sources for estimating HFCE and Imports for each drug type are detailed in the section titled **Methodology**.

GDP(P) Estimates

GDP(P) = Domestic_output – Intermediate_use + Net_taxes

Where:

- Domestic_output = Sales – Change_in_inventory
- Intemediate_use = intermediate use of supplies in production
- Net_taxes = net taxes less subsidies on production

The study assumes that:

- Change_in_inventory = 0 (see discussion above for GDP(E))
- Net_taxes = 0 as illegal producers are unlikely to pay taxes or receive subsidies

$$\text{Thus GDP(P)}^{id} = \text{Sales}^{id} - \text{Intermediate\_use}^{id} \dots [4]$$

From [1] and [3], [4] can be expressed as

$\text{HFCE}^{id} - \text{Imports}^{id} = \text{Sales}^{id} - \text{Intermediate\_use}^{id} \dots [5]$

and rearranged as

$\text{Sales}^{id} = \text{HFCE}^{id} - \text{Imports}^{id} + \text{Intermediate\_use}^{id} \dots [6]$

Sales can be estimated residually, given derivation of HFCE, Imports and Intermediate use.

The Australian drug market has four production components requiring estimation of Intermediate use:

Cultivation of cannabis
The study **assumes** that all cannabis consumed in Australia was grown in Australia, in accordance with seizures and other drug intelligence information. Deriving production (Sales) information therefore requires estimates of costs of production (Intermediate use). Estimates have to account for two production methods: "bush" cultivation, and hydroponic cultivation. The two methods of production have different cost structures, and the estimation methods and sources for each production method are detailed in the **Methodology** section below.

Laboratory manufacture of amphetamines and MDMA, including refining from imported precursors
Only a proportion of final consumption of these drugs is sourced from domestic manufacture. The methods and sources for dissecting the market into imports and domestic

production, and the production costs (Intermediate use), are detailed in the **Methodology** section below.

Distribution margins

Irrespective of whether the drugs are produced domestically or imported, they are distributed to final consumers by a network of dealers. By convention in the 2008 SNA, goods distributed through wholesale and retail activity that are not elaborately transformed earn a margin for their owners, measured as the sale value less the cost of goods sold. For the Australian drug market, a characteristic of the distribution network is that most drugs except cannabis are "cut" (diluted) with various substances, to some degree, as they pass through the chain. Two questions arise out of this practice. Firstly, the study **assumes** that "cutting" of drugs does not constitute elaborate transformation sufficient to classify the activity as manufacturing, rather than retailing or wholesaling. Secondly, differences between prices and purities at the start of the wholesale distribution chain, and those at the "street" end of the supply chain, provide an insight into the estimation of margins. This is detailed in the **Methodology** section below.

Seizures

A risk that drug producers and distributors must take into account is discovery and consequent seizure of crops or inventory. The study assumes that such seizures represent an expected loss of inventory, and are therefore a cost of production (Intermediate use) rather than an uncompensated seizure (a non–transaction "other change" in volume). Valuation and purity analysis of seizures by law enforcement agencies at various distribution stages provide insight into wholesale and street markets. See the **Methodology** section for details of seizure information.

GDP(I) estimates

GDP(I) = Compensation of Employees + Gross Operating Surplus + Gross Mixed Income

The study **assumes** that:

- All drug production and distribution was carried out by unincorporated businesses, not corporations.
- Participants in the unincorporated businesses were principals, not employees.
- Compensation of Employees = 0 and Gross Operating Surplus = 0

Therefore all income accrued from illegal drugs is Gross Mixed Income.

$$GDP(I)^{id} = GMI^{id} \text{ ... [7]}$$

From [1], [3] and [7]:

$$GMI^{id} = HFCE^{id} - Imports^{id} \text{ ... [8]}$$

Prices and Volumes

One of the features of the Australian drug market is the relative stability of prices in retail (or "street") terms. However, as noted above, the quality of the drugs on offer is variable, being "cut" to a greater or lesser degree in response to changes in demand and supply conditions. Although estimates have been made in physical units as well as monetary terms, both of these are "nominal" and do not take into account quality variability. An estimate of monetary volumes has been attempted using purity estimates to adjust prices to take into account quality change. See the **Methodology** section for details.

METHODOLOGY

To calculate the GDP^{id} identities, estimates are required for $HFCE^{id}$, Intermediate use^{id} and imports^{id}.

Illegal drug household final consumption expenditure, by drug type

Household final consumption expenditure for illegal drugs ($HFCE^{id}$) may be calculated as the product of the quantities of drugs consumed (Quantity_consumed) and related illegal drug retail prices (Retail_price) during a reference period (which in this case is a year).

$$HFCE^{id} = Retail\_price * Quantity\_consumed * 365 ... [9]$$

The Retail_price component of [9] may be found in Australian Crime Commission (ACC) publications. The Quantity_consumed component of [9], on any one day, is a product of the percentage of the population (expressed as numbers of people) who engage in the consumption of illegal drugs, that is, the number of users on any one day (Users) and quantity consumed per user on any one day (Quantity_used) in kilograms, see [10].

$$Quantity\_consumed = Users * Quantity\_used ... [10]$$

The User component in [10] may be expressed as:
Users = (%Daily_users * Recent_users) + (%Weekly_users * Recent_users*1.5 / 7) + (%Monthly_users * Recent_users / 30.42) + (%Quarterly_users * Recent_users / 91.25) + (%Yearly_users * Recent_users / 365) ... [11]
Where:

> Recent_users = Number of recent users,
> %Daily_users = percentage of recent users using daily,
> %Weekly_users = percentage of recent users using weekly,
> %Monthly_users = percentage of recent users using monthly,
> %Quarterly_users = percentage of recent users using quarterly, and
> %Yearly_users = percentage of recent users using once a year.

Estimates on the prevalence and frequency of illicit drug use were provided by the National Drug Strategy household survey (NDSHS), the 2009 NSW Inmate Health Survey (IHS), the Illicit Drug Reporting System (IDRS), the National Drug and Alcohol Research Centre (NDARC 2005) paper "The Sydney methamphetamine market" and the academic papers "Homelessness and Substance use: Which comes first?" (Johnson 2007) and "High and Dry: Homelessness and Alcohol and other Drug use".

The calculation of the **Quantity_used** component of [11] is dependent on the availability of data on each drug type. For the majority of illegal drugs, **Quantity_used** per user on any one day may be found in the reference material.

The annual Ecstasy and Related Drugs Reporting System (EDRS), Illicit Drug Reporting System (IDRS) and NDSHS provided consumption information on five illegal drug types

Cannabis and Amphetamines group data sourced from the academic paper Assessing the economic consequences of **two cannabis policy options** (Shanahan, 2011) and AIHW/NDSHS 2010 publication: **Data on the consumption and usage of drugs in Australia**, allowed consumption estimates to incorporate regular (**Regular_user**) and occasional user (**Occasional_user**) behaviour, see [12].

$$Quantity\_used = Regular\_user + Occasional\_user \ ... \ [12]$$

The components of [12] may be expressed as:

$$Regular\_user = Units\_consumed * Unit\_amount \ ... \ [13]$$
$$Occasional\_user = Units\_consumed * Unit\_amount \ ... \ [14]$$

Where:

Units_consumed = number of units consumed, and
Unit_amount = average amount of drug per unit consumed.

Illegal drug intermediate use, by drug type

Intermediate use for illegal drugs (Intermediate_use[id]) may be calculated as the domestic production costs over the reference period, which in this case is a year.

The calculation of Intermediate_use[id] is dependent on the availability of data on each drug type.

Intermediate_use[id] for the amphetamines group and MDMA (Intermediate_use[am]), over the year, is a product of the production costs per unit (Unit_cost), quantity consumed per annum (Quantity_consumed) [10] and the percentage of the drug produced domestically (Domestic_share_total) plus domestic drug seizures (Domestic_seizures), see [15].

Production and import percentages are outlined in table 3 below.

TABLE 3: PRODUCTION AND IMPORT PERCENTAGES FOR EACH DRUG TYPE

	Domestic production	Imported
Illegal drugs	%	%
Amphetamines Crystal	80	20
Amphetamines Non–Crystal	80	20
MDMA	5	95
Heroin	–	100
Cocaine	–	100
Cannabis – Domestic production processes		
Farmed	30	–
Hydroponic	70	–
Total cannabis production	100	–

– nil or rounded to zero (including null cells)

Intemediate_use^{am} = Unit_cost * ((Quantity_consumed * Domestic_share_total) + Domestic_seizures) ... [15]

The Unit_cost component [7] for the amphetamines group and MDMA may be found in reference material supplied by ACC and in the academic paper '**The Economics of Meth**'. The AIC, AFP and NDARC also provided domestic production and import costs.

Intermediate_use^{id} for cannabis (Intermediate_use^{c}) over the year is a product of the production costs per unit (Unit_cost) by production method (hydroponic or agriculture), quantity consumed per annum (Quantity_consumed) [10], the share of domestic production (Domestic_production_share) plus domestic drug seizures (Domestic_seizures), see [16].

Intermediate_use^{c} = Unit_cost * ((Quantity_consumed * Domestic_production_share) + Domestic_seizures) ... [16]

Data availability allows the calculation of the cannabis Unit_cost component of [16] for hydroponic and farmed domestic production.

The Unit_cost component for the hydroponic production cannabis represents inputs such as materials, lighting, labour and rent (see Caulkins, 2010). The Unit_cost component for the production of farmed cannabis represents inputs such as tillage and planting, seed, irrigation, loading and trucking, operating capital interest, land rent and equipment (see Caulkins, 2010).

Illegal drug imports, by drug type

Illegal drug Imports = Import_Cost^{id}

The Import_cost^{id} value over the year is a product of the imported volume (Import_volume) and wholesale nominal price (Wholesale_nominal_price), see [9].

Import_cost^{id} = Import_volume * Wholesale_nominal_price ... [17]

The Wholesale_nominal_price component of [18] is available from the referenced sources below. The Import_volume component of [17] is expressed as:

Import_volume = (Total_consumption * Import_share_total * Retail_purity/Border_purity) + Import_seizures ... [18]
Where:

Total_consumption = Total consumption,
Import_share_total = Percentage of total imported,
Retail_purity = Retail purity,
Border_purity = Border purity, and
Import_seizures = Import seizures by customs

Estimates of purity are essential to reflect realistic illegal drug market behaviour. For example, if 100kg of cocaine is imported, it will be diluted before it is sold onto the next distributor. This process will be repeated by multiple distributors before reaching the final consumer. While the original import volume was 100kg of undiluted cocaine, consumers may have access to 250kg of diluted cocaine. The changes in purity (between importation and final sale) allows for the calculation of import volume estimates. Imported volumes are derived from consumption volumes adjusted by a purity factor (see equation [18] above).

Information on illegal drug prices and purities at retail, wholesale and border levels was provided by the Illicit Drug Data Reports (IDDR) of the ACC, the Australian Institute of Criminology (AIC) and the Australian Federal Police (AFP).

RESULTS

Graph 4 below illustrates declining estimates of illegal drug HFCE[id] over the period 2004 to 2010, with HFCE[id] falling by just under two billion dollars over the reference period. This fall can be attributed to the estimated reduction in cannabis and heroin expenditure. Note that the physical quantity of cannabis consumed increased over the latter period to 2010, but declines in street prices more than offset this quantity increase, and resulted in a lower overall expenditure on cannabis during that period.

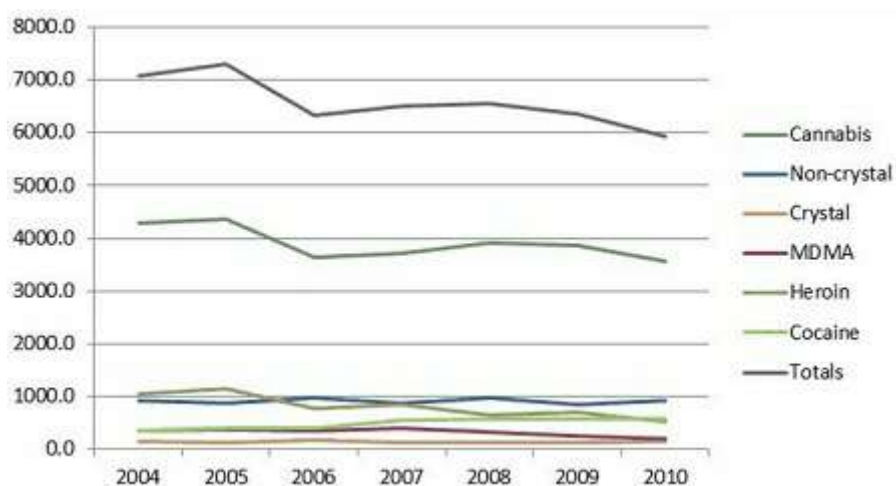**GRAPH 4 – HFCE BY DRUG TYPE ($m) – CALENDAR YEAR**

Table 4 illustrates total Gross Value Added from the illegal drug economy (GVA[id]) over the reference period. The illegal drug contribution to GVA[id] reduced by $0.9b, from $6.3b in 2004 to $5.4b in 2010. The fall is largely driven by the reductions in cannabis and heroin consumption. The value of cocaine, amphetamines (non–crystal), amphetamines (crystal), and MDMA has been reasonably stable over the seven years.

TABLE 4 – ILLEGAL DRUG ECONOMY SUMMARY MEASURES (CALENDAR YEAR, $m)

	2004	2005	2006	2007	2008	2009	2010
Imports[id]	782	708	602	732	628	700	542
Intermediate_use[id]	86	82	75	74	72	77	80
HFCE[id]	7 087	7 297	6 333	6 515	6 554	6 359	5 934
GDP[id], GVA[id](a)	6 305	6 589	5 731	5 784	5 926	5 659	5 392

(a) GVA and GDP (P), (E) and (I) are equal

The ABS compiles Supply and Use (SU) tables to generate balanced annual estimates of GDP. The Supply table measures the production of goods and services by Australian resident units and imports, while the Use table measures the use of goods and services for intermediate consumption, final consumption, gross fixed capital formation, changes in inventories and exports. Domestic supply and intermediate consumption are cross classified by industry and product categories, while the other components are simply classified by a product category. The Use table also provides information on the generation of income by each industry.

Table 5 below shows the industries and sectors impacted by the inclusion of the illegal drug economy. The drugs market will contribute to the agriculture, manufacturing, and retail industries. (Note, the wholesale industry has been included in retail owing to the lack of information to separate these two industries). The capture of household spending on illegal drugs will increase HFCE, and the rest of the world sector will reflect the importation of illegal drugs. Intermediate use is the domestic production costs incurred by illegal drug producers.

TABLE 5 – EXPERIMENTAL ILLEGAL DRUG SUPPLY–USE (SU^{id}) TABLE FOR THE YEAR 2010 ($m)

	Supply					Use			
	Agri–culture	Manu–facturing	Retail and Whole–sale	Domestic Supply	Imports	Total Supply	Inter–mediate Use	Final Use (HFCE)	Total Use
Cannabis	1 001	–	2 638	3 639	–	3 639	64	3 575	3 639
Cocaine	–	–	269	269	315	584	–	584	584
Heroin	–	–	343	343	174	517	–	517	517
MDMA	–	2	169	171	30	201	–	201	201
Amph. (non–crystal)	–	38	873	911	18	929	14	915	929
Amph. (crystal)	–	7	134	140	5	145	2	143	145
Total	1 001	46	4 425	5 472	542	6 014	80	5 934	6 014

– nil or rounded to zero (including null cells)

Total GVA (nominal prices) for illegal drugs as a percentage of 2009–10 Australian GDP is 0.4%

where Australian GDP (nominal) for 2009–10 was equal to $1,293 billion. Total HFCE (nominal prices) on illegal drugs as a percentage of 2009–10 Australian HFCE is 0.8% where Australian HFCE (nominal) was equal to $712 billion. Total Imports (nominal prices) from illegal drugs as a percentage of 2009–10 Australian imports is less than 0.2% where Australian Imports (nominal) were equal to $258 billion.

Unpaid Work

The focus of this paper is the overall value and growth of unpaid work conducted by households in Australia, including comparisons to other countries. The value of unpaid work falls outside of the current conventional measures of production, as captured by the Australian System of National Accounts (ASNA). However, measuring the value of unpaid work is a worthwhile pursuit, for when the results are combined with traditional measure of production, a more complete picture of the nation's economic activities is attained. The latest estimates presented in this paper relate to unpaid work conducted in Australia throughout 2006. This paper also contains detailed tables, which extend and refine unpaid work estimates previously published by the Australian Bureau of Statistics (ABS) for 1992 and 1997.

Although most unpaid work relates to activities that constitute production in a broad sense, international statistical standards as outlined in the System of National Accounts 2008 (2008 SNA), to which the ASNA adheres, have defined the types of unpaid work covered by this paper as falling outside the conventional definition of production.

More precisely, the 2008 SNA provides a general definition of production, but recommends applying a more restricted definition when compiling GDP estimates. The general production boundary is defined by the 2008 SNA as encompassing all activities carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods or services. Most unpaid work falls within this definition. The more restrictive 2008 SNA production boundary definition however, excludes all own-account production of services within households (which are the equivalent of unpaid household work as defined in this paper), other than housing services produced by owner occupiers and the production of services by employing domestic staff. 2008 SNA production boundary also omits from production the value of services produced by volunteer and community work that is provided free by households to non-profit institutions or to other households.

International statistical standards exclude unpaid work from the conventional definition of production primarily due to conceptual and measurement difficulties. However, the 2008 SNA does recognise the value in measuring unpaid work. 2008 SNA recommends that the boundary of production could be extended by incorporating unpaid household work, and volunteer and community work in so-called 'satellite accounts'. These are accounting statements which are separated from, but consistent with, the existing System of National Accounts. The compilation of a household satellite account would provide supplementary information, which could be used in conjunction with the core accounts, to give an additional dimension to economic analysis in regards to the household as an individual sector, and its relationship with the other sectors of the economy. For more information see paragraph 7 of the explanatory notes.

Further support for the compilation of unpaid work statistics is found in the 2009 report by the Commission on the Measurement of Economic Performance and Social Progress (generally referred to as the Stiglitz-Sen-Fitoussi Commission). The Stiglitz-Sen-Fitoussi Commission advocates for statistics to be compiled based on broader measures of production which includes household economic activities, as this would allow for better measurement of economic well-being. It argues that as household production is economically important, yet is excluded from current statistical measures of production, it results in the misrepresentation of actual living standards and neglects important shifts in economic production between the household and market sectors. The report states that estimates of unpaid work would complement traditional measures of economic performance (such as GDP) in producing more representative indicators of actual economic and social progress. This in turn would aid in the better design and assessment of economic policies.

Valuation Methods

Considerable research has been undertaken internationally to determine the best methodology for valuing unpaid work. While there currently exist no internationally agreed statistical guidelines specifying how to measure unpaid work, two basic valuation approaches are identified: an output approach and an input approach.

The output approach would see unpaid work valued directly. The output of household production would be valued by multiplying the volume of household output for different activities by the market-equivalent prices for each activity. As the data requirements for an output based approach are not readily available for most statistical agencies, including the ABS, unpaid work studies are more commonly conducted using an input approach.

The input approach values unpaid work at total costs of production. Household unpaid work would be valued as the sum of all its inputs; value of labour, intermediate consumption, and capital cost. However in practice, estimates of unpaid work are typically compiled using only the labour input component, as this is more easily achievable. Measuring unpaid work based purely on the value of unpaid labour is the method most frequently used.

In this paper, separate estimates of the value of unpaid work have been compiled. All estimates follow the input approach, based on the inputs of labour only, and are based on the same basic equation:

Value of unpaid work = wage rate x time spent on unpaid work x population

The population estimate used in this paper is defined as the civilian population aged 15 years and over, excluding those living in special dwellings or very remote and sparsely settled parts of Australia.

The value of unpaid work estimates diverge only in regards to the wage rates applied, and can be classified into two groups:

▪ Market replacement cost - estimates measuring what it would cost a household to hire someone to provide the services concerned; and

▪ Opportunity cost - estimates measuring the amount that an unpaid worker would have earned had he/she spent the same time in paid work that was spent on unpaid work.

Within the market replacement cost approach, three separate estimates are distinguished:

1. The **individual function replacement cost** - assigns values to the time spent on unpaid work by household members according to the cost of hiring a market replacement for each individual task.
2. The **housekeeper replacement cost** - values the time spent on unpaid household work by household members according to the cost of hiring a housekeeper to undertake the relevant tasks.
3. The **replacement cost hybrid** - is a combination of the above two methods. It applies the housekeeper wage rate to those tasks normally carried out by a housekeeper and values tasks not normally undertaken by a housekeeper using the wage rates applied in the individual function replacement cost approach.

Within the opportunity cost approach two separate estimates are compiled:

1. The **gross opportunity cost** approach values unpaid work in terms of the earnings assumed to be foregone by individuals when they devote time to unpaid work rather than paid employment. A gross wage rate is used (i.e. before the deduction of taxes, and the addition of employer costs).
2. The **net opportunity cost** approach is a refinement of the gross opportunity cost approach in an attempt to reflect real wage conditions. The net opportunity cost method values unpaid work at the after-tax hourly wage rate, plus income by way of employer costs of superannuation and fringe benefits.

Both market replacement cost and opportunity cost methods are compiled using ABS data, on wage rates based on the Survey of Employee Earnings and Hours, and information on time spent by activity from the Time Use Survey. Estimates can be computed at an aggregate level, i.e. per person, or at a disaggregated level, for males and females separately. In this paper, valuations are based on male and female, and person wage rates. For each valuation method estimates that are identified as being compiled using male and female wage rate are valued by applying male wage rates to activities performed by males, and a female wage rate applied to activities performed by females. Estimates identified as being compiled using person wage rates are valued by applying the same person wage rate to activities conducted by men, and to those conducted by women. There are two main reasons why estimates based on the same valuation approach differ when calculated using person wage rates versus a male and female wage rates:

1. A difference in the wage rates for males, and for females, for a given occupation; and

2. A difference in time spent on unpaid work activities conducted by males, and by females.

A more detailed description of these methods, their inherent advantages and disadvantages, and the data sources used, can be found in the explanatory notes of this paper.

Of the above mentioned methods, some have been found to be more preferable than others. The

ABS considers the individual function replacement cost approach based on male and female wage rates, as the most appropriate measure of unpaid work for the Australian context. In comparison, in the 2003 publication Household Production and Consumption: Proposal for Methodology of Household Satellite Accounts, Eurostat recommends the housekeeper replacement cost method. The publication further states that the opportunity cost method is widely rejected by researchers as a suitable measure of household production in the National Accounting framework, an opinion also held by the ABS. Nevertheless, opportunity cost figures have been produced in this paper to allow for international comparison and to illustrate the impact the choice of valuation method has upon the results.

VALUE OF UNPAID WORK IN AUSTRALIA, 2006

The value depends on the methods and type of unpaid work performed

Various estimates of the value of unpaid household work, volunteer and community work, and total unpaid work conducted in 2006 are shown in table 6 below. The results vary considerably depending on the valuation method used.

TABLE 6. VALUE OF UNPAID WORK BY VALUATION METHOD, for 2006

	Average wage		Value of unpaid work			
	Household work	Volunteer and Community work	Household work	Volunteer and Community work	Total value of unpaid work	Ratio of total value of unpaid work to GDP(a)
Estimation method	$/hr	$/hr	$billion	$billion	$billion	%
Market replacement cost						
Individual function replacement cost method						
Male and Female wage rate	18.47	19.47	392	43	434	43.5
Person wage rate	18.52	19.50	393	43	435	43.6
Housekeeper replacement cost method						
Person wage rate	17.59	19.50	373	43	416	41.6
Hybrid replacement method						
Male and Female wage rate	18.58	19.47	394	43	437	43.7
Person wage rate	18.65	19.50	395	43	438	43.9
Opportunity cost						
Gross opportunity cost method						
Male and Female wage rate	24.37	24.48	517	54	570	57.1
Person wage rate	25.07	25.07	532	55	586	58.7
Net opportunity cost method						
Person wage rate	21.20	21.20	449	46	496	49.7

(a) The percentage of GDP is recorded without adding the value of unpaid work to the value of GDP

in the calculation.

The estimates of total value of unpaid work range from $416 billion to $586 billion. If unpaid household work, and volunteer and community work were to be included in the ASNA production boundary, GDP for 2006 would increase by a minimum of 41.6% (using the housekeeper replacement cost method), and a maximum of 58.7% (using the gross opportunity cost method based on a person wage rate).

Unpaid household work is the main contributor to the value of total unpaid work. This result is due to a time, rather than wage, factor. For although wage rates applied to volunteer and community work are consistently higher, or equal to household work for each valuation method, considerably more time is spent on household work (25.23 hours per week) as opposed to volunteer and community work (2.61 hours per week).

The results of both opportunity cost methods are consistently higher than the estimates produced using the market replacement valuation methods. This is seen in the results for all three years compiled in this paper and also consistent with the international findings discussed later. This is because the market replacement cost methods uses wage rates of occupations based on unskilled labour, therefore lower wage earners. The two opportunity cost methods are based on the average wage rate of all occupational groups in the economy, which is upwardly impacted by the wage rates of highly skilled professions.

Table 7 shows the contribution of individual activities to the total value of unpaid work, and the impact the inclusion of each activity into the production boundary would have upon GDP. The figures in this table, and the accompanying analysis, are based upon results compiled using the individual function market replacement cost method, using male and female wage rates. Similar conclusions can be drawn from the figures compiled using other methods in terms of percentage contribution to GDP and activity contribution to total value of unpaid work.

TABLE 7. VALUE OF UNPAID WORK BY ACTIVITY, for 2006

	Average weekly hours	Wage rate	Total value	Ratio of activity time to total time spent on unpaid work	Ratio of activity value to total unpaid work value	Ratio of activity value to GDP (a)
	hr	$/hr	$billion	%	%	%
Food and drink preparation and clean up	5.64	17.92	85	20.3	19.5	8.5
Laundry, ironing and clothes care	2.03	15.33	26	7.3	6.0	2.6
Other housework	2.89	17.56	43	10.4	9.8	4.3
Gardening, lawn care and pool care	1.63	17.62	24	5.9	5.6	2.4
Pet care	0.58	21.93	11	2.1	2.5	1.1
Home maintenance	1.02	20.75	18	3.7	4.1	1.8
Household management	1.05	21.07	19	3.8	4.3	1.9
Associated communication	0.13	23.54	3	0.5	0.6	0.3
Associated travel	3.38	18.23	52	12.1	11.9	5.2

Child care	4.13	18.73	65	14.8	15.0	6.5
Purchasing of goods and services	2.74	20.51	47	9.9	10.9	4.7
TOTAL UNPAID HOUSEHOLD WORK	**25.23**	**18.47**	**392**	**90.6**	**90.2**	**39.2**
Adult care	0.18	17.97	3	0.6	0.6	0.3
Volunteer work	2.07	19.77	34	7.4	7.9	3.4
Associated communication	0.02	23.22	0	0.1	0.1	0.0
Associated travel	0.34	18.23	5	1.2	1.2	0.5
TOTAL UNPAID VOLUNTEER AND COMMUNITY WORK	**2.61**	**19.47**	**43**	**9.4**	**9.8**	**4.3**
TOTAL UNPAID WORK	**27.84**	**18.57**	**434**	**100.0**	**100.0**	**43.5**

(a) The percentage of GDP is recorded without adding the value of unpaid work to the value of GDP in the calculation.
Source: ABS estimates based on: Time Use Survey, Survey of Employee Earnings and Hours, Labour Force Survey, Australian System of National Accounts
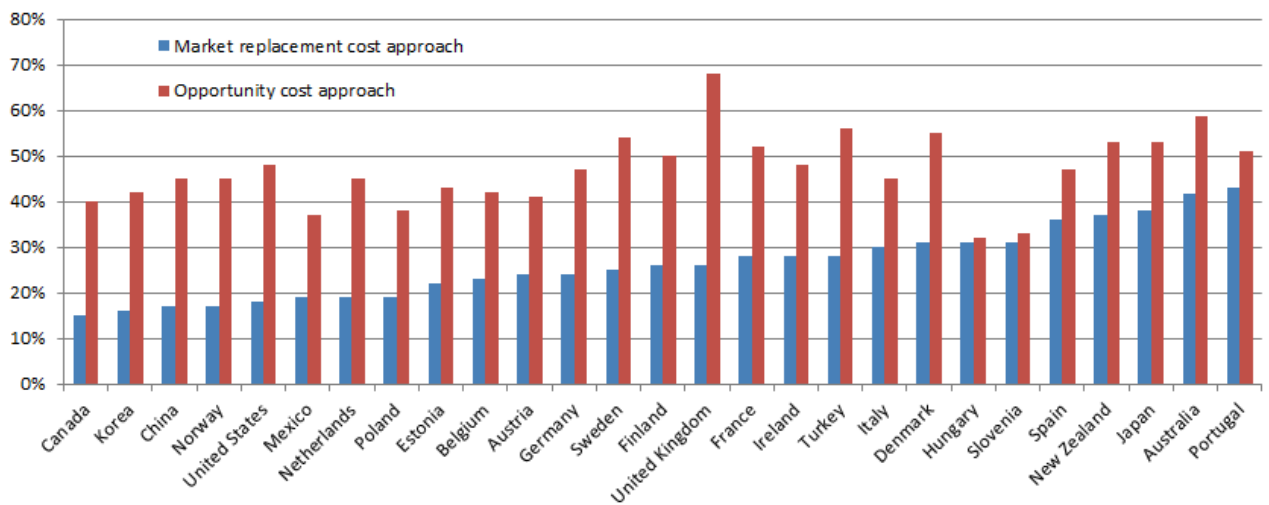
The results show that if the production boundary was extended to include only unpaid household work, it would have greater impact upon the value of GDP (39.2%) than if volunteer and community work was included (4.3%).

Despite food and drink preparation and clean up having one of the lowest activity wage rates ($17.92 per hour), it is the largest contributor to the total value of unpaid work (19.5%) due to the fact the largest portion of time (5.64 hours, 20.3% of total time) is dedicated to this activity weekly. Communication associated with volunteer and community work contributed the least in terms of value ($368 million) and time (0.02 hours) to total unpaid work despite having one of the highest wage rates ($23.22).

INTERNATIONAL COMPARISON

In 2011, the Organisation for Economic Co-operation and Development (OECD) published the statistical working paper Incorporating Estimates of Household Production of Non-Market Services comparing estimates of unpaid work for 26 OECD countries and China. Graph 5 below has incorporated the 2006 estimates produced in this paper for Australia, with the findings published by the OECD, in relation to value of unpaid work as a ratio to GDP for each individual country.

GRAPH 5. VALUE OF UNPAID WORD AS A PERCENTAGE OF GDP

Source: Incorporating Estimates of Household Production of Non-Market Services, OECD Statistical Working Papers, October 2011, and ABS estimates based on Time Use Survey, Survey of Employee Earnings and Hours, Labour Force Survey, Australian System of National Accounts.
Note: Due to Time Use Survey data availability, the estimates presented are based on the most recent year available for each country, as of October 2011. This has resulted in estimates based on data from a range of years, from 1998-99 through to 2008-09. For a full list of countries and their corresponding Time Use Survey used, please see paragraph 13 of Incorporating Estimates of Household Production of Non-Market Services.

The results show that unpaid work reported by the OECD countries and China, as a percent of GDP, range between 15% (Canada) and 43% (Portugal) using market replacement cost approach, and 32% (Hungary) and 68% (United Kingdom) using the opportunity cost approach.

The relative ranking of countries changes considerably depending on which valuation method is used. The most extreme example of this is Slovenia. In ranking countries based on the market replacement cost, Slovenia is the sixth highest ranking country (31% of GDP), but when rankings are compiled using the opportunity cost method, it is the second lowest country (33%).

The value of unpaid work conducted in Australia relative to GDP ranks second highest overall, using either of the valuation methods.

Despite the large variation in estimates depending on which compilation method is used, the results indicate that across the board unpaid work represents a notable percentage of each nation's productive activity as currently captured by the official System of National Accounts. Should the production boundary be expanded to encompass unpaid work, each country's GDP would increase by a minimum of 15%.

Unpaid work conducted by households represents important economic activity that occurs in Australia every year. In 2006, the value of unpaid household work, and volunteer and community

work ranged from $416 billion to $586 billion, which represents 41.6% to 58.7% of GDP for that year. In terms of unpaid work relative to GDP, these results place Australia at the higher end of the international standings.

Estimates of both level and growth of unpaid work vary significantly depending on the valuation method used. Additionally, the activities included within the scope of unpaid work may lead to considerable differences in results. Therefore this paper not only demonstrates the importance of unpaid work in Australia and other countries, but it also shows the need for agreement upon a harmonised definition and valuation methodology, when conducting such analysis.

Widely used macroeconomic measures of the economy such as the National Accounts provide vital information on the size and structure of the economy. However they do not provide information on the distribution of income and wealth or the individual access to goods and services. These issues of equity are widely recognised as crucial to an understanding of material well-being, and have been of increasing focus over recent years. Issues of distribution and access are also central to targeting, and improving the efficiency of, economic policies.

Distribution of Household Income, Consumption and Wealth

The report of the Commission on the Measurement of Economic Performance and Social Progress (September 2009), the "Stiglitz-Sen-Fitoussi Commission", stressed the importance of a greater focus on the household to provide better measures of people's well-being. The report stressed the importance of formulating metrics that presented the distributional aspects of households such as median income and income quintiles consistent with the System of National Accounts. The report recognised the complexity in formulating such metrics but encouraged countries to do so to obtain the complete picture of what is happening to individuals in our society.

In November 2009, the Group of Twenty (G-20) Finance Ministers and Central Bank Governors played a key role in responding to the global financial crisis of 2008-09 by devising a list of 20 recommendations, as part of the group's Data Gaps Initiative (DGI). Recommendation 16 of the DGI states **"**As the recommended improvements to data sources and categories are implemented, statistical experts to seek to compile distributional information (such as ranges and quartile information) alongside aggregate figures, wherever this is relevant".

In Australia, the importance of distributional analysis of household aggregates such as saving and wealth for economic and social policy has been recognised in addresses made by the Reserve Bank of Australia (RBA). In 2005, then assistant RBA Governor, Glenn Stevens addressed the Irving Fisher Committee for Financial Statistics of the International Statistical Institute, on "The Changing Statistical Needs of Central Banks" and asked the following, "how are debt and wealth distributed across the population by income or by age or by region?". A 2011 address to the Australian Economic Forum by assistant governor Philip Lowe, titled " Changing Patterns in Household Saving and Spending" utilised aggregate ABS national accounts data and micro data from the Melbourne Institute survey of "Household Income and Labour Dynamics in Australia" (HILDA), to produce analysis such as change in median saving ratios by income quintile for the period 2006-2009.
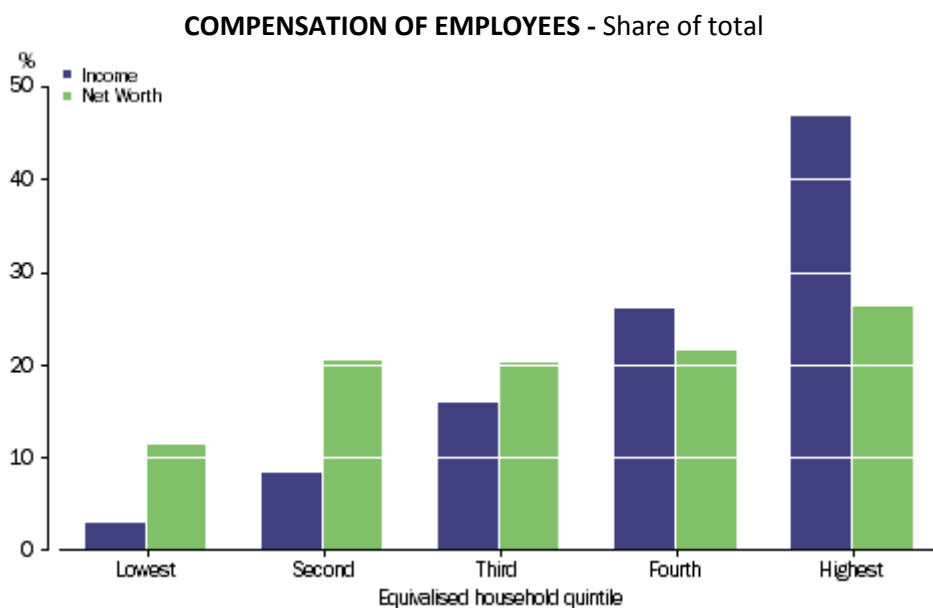
In early 2011, Australia along with 25 other countries took part in the Organisation for Economic Cooperation and Development (OECD) and Eurostat (European Union statistical commission) expert group, measuring disparities in a national accounts framework. The role of the expert group was to devise robust and internationally comparable methodology to allow the integration of distributional information using existing micro information on different household groups that are consistent with the System of National Accounts (SNA) concepts and aggregates. The results produced in this information paper are based on (and expand upon) the work undertaken by the ABS with the OECD-Eurostat Expert Group.

RESULTS

Current price household estimates for income, consumption and wealth from the Australian System of National Accounts, 2011-12 (cat. no. 5204.0), for the year 2009-10 were distributed for five household distributional indicators using data from the ABS Survey of Income and Housing and ABS Household Expenditure Survey. Estimates for non-profit institutions serving households (NPISH) included in the household sector in the 5204.0 estimates were removed from the household national accounts in this information paper.
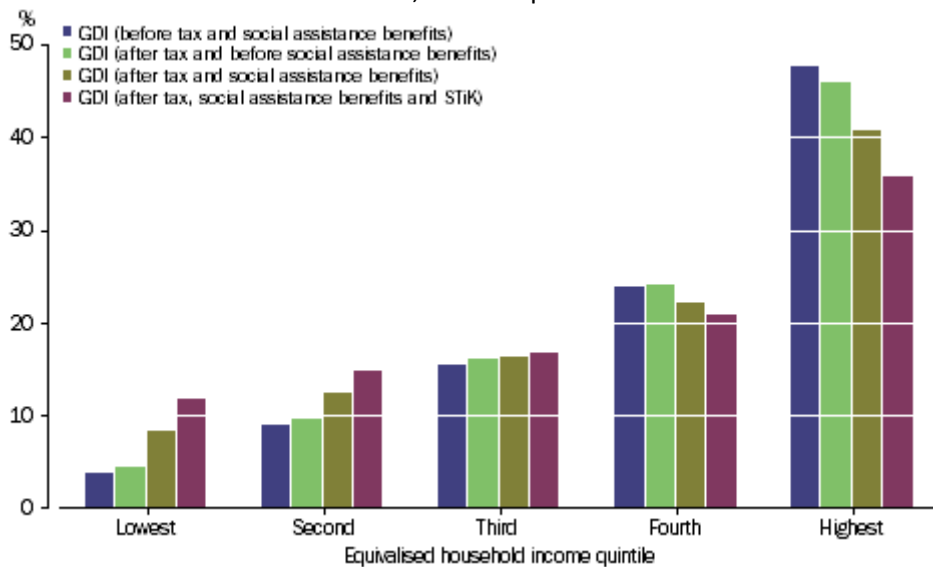
(a) Compensation of Employees

The total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the employee during the accounting period. It is further classified into two sub-components: wages and salaries; and employers' social contributions (payments by employers which are intended to secure for their employees the entitlement to social benefits, such as employer superannuation contributions).
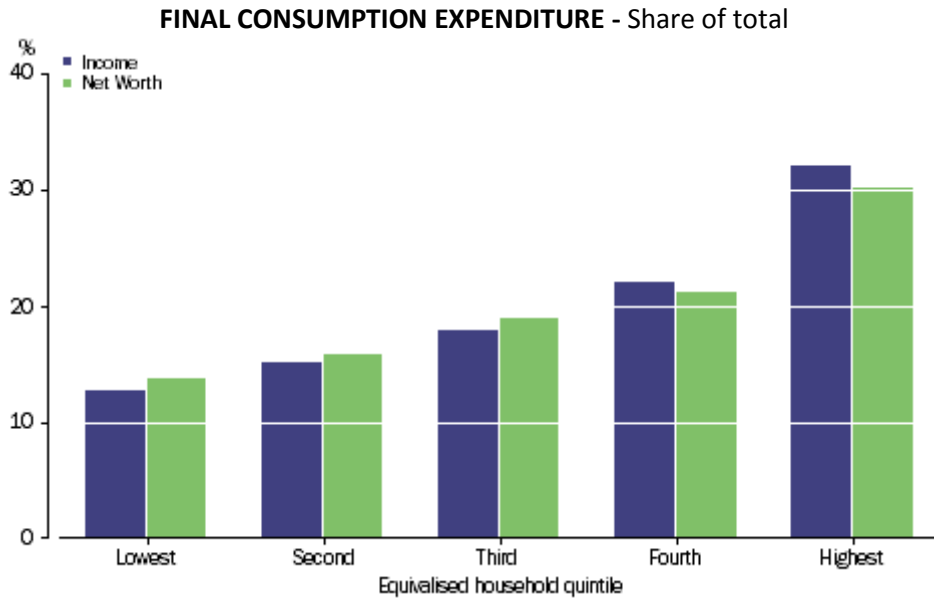
COMPENSATION OF EMPLOYEES - Share of total

In 2009-10, total household compensation of employees (COE) was $614,582m . COE for households in the highest income and net worth quintile was 47% and 26% of total household COE, by comparison for households in the lowest income and net worth quintile it was 3% and 11% of total household COE. There was an increase in the share of total household COE by households in each income quintile from the lowest to the highest. The ratio of the value of the highest to lowest quintile was 16.3 and 2.3 for income and net worth for COE

IMPACT OF REDISTRIBUTION MEASURES BY GOVERNMENT AND NPISH - Share of total household income, income quintiles
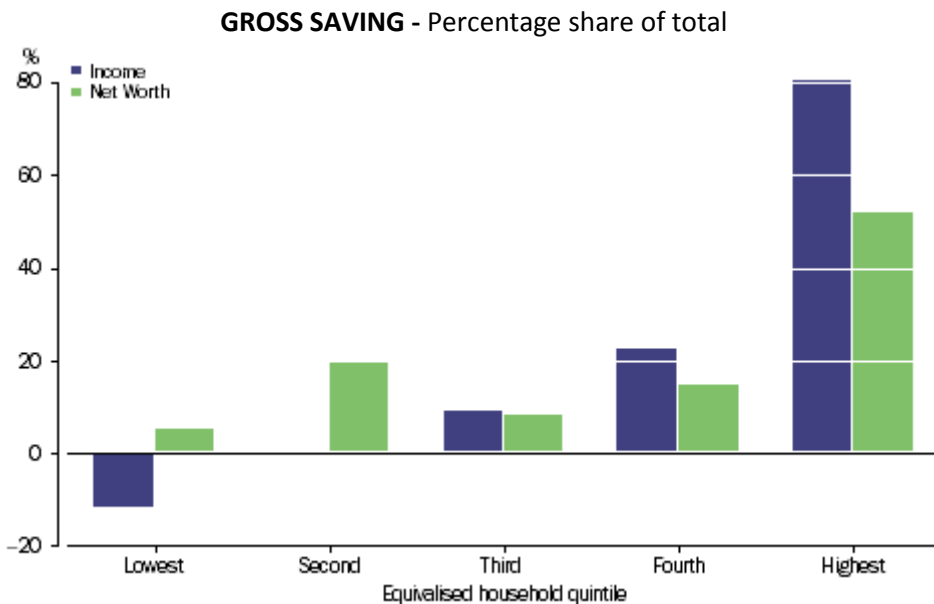

For households in the lowest, second and third income quintiles, the share of total household income increased with each step. For households in the highest income quintile, the share of total household income decreased in each step. For households in the fourth income quintile, the share of total household income increased by step 2 (payment of income taxes), and declined in step 3 and 4 (transfer payments in cash and kind).

(a) Consumption

FINAL CONSUMPTION EXPENDITURE - Share of total

In 2009-10, total household final consumption expenditure (HFCE) was $676,416m. HFCE for households in the highest income and net worth quintile was 32% and 30% of total HFCE, by comparison for households in the lowest income and net worth quintile it was 13% and 14% of total HFCE. There was an increase in the share of total HFCE by in each quintile from the lowest to the highest for both income and net worth quintiles. The ratio of the value of the highest to lowest quintile was 2.5 and 2.2 for income and net worth quintiles for HFCE.
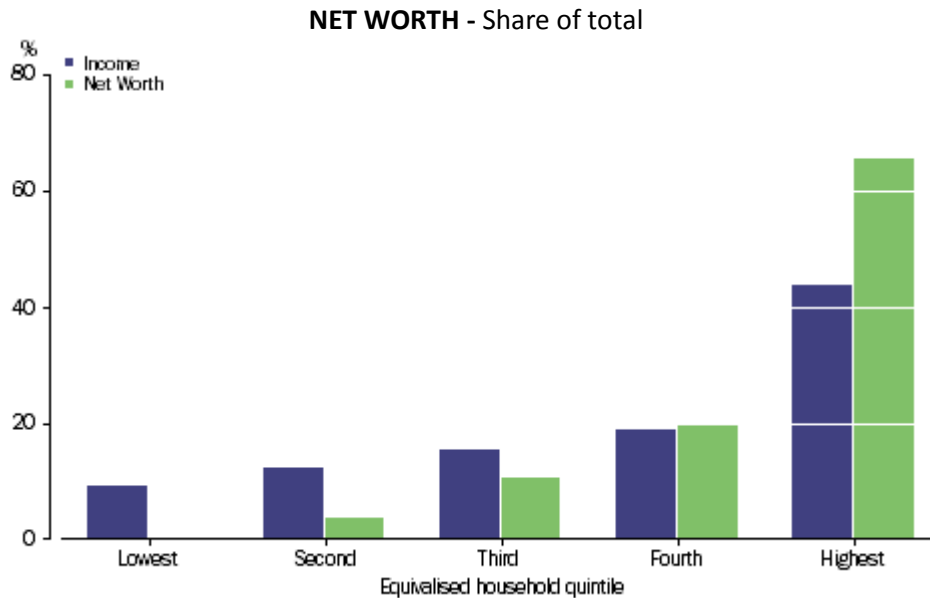
(b) Gross saving

GROSS SAVING - Percentage share of total

In 2009-10, total household gross saving was $145,653m. Gross saving for households in the highest income and net worth quintile was 80% and 52% of total household gross saving. The total share of gross savings by households in the second, third and fourth income quintiles was 32% of total household gross saving, in terms of net worth, gross savings by households in the second, third and

fourth quintiles was 43% of total household gross saving. By comparison, households in the lowest income quintile were dis-savers, with -12% of total household gross saving, and households in the lowest net worth quintile saved 5% of total household gross saving.

(d) Net Worth

NET WORTH - Share of total

In 2009-10, total household net worth was $6,311,373. Net worth of households in the highest income and net worth quintile was 44% and 66% of total household net worth, by comparison net worth of households in the lowest income and net worth quintile was 9% and 0% of total household net worth. There was an increase in the share of total household net worth by households in each quintile from the lowest to the highest for both income and net worth quintiles. The ratio of the value of the highest to lowest quintile was 4.7 and 196.3 for income and net worth quintiles for net worth.

The distribution by household groups of the national accounts household income, consumption and wealth estimates presented in this information paper provides a bridge between the macroeconomic aggregate household estimates produced within the Australian System of National Accounts and the ABS household economic resource surveys distributional analysis of household income, consumption and wealth. The methodology used to integrate the distributional information from the micro surveys on different household groups consistent with System of National Accounts (SNA) concepts and aggregates were based on the work undertaken by ABS with the OECD-Eurostat Expert Group on measuring disparities in a national accounts framework

Conclusion

Emphasising the household perspective is important to users of our statistics. This emphasis can be managed within the SNA framework while still retaining the strengths of the framework as an economy wide, integrated and coherent structure for measuring the economy.

The ABS is committed to emphasising the household perspective and has done considerable work in the past three years to achieve this. This work includes: producing a quarterly household balance sheet; reviewing and enhancing estimates for the non-observed economy including illegal production; updating estimates for unpaid work; and developing estimates of the distribution of household income, consumption and wealth within the SNA framework.

Further work remains to be done however, including: extending the distribution analysis to produce an eight year time series starting in 2003-04; producing an analysis of Real Household Incomes; and removing the NPISH sector from the household sector estimates.

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