

Selected Issues in the Measurement of New Zealand's Saving(s)

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1 Introduction

In this paper, we:

- summarise current measures of saving and net worth and set them in the context of relevant frameworks and previous reviews of saving measures
- assess the adequacy of, or issues with, these current measures,
- outline a forward agenda for improved measurement of New Zealand's saving.

Saving occurs when consumption is foregone today in order for consumption tomorrow. It is either measured by income not spent (a flow measure), or through the accumulation of savings, that is the change in net wealth or worth (a stock measure). Associated with these two basic measurement approaches, we also have two basic compilation methods (unit record, typically household, or macroeconomic aggregate data)² for estimating these flows and changes in stocks.

Figure 1

	Flow: Income less expenditure	Stock: Change in net worth
Unit record (eg household)	HES	HSS, SoFIE
Macroeconomic aggregates	HIOA	RBNZ

¹ The views expressed in this paper are those of the authors and are not necessarily those of Statistics NZ. We thank Michael Anderson, Ross Harvey and Peter Rhodes in particular for contributions to and comments on the paper.

² The distinction between unit record and aggregate compilation approaches is exaggerated here for illustrative purposes. In practice, national accounting measures such as the household income and outlay account and government accounts use a combination of unit record and aggregate data but then report at the aggregated level. Moreover, while the unit record level approach is equated here with households, where it is actually and commonly applied, theoretically unit record income, outlay and savings data could be reported for other sectors also, eg the government sector.

In the following section, we define these alternative measures conceptually. Subsequent sections report on their measurement in New Zealand and compare the various measures, while identifying their strengths and weaknesses.

At this point we observe that the distinction between flow and net worth measures, useful as it is, can easily be distorted into competing approaches, when in fact the key objective should be to reconcile them in a full set of income, capital, financial and balance sheet accounts. Disposable income represents the maximum amount that a household can afford to spend on consumption goods or services without having to finance its expenditure by reducing its cash, disposing of other financial or non-financial assets or by increasing its liabilities. If, however, changes in net wealth from capital gains and losses are to be taken into account, as many savings analyses require, then income must be defined as equating to consumption plus the change in net worth. As was pointed out in the Review of Income and Wealth Statistics, 1991,³ any full understanding of spending and saving behaviour ultimately requires income analysis to be integrated with wealth analysis.

³ Department of Statistics, *Report of the Review Committee: Income & Wealth Statistics*, 1991, p 28.

2 Flow-based saving measures

Measured as a flow, saving is always the residual of some measure of income less some measure of expenditure or consumption. As this imprecise language indicates, there are a number of conceptual definitions of income and expenditure that may determine saving measures, as well as a number of measures applied in practice. Is current income or permanent income the appropriate concept? Are we interested in cash income or also in-kind and accrued income? And similarly how do we take account of long-lived expenditure items, or implicit consumption such as the loss of value through asset use? How should capital gains/losses be treated? Saving can be measured in real or nominal terms, and particularly when determining saving through changes in net worth, there are questions of the scope of wealth measures. Do they include human, intangible and environmental (natural resource) capital?

These questions are not esoteric asides. For example, typically, we count education expenditures as consumption, yet a good portion of education spending is raising human capital and therefore net worth. The substantial increase in New Zealand's tertiary education participation rates during the last 15 years – over this period it has increased 10 percentage points as a percent of the population aged 15 and over – could be expected to have reduced contemporary measured saving rates, yet at the same time increased net wealth measured inclusive of human capital. The appropriate saving measure does depend upon the question being asked and requires consistency with the base concept and scope of enquiry.

Figure 1 illustrates that there are both macroeconomic (national aggregate) based measures of income, expenditure and saving, and unit record (household survey) based measures. Differences between macroeconomic and household-based measures arise from differences in the conceptual bases, methods and in the data sources that are employed in measuring income and expenditure. Later we will attempt some reconciliation and explanation of differences between these alternative flow measures, although given that saving is the residual of two large imprecisely measured aggregates of income and expenditure, it is not surprising that the saving measures do vary.

2.1 National accounts (aggregates) based approach

The *System of National Accounts* (SNA) provides an accounting framework within which macroeconomic data can be compiled and analysed, including the measurement of saving. Conceptually, national saving (S) in the SNA macroeconomic framework is defined as follows:

$S = Y - C$ or $GNDI - C$ where

$Y = GNDI$ = Gross national disposable income

C = Final consumption (of households, C_h , non-profit institutions, C_{np} , and government, C_g)

Gross national disposable income ($GNDI$) is calculated by adjusting final domestic output or income generated in New Zealand (gross domestic product, GDP) to allow for the net income received from non-residents (Y_{nr}) plus the net current transfers received from non-residents (TR_{nr}).

Thus,

$$GNDI = GDP + Y_{nr} + TR_{nr}$$

Gross national disposable income is the total income available to New Zealand residents for either final consumption or saving.

Here S is defined as gross national saving, and is meant to represent the portion of current income that is made available for capital investment. By convention, saving is reported in the income and outlay accounts net of depreciation where:

$$NNS = S - D \text{ or } NNDI - C, \text{ where } NNDI = GNDI - D \text{ and}$$

NNS = net national saving

D = depreciation or the consumption of fixed capital

2.1.1 The SNA framework

In a fully-developed national accounting system, data are presented in the form of a set of self-balancing and inter-related accounts. For each enterprise, sector or the economy as a whole, it is possible to compile a set of accounts comprising:

- A *production account*, which records the current value of goods and services produced and the costs associated with that production. A key item measured in the account is value-added.
- An *income and outlay account*, which records the initial receipt of factor incomes and the subsequent redistributive flows not associated with production. Saving is the residual.
- A *capital account*, which records the net transactions in real assets and shows whether this capital expenditure is financed from saving generated within the current period or from borrowing.
- A *financial account*, which records the changes in financial assets and liabilities which underlie the other current and capital transactions.
- A *reconciliation account*, which records changes in the values of assets and liabilities arising from revaluations and other changes in volumes not recorded in the other accounts.
- A *balance sheet*, which records the net worth, being the difference between the value of the stock of assets and liabilities.

The format of the accounts in the tables (see Appendix 1) illustrates their interrelated nature. The income and outlay account is linked to the capital account via saving, and to the production account via value added. The financial account is linked to the capital account via net lending. The variables linking each account are shown in italics.

A primary division in the analysis is between current and capital transactions. This is a fundamental accounting distinction which recognises the importance of separating those transactions that are 'used up' during the accounting period in the process of

income generation or consumption, from those that can be expected to provide benefits into the future. What constitutes current income, saving, investment, borrowing and lending, and net wealth rests on this distinction.

Balance sheet information is useful for measuring levels of net equity, what financial assets are held in comparison with liabilities, and how both assets and liabilities are affected as a result of transactions, price changes and other non-economic events.

2.1.2 Institutional sector accounts

So far, we have discussed national aggregates. The SNA framework also identifies six economic sectors and provides for reporting on each of these and the interactions between them. The six sectors are: households (*H*), producer enterprises (*B*), non-profit organisations (*NP*), financial intermediaries (*F*), government at both central and local levels (*G*), and the rest of the world (*R*). In New Zealand, unincorporated enterprises are included in the enterprise sector, although in practice all their net income is transferred to the household sector and therefore is included in household sector income and saving.

Classifying economic agents by sector brings together similar types of decision-makers and provides information that is useful in studying the source and disposal of incomes, the origin of saving, the direction and method of transfer of saving from one sector to another, and the areas of the economy in which available funds are spent. Each of the aforementioned accounts (production, income and outlay, capital, financial, reconciliation and balance sheet) can be produced for each economic or institutional sector, enabling a disaggregated analysis of saving by sector. Focusing on the income and outlay accounts (*IOA*), if we define the national income and outlay account as *NIOA*, and use the sector notation above, then:

$$NIOA = HIOA + BIOA + FIOA + NPIOA + GIOA$$

National saving is determined in this context as the sum of household saving (S_h) determined from the household income and outlay account (*HIOA*), business or producer enterprises saving (S_b), financial intermediaries saving (S_f), non-profit organisation saving (S_{np}), plus government saving (S_g). The sector saving figures are all measured on a residence basis, and incorporate New Zealand residents' net transactions with the rest of the world, as follows (note the changed notation, where we define all items, including *S*, net of depreciation):

$$S = S_h + S_b + S_f + S_{np} + S_g,$$

Sometimes it is useful to look at private saving $S_p = S_h + S_b + S_f + S_{np}$, or $S - S_g$. This is particularly so in New Zealand currently because we have direct measures of S , S_h and S_g only. In the absence of sector accounts, there is no direct measure of S_b , S_f or S_{np} . With the saving of non-profit institutions likely to be relatively small, business sector saving [$S_b + S_f$] is effectively the residual and incorporates residual measurement issues from household saving (S_h). More substantively, in terms of consumption and saving behaviours, we observe that households – together with foreigners – effectively own the business sector, and household expenditure therefore may well reflect claims they have on business income and saving.

Turning to household saving, we can think of the *HIOA* as the household account for the nation or the sum of all individual household accounts. It yields a residual

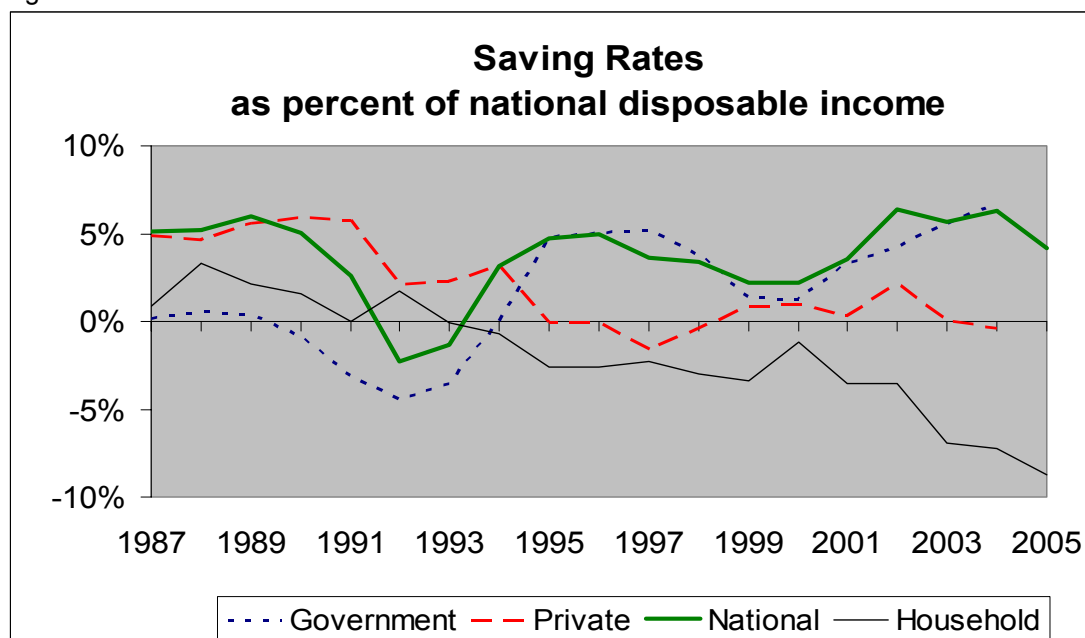
measure of saving for the household sector that is similar to the concept of saving one has for a typical household and, if measured gross, could theoretically be measured by summing individual household accounts (their income and expenditure). Thus one might expect a similar result from household-based measures (such as the HES, SoFIE and HSS). However, there are some critical differences in both measurement practice and in some concepts (eg of income, consumption of durables) that we will outline later.

2.1.3 New Zealand saving rates

Figure 2 reports national, household, government and private sector net saving rates, as a percentage of NDI. Government saving is drawn from Statistics NZ figures provided to the OECD for the general government sector (that consolidates local and central government), national saving is drawn from the published national income and outlay account, household saving from the experimental household income and outlay account, and private saving is calculated as national saving less government saving, as above.⁴

It is apparent that the decline in private saving is much less than the decline recorded by the household sector alone. The measured level of private saving is still low by most standards, yielding approximately zero net financing of new investment above the depreciation level, but it is much less stark than the -8 percent reported for the household sector in 2003/04.⁵ It is also apparent that the decline in private saving in the last two years of the reporting period was mirrored by large increases in government saving, as tax revenues rose sharply.

Figure 2



⁴ All the national accounts figures reported in this paper are from *National Accounts: Year ended March 2005*. These figures will be revised as a result of *National Accounts: Year ended March 2006* released on 16 November 2006, along with the associated revised Household Income and Outlay Account.

⁵ While household and national saving rates have been published for 2004/05, government saving has not been calculated beyond 2003/04, restricting the private saving series to 2003/04 also.

2.1.4 Household income and outlay account

This account comprehensively summarises current incomes and outlays for the household sector. The following table summarises the main income and expenditure items of the account.

Outlays	Income
Household final consumption expenditure	Compensation of employees
Investment income payable	Net operating surplus from owner-occupied dwellings
Income tax	Entrepreneurial income
Other current taxes	Investment income receivable
Social security contributions	Social security benefits in cash
Pension fund contributions	Social assistance benefits in cash
Other current transfers (overseas, private non-profit organisations, households)	Pension fund benefits
	Other current transfers
	Adjustment for change in net equity in pension funds
Savings	
Total current outlays	Total current income

The compilation of the account leads to the estimation of saving as the balancing item, incorporating measurement and timing errors in the other transactions.

Statistics NZ produces a HIOA but its status is declared as 'experimental'. The reason for this is that a complete set of institutional sector accounts is not produced and until this is done there remains insufficient confidence in the treatment and allocation of certain transactions between households and the other sectors. In addition, the methodologies employed largely reflect those adopted in the late 1990s when experimental accounts for all sectors were first developed. Production of these sector accounts ceased in 2000, pending the adoption of improved methods using new data sources becoming available (mainly redesigned Annual Enterprise Survey data and improved access to Inland Revenue taxation statistics). This work has yet to be done, and while improvements in the household income and outlay methods have been made post-2000, a number of possible changes that would make better use of the additional data now available have not. The latest published accounts, along with a glossary of terms, is given in Appendix 2.

Income, outlays and hence saving in the account are measured in accordance with generally accepted international standards and national accounting conventions. As Savage⁶ notes, there can be both practical and conceptual difficulties with the estimation of savings based on the 'flows' approach, especially when making international comparisons. Following Savage, the main issues can be summarised as:

- Residual effects. Since saving is estimated as the residual between two very

⁶ Savage J, *Savings in New Zealand: A Background Paper*, Report for the Office of the Retirement Commissioner, NZIER, June 1997.

large flows, it is highly sensitive to any errors in estimating either consumption or income.

- Sectoral divisions. The relationship between households and business, especially small, owner-operated businesses, may be blurred. In the Statistics NZ HIOA, unincorporated enterprises are classified to the producer (business) sector and only the net entrepreneurial income from the business is included as a profit transfer in the household account – in effect, no retained earnings (savings) of unincorporated businesses are included in the producer sector as the total net earnings are recorded as being transferred to the household owners, where they become mixed with other sources of household income prior to income tax assessment. While every effort is made to ensure that business-related expenses (mainly) are excluded from household consumption expenditure, any that are not will lead to an overstatement in household outlays. In addition, if making international comparisons, one needs to be aware that many countries include non-profit institutions as part of the household sector.
- Expenditure issues. Quite apart from the boundary issues that may arise in the way that expenditure is classified (such as between current and capital transfers) a number of critiques focus on more fundamental issues, such as: (a) the treatment of consumer durables as ‘capital’ and only recording the stream of services they provide as ‘current’ expenditure and (b) the treatment of education expenditure as an investment, not consumption. However, such changes would result in a different concept of ‘saving’ to that contained in the SNA, and while relevant from an economic analysis perspective, this issue is not pursued further in this paper which is largely confined to current measurement issues.
- Depreciation. Saving can be measured in gross terms (inclusive of depreciation) or net terms (exclusive of depreciation). This can be quite important in international comparisons given the range of estimation methods used to derive depreciation. From the perspective of household savings as measured in the HIOA, the valuation of depreciation has relevance given the treatment of owner-occupied dwellings in the account. Following international conventions, the account treats persons owning their own home as both ‘landlords’ and ‘tenants’ and imputes a value for the economic activity involved in home ownership. As landlords, homeowners make payments to cover maintenance, insurance and local authority rates. As tenants homeowners pay imputed rent. The difference between the income (ie imputed rent) and the expenses is the gross operating surplus. The household account records these transactions from the tenant-owner perspective, ie imputed rents are included in household consumption expenditure as an outlay, while net operating surplus is recorded as income. Depreciation is recorded separately in the household capital account. A consequence of this treatment is that the savings residual in the income and outlay account is net of the depreciation on owner-occupied dwellings, whereas a survey-based savings residual would be gross.
- Pension and social security schemes. Following SNA93 standards, the income measure in the account differs from most direct survey-based analyses of household income in New Zealand in that it imputes income for life insurance and superannuation and pension schemes. Employer contributions to these schemes are included as part of an individual’s income. Since the accumulated pension and superannuation funds are regarded as part of household assets,

interest earned by the funds is included in household income. To avoid double counting this income, actual pension payments are treated as a rundown in assets, or dis-saving. Internationally, there may be differences in where the line is drawn between funded social security schemes (not classified as part of private savings) and funded pension schemes (usually for state employees).

- Capital gains. The SNA flows approach excludes capital gains and losses associated with holding or trading capital and financial assets, and these gains/losses are excluded from the concept of saving. Similarly, foreign exchange movements are eliminated. Following the Hicksian definition of income, a case could be made for including such gains in the concept of income.

The above issues point to a number of possible conceptual or definitional differences that may exist between the SNA93-based income and outlay account and survey-based household income/expenditure series. Where possible, these have been adjusted for in the comparisons below, in order to put both datasets on an equivalent basis.

2.1.5 *Specific measurement issues in national accounts*

Key measurement issues include:

Trust income

In recent years, family trusts have become an increasingly popular means of holding productive real and financial assets. In the national accounts, family trusts, as the owners of 'household' assets, are classified to the householder sector and income earned by the trusts is included in household income. However, the different forms of asset ownership possible are quite complex, as are the ways in which the relevant trust flows might be captured in the source data used to compile the accounts. While trust income (especially beneficiary income) is, in principle, recorded in household income, it is suspected that this may be understated due to the omission of some of the trustee income, especially that derived from company dividends held by the trust. Recent Inland Revenue statistics suggest that this component of trustee income has increased significantly in recent years and may be leading to a growing understatement of household income.⁷

Net foreign investment income and transfers

There is a known under-coverage of New Zealand individuals' investment holdings abroad (ie shares, deposits not administered by New Zealand institutional investors), currently estimated at approximately \$5 billion (see *Balance of Payments and International Investment Position: Year ended 31 March 2006* Hot Off The Press, Table 8). No estimate of the resulting under-coverage of income has been made, although simple arithmetic assumptions on possible foreign rates of return and dividend ratios imply a sum of perhaps \$200 to \$600 million. Steps are underway to incorporate enhanced stock and new income estimates fully into our national and international accounts.

⁷ Refer to the *Briefing for the Incoming Minister of Revenue – 2005*, Inland Revenue, 2005; and Briggs P. *Family trusts: ownership, size and their impact on measures of wealth and home ownership*, Reserve Bank of New Zealand, 2006.

Increased immigration in recent years may have accentuated under-coverage issues. Current measures assume that a person transferring from one country to another takes all their wealth with them, and we obtain and report information on such transfers. However, any accrued income on assets left overseas (eg property or business investments) by new New Zealand residents (migrants to New Zealand) is not accounted for and has likely been a growing component.

Compensation of employees from the rest of the world, net

At present, no specific estimate is made (in the balance of payments or the HIOA) for compensation of employees earned by New Zealand residents overseas, nor for that earned by non-residents in New Zealand. While some of these income transfers may be picked up in other transfers with the rest of the world, it is thought that most of these are being omitted. The HES suggest the amount earned overseas by New Zealand residents may be as high as \$400 to \$500 million, although until further work is done on establishing exactly what is included in this item, and in estimating the size of the relevant outflow, it is difficult to know what the possible understatement of income in the household account might be.

Earnings attributed to insurance/pension policyholders

While every effort is made to exclude capital gains and losses from the earnings of pension and life funds, to the extent that any remain then household income will be over or understated compared with the conceptually correct measure.

Overseas travel expenses

Expenditure by New Zealand residents travelling overseas and expenditure by tourists in New Zealand are key items in the derivation of household consumption expenditure. Both flows are model-based, using data from the Survey of Returning New Zealanders for expenditure by New Zealanders overseas and the International Visitors Survey for tourist expenditure in New Zealand. Correctly capturing these expenditures poses significant technical and logistic problems, and while the surveys are considered robust by international standards, sampling and non-sampling errors may be quite large. These errors may be quite significant from a savings perspective given the large expenditure flows being estimated – for the year ending 31 March 2005, expenditure on overseas travel by New Zealand households was estimated at \$2,764 million while tourist expenditure in New Zealand was estimated at \$6,389 million. The latter figure is relevant due to the method used to compile household consumption expenditure, namely as total expenditure in New Zealand plus spending by New Zealand households overseas less spending in New Zealand by overseas tourists.

Household transfers

This was mentioned above in the context of migrants transfers. In addition, it should be noted that other household transfers to/from New Zealand are difficult to measure depending on the transmission mechanism, and some over or understatement may be occurring in these flows. Similarly, transfers to and from non-profit institutions within New Zealand are based on an ageing benchmark which may be leading to over or understatement of incomes, although there could be offsetting outlays in household consumption expenditure due to misclassification. However, it is not thought that revisions in either of these areas would result in a significant change in the bottom-line savings residual.

2.2 Household survey-based approach

It was observed above that the HIOA is notionally the sum of individual household income and expenditure accounts. Household survey-based approaches to measuring saving simply gather and sum incomes and expenditures for each household and weight them to a population estimate, thereby yielding a measure of saving for all resident households. In this direct household-based framework, the same notion of saving equalling income less expenditure typically applies, but the measures of income and expenditure do differ in practice from those in the SNA framework.

The most comprehensive and well-known household survey of both income and expenditure is the Household Economic Survey (HES), which has been used in numerous income and saving studies. While the survey is not designed to produce saving statistics – indeed, Statistics NZ specifically cautions against doing so – it is often used due to its comprehensiveness and richness of data on respondent characteristics which provides an extensive database for models analysing household economic behaviour.

Other household survey datasets include the Household Income Survey, an income supplement to the June quarter Household Labour Force Survey, and SoFIE (see para 3.1.2). In the section below, the discussion is confined to the HES, given its established use in savings studies.

2.2.1 *The Household Economic Survey*

The HES records expenditure and income data for all New Zealand resident households living in permanent dwellings. The HES was conducted annually from 1974 to 1998 and subsequently three-yearly. Up to 1997/98 it covered an April–March year, but in 2000/01 it switched to a July–June year. Approximately 3,000 households participate in the HES, each for a period of two weeks in each survey year, with the sample spread evenly throughout the year so that at any one time a similar number of households are being surveyed. Response rates are generally high, with the 2000/01 survey having a 73 percent response rate.

Expenditure data is collected from both an expenditure questionnaire (one per household) and an expenditure diary (one per adult aged 15 years and over). Up to 2,316 items of expenditure can be collected. The questionnaire uses a 12-month recall period for most goods and services costing \$200 or more, or, for more regular commitments, expenditures are collected using the ‘latest payments’ approach. The diary is completed each day for the following 14 days, ensuring no double counting between questionnaire and diary. The income data is collected via a questionnaire from all persons in the household aged 15 years and over. It captures all regular income (using a ‘current income’ approach) and all irregular income (using a recall approach). As a consequence of the time-frames covered in the survey, expenditure data will reflect expenditures that have occurred over the previous 24 months, while income will reflect the previous 12 months, averaged around the mid-point of the survey year.

The HES contains a number of limitations in measuring saving, including:

- Relatively high sample errors for disaggregated data (the survey is much smaller than SoFIE or the HSS).
- Representativeness. Key households/individuals of interest, such as the wealthy and superannuitants living in non-private dwellings may be under-represented. While the recent adoption of integrated weighting has been designed to overcome certain aspects of un-representativeness, by aligning the sample characteristics to those in the population (from the population census), this will not remove possible biases noted above.
- Time period.
 - As noted earlier, the expenditure data will reflect expenditures over the previous 24 months while the current income data will be for the 12-month survey period, averaging around the December quarter (for the 2001, 2004 surveys).
 - Goods purchased on hire-purchase are recorded in full in the purchase period.
 - Interest payments on non-property loans are all recorded in the 12-month survey period, regardless of length of loan. Conversely, loans taken out in earlier periods but still current are not recorded in the survey.
- Non-sample error may be large, given known difficulties associated with recall (missing items purchased in the last 12 months) and telescoping (including items that were actually purchased outside the 12-month time period).
- Children under 15 years of age are omitted, hence their expenditures may not be fully accounted for.
- Self-employed income, a key variable, is thought to be poorly measured – although the following comparison may suggest otherwise. This income is captured by direct reference to the latest profit and loss account for the business. If the business has not been operating long enough to have accounts, then no self-employed income is recorded.
- The HES does not collect data on wealth holdings, hindering analysis of imputed interest, rent and pension receipts.

From a number of independent studies conducted by Statistics NZ, for example estimating household consumption expenditure in the national accounts and analysing HES expenditures to derive CPI weights, it is known that a number of the above factors contribute to significant underestimates of large items of clothing and consumer durables as well as the more well known items such as alcohol and cigarettes.

Basically, some shortcomings in measurement from the HES are addressed in the national accounts adjustments to attain better measures of income and consumption (and hence savings) for the household sector.

2.2.2 Reconciliation between HIOA and HES-based measures of income and outlays

The following sections summarise a macro-data comparison of the income and outlay transactions contained in the HIOA and the HES. The key differences – which can exist for coverage, conceptual or measurement reasons – are identified and adjustments made to attempt to match the two datasets as closely as possible. This is a simple reconciliation exercise that attempts to ensure that for each component the two sources attempt to measure the same thing. For most transactions, the approach taken is to start with HES figures defined as closely as possible to the HIOA coverage, and to then adjust the HIOA figure to a proxy HES equivalent.

In a number of cases, where major differences were known to exist, even though in principle the same or similar item should be included in both datasets, the item has been removed from both sources so as not to ‘muddy’ the exercise. This has mainly applied to life insurance and pension fund transactions (all flows have been removed from both datasets) and gambling (the net cost is retained in household consumption expenditure, but the net dividend flows between households which have no impact on saving have been removed).

The exercise does not explore why the remaining differences as calculated exist.

The comparison covers the last five HES: 1995/6, 1996/7, 1997/8, 2000/01 and 2003/04. Tables 1 and 2 provide comparisons for the 2000/01 year as an illustration.

2.2.2.1 Income comparison

Table 1

Comparisons between Income Items in the HIOA and HES 2000/01
(*\$million unless stated otherwise*)

Income	HIOA		HES		
	(1) Published	(2) HES equivalent	(3) HES derived	% (3)/(2)	(4) Published
Compensation of employees	48,163	50,653	50,780	100.3	
Net operating surplus from owner-occupied dwellings	5,218	0	0	n.a.	
Entrepreneurial income	14,899	11,023	10,295	93.4	
Investment income receivable	5,442	3,792	3,132	82.6	
Factor/property income from ROW	0	0	661	n.a.	
Social security benefits in cash	767	767	580	75.6	
Social assistance benefits in cash	12,464	12,464	10,185	81.7	
Pension fund benefits	3,307	0	0	n.a.	
Other current transfers	2,384	1,048	668	63.8	
Adjustment for change in net equity in pension funds	814	0	0	n.a.	
Total current income	93,458	79,747	76,301	95.7	
				% (4)/(1)	
HES regular income				82.4	77,050
HES regular and irregular income				86.9	81,228

Explanation of main entries and adjustments:

- HES regular income of \$77,050 million has been adjusted to \$76,301 largely due to the removal of regular private superannuation receipts.
- The differences between HES regular and irregular income (\$77,050 million and \$81,228 million, respectively) are mainly due to items such as inheritances, lump sum superannuation and life fund payments, overseas gifts, gambling winnings and matrimonial settlements. All have been excluded in the comparison.
- The item “factor/property income from the rest of the world” is not a specific item in the HIOA but has been included to show the nil measurement of this item in the published HIOA. This would include compensation of employees earned overseas and investment income earned by households from their direct ownership of overseas financial assets (shares, bank accounts). At present no value is estimated for these income flows in the national accounts, balance of payments and HIOA. The HES is picking up a value of \$661million, most of which is recorded as salary and wages from overseas.
- HIOA compensation of employees has employers’ ACC contributions, employers’ superannuation contributions and fringe benefits removed, as these would not be captured in HES.
- Reported salaries and wages of working proprietors of companies are currently recorded in entrepreneurial income in the HIOA. To better match the HES this has been shifted to compensation of employees, where it is more likely to be recorded.
- Net operating surplus derived from owner-occupied dwellings has been removed from the HIOA as this imputation will not be recorded in HES. A matching figure has been deducted in the HIOA from household final consumption expenditure (refer Outlay section below).
- All flows associated with life insurance and pension funds have been removed from both sources. This removes actual pension contributions and benefits, and also the earnings attributed to insurance/pension policy holders that is classified to investment income receivable.
- Net winnings from all gambling, lotto etc have been removed from other current transfers in the HIOA and are similarly not included in the HES equivalent.
- Insurance claims have been removed from HIOA other current transfers and this item is not recorded in the HES equivalent.

It is important to note that the HES values being used in the comparison are taken from the revised data resulting from the introduction of integrated weighting undertaken in 2000, which has increased HES values by 10–15 percent depending on the year. This accounts for the higher percentage coverage being recorded for HES relative to the HIOA, when compared with the coverage that may have been reported in earlier, similar comparisons.

As Table 1 shows, the HES appears to be recording a very high coverage of salaries and wages and, somewhat surprisingly, entrepreneurial income. Survey experience

indicates that measuring entrepreneurial income via the HES has been troublesome and likely to be subject to significant under-coverage. This comparison (and slightly higher percentages were derived for the other comparison years) would suggest otherwise, as the HES would appear to be capturing well over 90 percent of self employed income. When added to the coverage of salaries and wages, the HES is shown to be covering about 95–99 percent of factor incomes, as measured in the national accounts.

At the total income level, the HES is matching about 96 percent of the equivalent household income sources recorded in the HIOA.

2.2.2.2 Outlays comparison

Table 2

Comparisons between Outlay Items in the HIOA and HES 2000/01 (*\$million unless stated otherwise*)

Outlays	HIOA		HES		
	(1) Published	(2) HES equivalent	(3) HES derived	% (3)/(2)	(4) Published
Household consumption expenditure	67,087	57,418	47,676	83.0	
Investment income payable	4,952	4,952	4,320	87.2	
Income tax	17,031	0	0	n.a.	
Other current taxes	390	0	0	n.a.	
Social security contributions	1,146	0	0	n.a.	
Pension fund contributions	3,843	0	0	n.a.	
Other current transfers	2,283	1,283	1,139	88.8	
Total current outlays	96,732	63,653	53,135	83.5	
				% (4)/(1)	
HES total excl capital outlays				59.1	57,138

Explanation of main entries and adjustments:

- Items excluded from HES total expenditure (\$57,138 million) to derive the adjusted total (\$53,135) mainly comprise capital items (major additions to dwellings), mortgage principal payments and 'saving expenditures' such as payments to saving schemes, life insurance etc. Net capital outlays on housing (purchase, sale and associated costs) are not included in the \$57,138 million total to begin with.
- Changes to the HIOA household consumption expenditure (HCE) to render it comparable with the HES include:
 - removal of expenditure on fringe benefits which is paid by the employer
 - deduction of an amount equal to gross operating surplus earned on owner-occupied dwellings. (Included in HCE is an imputed rental on owner-occupied dwellings. The deduction of gross operating surplus implicitly included in the rental figure reduces the amount to the equivalent housing costs recorded in the HES, namely maintenance costs and property rates.)

- the HES records full premium values for non-life insurance cover, whereas in the HIOA this premium is split between a service charge component (in HCE) and an item “net casualty insurance premiums” recorded in other transfers. To derive the HES equivalent value, the net casualty insurance premium amount is removed from other transfers and added to HCE.
- The main items included in “other current taxes” in the HIOA are motor vehicle registration fees and other government licences and fees. For simplicity, these have been shifted to the “other current transfers” category where similar payments are recorded in the HES equivalent item.
- Net gambling dividends are excluded from transfers in both datasets.
- Social security contributions mainly cover both employer and employee ACC levies. As these are not captured in the HES they are removed from the comparison.
- Income tax is not recorded in the HES.
- All life insurance and pension scheme flows have been omitted from the comparison.

As Table 2 shows, the HES captures about 83 percent of similar items in the HIOA. This figure hardly varies over the five-year comparison. Restricted to HCE only, the HES appears to be capturing 80–84 percent of the equivalent HCE items. This is in contrast to the higher 96 percent of incomes data that the HES appears to be capturing. This has implications for studies that attempt to match income and outlays from the HES in order to derive a saving residual.

2.2.2.3 *Saving comparison*

While Statistics NZ advises caution when attempting to derive a saving residual from the HES, especially at the individual household level, Table 3 below brings together the above income/outlay information to derive an aggregate HES saving figure and compare this with the official HIOA measure. Note that:

- No attempt has been made to derive HES income net of income tax, so the residual is inclusive of tax.
- The published HIOA saving figure is net of depreciation on owner-occupied dwellings. To move it closer to the HES (and layman’s) concept of saving, this depreciation is added back for comparison purposes.

As a result of the above, the HIOA:HES ‘saving’ comparisons use an aggregate equal to [saving (HIOA) + taxation + depreciation]. However, as will be seen below, while we are working with different **levels** compared with the traditional saving statistics, the comparison still reveals the differences in saving patterns between the sources.

Table 3

Differences between Adjusted Income & Outlay Residuals in HIOA and HES
(\$million unless stated otherwise)

	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04
HIOA : As published									
Total income receivable (1)	78,620	83,463	85,741	88,005	91,704	93,458	97,797	100,407	106,373
Saving (2)	-1,960	-1,809	-2,398	-2,651	-1,007	-3,272	-3,509	-7,863	-8,828
Saving ratio (2)/(1)	-2.5%	-2.2%	-2.8%	-3.0%	-1.1%	-3.5%	-3.6%	-7.8%	-8.3%
Depreciaton (3)	1,604	1,692	1,752	1,823	1,880	1,985	2,076	2,205	2,429
Income tax(4)	15,360	15,649	15,749	15,112	15,244	17,031	17,910	19,535	20,431
(5) =(2)+(3)+(4)	15,004	15,532	15,103	14,284	16,117	15,744	16,477	13,877	14,032
Ratio (5)/(1)	19.1%	18.6%	17.6%	16.2%	17.6%	16.8%	16.8%	13.8%	13.2%
HIOA : HES equivalent									
Total income (6)	64,988	68,934	71,395	73,235	77,424	79,747	84,530	87,275	92,843
Total outlays (7)	50,887	54,236	56,632	58,771	60,814	63,653	67,357	72,292	77,455
Difference (8)	14,101	14,698	14,763	14,465	16,611	16,095	17,174	14,983	15,389
(9)=(8)+(3)	15,705	16,390	16,515	16,288	18,491	18,080	19,250	17,188	17,818
Ratio (9)/(6)	24.2%	23.8%	23.1%	22.2%	23.9%	22.7%	22.8%	19.7%	19.2%
HES : HES adjusted									
Total income (10)	58675	60292	65426			76301			89725
Total outlays (11)	42802	43843	46598			53135			63929
Difference (12)	15873	16449	18828			23166			25796
Ratio (12)/(10)	27.1%	27.3%	28.8%			30.4%			28.8%

Notes to the table:

- Total income receivable (1) is equal to (from the published household income and outlay account) total income receivable plus adjustment for the change in net equity of pension funds less depreciation.
- The saving ratio [2/1] is published saving divided by total income receivable, as defined above. The saving ratio is normally defined using disposable income as the denominator, which results in higher ratios. However, as noted above, no estimates have been made for income tax, and so an alternative ratio based on a total income denominator that can be equally applied to the HES data is used.
- For the saving ratio [5/1], income tax and depreciation are added to create a [saving + tax + depreciation] residual, in order to compare with adjusted HIOA data and the HES data.

The published household saving ratio has been negative for a number of years and has fallen further, quite significantly, in the last few years. This decline is also evident when gross saving is used (saving plus depreciation) but less so when income tax is added back (see Table 3 and Figure 3). It would appear that the growth in income tax has had a key impact on the saving residual.

Adjusting the HIOA data to better match the HES series does not alter this basic pattern, with the adjusted saving ratio still showing a decline in the latest few years. However, this pattern is not evident in the adjusted HES data, which, while recording a small fall from 2001 to 2004, indicates similar saving ratios in the latest period to those recorded in 1996–1998 (see Table 3 and Figure 4). This difference in saving pattern between the HIOA and the HES has been commented on in a number of studies, with the suggestion being made that the official series may be understating household saving.

The comparisons above indicate that the level of coverage of the HES when compared with the HIOA is quite different with regard to income and outlays. The comparison clearly shows why the HES-based data may suggest much higher saving levels. HES expenditures are only recording approximately 83 percent of HIOA outlays compared with 96 percent of income. However, assuming that these coverage ratios are reasonably stable – and given the HES error margins they may not be – this does not explain the difference in change in the saving ratio, that is the falling ratio in the official figures. While a further HES is needed to confirm the pattern, there may be a case for concern regarding possible understatement of income in the HIOA. While this is unlikely to occur in the domestic factor income variables (compensation of employees and entrepreneurial income) it is possible that household income derived from profit distributions and from overseas may be understated. Recent work indicates possible understatement of income derived from family trusts and from financial assets directly held overseas. To the extent that these sources may have become more significant in recent years, this may explain the recent falling saving ratios. These issues are currently under investigation.

Figure 3

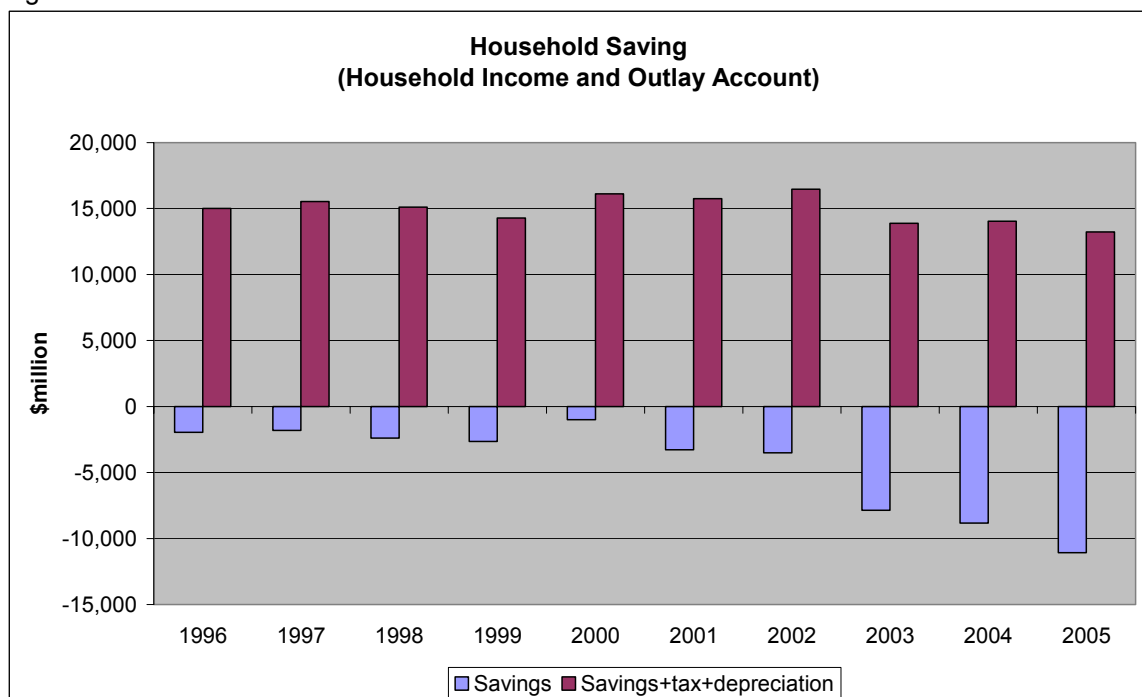
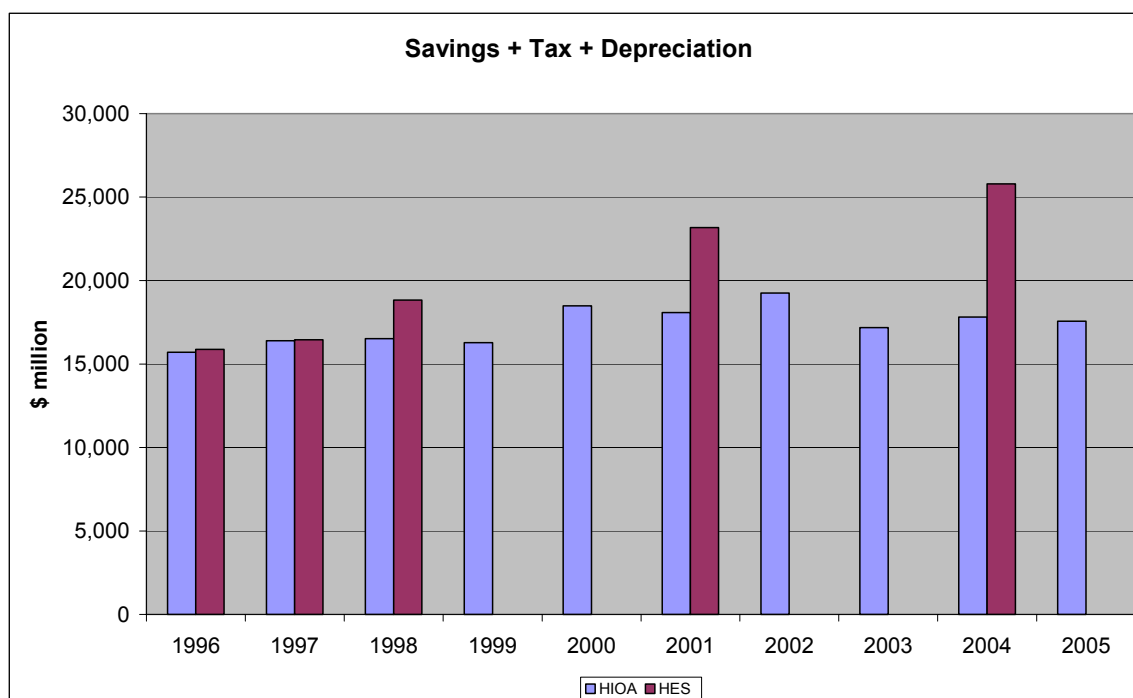


Figure 4

Adjusted HIOA and HES Equivalent 'Saving' Measures



In recent years there has been legitimate concern at not only the declining saving rate shown by the HIOA but also the fact that saving has been negative for some time, and whether or not the saving statistics are misleading.⁸ Comparisons with the HES are often employed to suggest either a positive savings rate or a non-declining trend. The above analysis suggests that while indeed there are some deficiencies in the HIOA, and the decline in the last two to three years may be overstated, the general declining trend is unlikely to be wrong. It is also suggested that the measurement issues involved when deriving a simple savings residual from the HES may be misleading, largely due to:

- (a) Lack of symmetry in the HES under-reporting of income and expenditure items. The key income items in the HIOA – salary and wages, entrepreneurial income and benefits – match reasonably well with estimates derived from other independent sources such as Inland Revenue taxable incomes, and are unlikely to be underestimated. As noted above, there may be some mis-measurement in secondary income flows, such as income from trusts in the last few years, but, over the full period in which saving has been observed to decline, consistent understatement in income items is most unlikely. It was shown above that the HES records approximately 96 percent of HIOA income. Conversely, the HES records only approximately 83 percent of similar matched outlays and, as with the income items, there is no reason to suspect the HIOA over or understates these expense items. In other words, HES derived savings residuals may be significantly biased upwards.
- (b) HES expenditures – or incomes – need to be adjusted for income tax paid.

⁸ The latest expression of concern can be found in Bollard A, Hodgetts B, Briggs P and Smith M, *Household savings and wealth in New Zealand*, Reserve Bank of New Zealand, 2006.

(c) Depreciation needs to be deducted to place the HES savings figure on a comparable basis to that in the HIOA.

If a crude adjustment to the HES-based saving figure is made for the above factors, then it would become negative, although the HIOA declining trend is still not apparent. In the table below, the following assumptions are made: HES expenditure is assumed to be understated by (a conservative) 10 percent; the average annual tax rates implicit in the HIOA are used to derive tax paid on HES-based taxable incomes; and the HIOA depreciation is deducted to make the residual comparable to the HIOA.

Table 4

Derivation of Possible Alternative HES-based Saving Residual

\$(million)					
	1995/96	1996/97	1997/98	2000/01	2003/04
HES savings from table 3	15873	16449	18828	23166	25796
HES savings assuming 10% expenditure understatement (1)	11,593	12,065	14,168	17,853	19,403
Tax estimated on HES incomes (2)	13,919	13,750	14,503	16,257	19,706
Residual (3) = (1) less (2)	-2,327	-1,685	-335	1,596	-302
Depreciation (4)	1,604	1,692	1,752	1,985	2,429
Residual (5) = (3) less (4)	-3,931	-3,377	-2,087	-389	-2,731

The above adjustments are very approximate and are provided mainly to illustrate that the HES-based measures need to be adjusted for a number of factors to bring them into alignment with the HIOA series, and that when these adjustments are made a different conclusion may result. It is not being suggested that the above figures are an accurate portrayal of the actual adjustments that would need to be made to better match the series.

3 Stock (wealth accretion) based approaches

One can also view saving through the common Haig-Simons notion of income/saving, which defines saving from the accretion of wealth and which therefore includes valuation changes. The notion here is that $S = W_t - W_{t-1}$, as W represents the current value of future consumption possibilities. Theoretically, wealth should be defined to include environmental, human, physical and financial net assets. In practice, wealth-based approaches typically measure only some subset of assets (eg in NZ only physical and financial assets are measured), although Australia does attempt a comprehensive measure of national worth.

3.1 Household survey-based wealth measures

Internationally, surveys that collect wealth data directly from households are still fairly uncommon, although more examples are being set up as interest grows in this area. This is due in part to the difficult concepts involved and the difficulty in getting respondents to provide good data. Where wealth surveys have been run, issues of differences between micro and macro estimates are of concern. A recent conference of the International Association for Research into Income and Wealth discussed many of these issues as a major theme.

Data on wealth of households in New Zealand collected directly from the household has not been collected for very long in New Zealand. The first survey to attempt to do this was the Household Savings Survey (HSS) in 2001. Subsequently, a wealth module has been added to every second wave of Statistics New Zealand's longitudinal income survey (SoFIE). Both of these surveys provide measures of the stock of wealth, that is the value of assets net of liabilities owned by the individual and the economic unit that the individual belongs to, as at the date of interview. As SoFIE is longitudinal, that is interviews with respondents are repeated at regular intervals, it will also provide a measure of the dynamics of wealth accumulation along with factors associated with these changes such as income, employment and family status.

The following sections discuss the methodology and results of these two surveys.

3.1.1 *The household savings survey (HSS)*

This survey of just over 5,000 households (5,374 interviews) living in permanent private dwellings, was conducted between August and November 2001. Interviews were conducted in person, using an electronic questionnaire. One respondent per household was selected and if this person was part of a couple, the couple was interviewed as one economic unit. Information on all assets and debts, as well as demographic information was collected. The measurement of net worth (the difference between total assets and total debts) relied on the respondent being able to supply their best estimate of the current market value of the asset, taking into account information from valuation documents, purchase price, asset condition and the current market conditions.

In the HSS a lot of detailed information was collected about the assets and liabilities of individuals. During development of the survey intensive testing of the ability of the respondents to complete the questions was conducted. Where values of particular

asset types were difficult for respondents to supply, additional contextual information was able to be collected to help provide a value. For example, respondents who held shares were able to supply the name of the company and number of shares for a value to be calculated. For superannuation assets held in defined benefit schemes, the name of the scheme, the contributing salary and years of contribution were collected and a value was supplied by the Government Actuary for these schemes. Assets held in trusts and business assets were also collected in some detail.

It should be noted that, despite its name, the HSS does not provide estimates of savings, or the wealth of the **household**. This is because the selection of one individual in each household means the wealth position of the entire household is not collected. As an illustration of this, consider a household that contains a couple and their student child still at home. If the student is the selected respondent, then their individual wealth position may differ significantly from their parents who reside in the same household. For results of the survey see Statistics NZ's website at www.stats.govt.nz.

3.1.2 Survey of family, income and employment (SoFIE)

SoFIE is a longitudinal panel survey designed to measure income, employment and family dynamics. The panel was selected in 2002. Interviews of all individuals aged 15 or over in 11,500 households in permanent private dwellings were conducted over a 12-month period between October 2002 and September 2003. This gave a sample size of just over 22,000 adults in wave 1 of the survey. A response rate of 77 percent was achieved. Interviews are conducted face-to-face by Statistics NZ interviewers who ask a comprehensive range of questions about the respondent's lives over the previous 12-month period. Income and employment data are collected in 'spells' defined by the start and end dates of these activities. Respondents were revisited 12 months later (between October 2003 and September 2004). The income and employment questions were repeated and in addition in this wave they were also asked a short module of questions about their assets and liabilities. This module has been repeated in the 2005/06 year (wave 4) and will follow in subsequent alternate waves. If the household composition has changed in that time any new members of the respondent's household are also interviewed. Just over 20,000 respondents were included in the cross-sectional sample in wave 2. Results from the first two waves are available.

As SoFIE is a longitudinal survey whose primary objective is to measure changes in income and employment over time it is important to keep as many of the original sample members as possible. One means of doing this is to restrict the interview length so that the respondent load is not too great, and minimising the perceived intrusiveness of the questions. This placed some restrictions on the level of detail able to be collected on assets and liabilities in SoFIE when compared with the HSS. However, it was intended to keep the two sources as compatible as possible to facilitate comparisons over time.

One effect that has not yet shown up in the difference between SoFIE and HSS is the effect of attrition on the SoFIE results. Over time, sample members will drop out of SoFIE through death, emigration or our inability to maintain contact with them. This loss is not adjusted for through the use of a 'births' sample. Differential attrition occurs in groups such as young people, people with low income, renters and Māori and this will affect the comparability of the distributions between the surveys over time.

Of those original sample members who responded in the first interview, 89 percent also responded in wave 2. Some of this loss is partly offset by the inclusion in the cross-sectional estimates of new respondents now living with the original sample members.

3.1.3 Differences between the two surveys

The main differences between HSS and SoFIE are:

- The population definition, which is all adults aged 15 and over in SoFIE, and all adults aged 18 and over in HSS.
- In SoFIE, all individuals in the household were interviewed about their share of assets and liabilities. In HSS, one economic unit was selected per household, where these were defined as unattached individuals or couples. The combined assets and liabilities of the couples were recorded.
- HSS collected more detail on trusts, superannuation schemes and property, business and farm assets than did SoFIE.
- HSS included Māori assets held communally, but net worth calculations were done excluding these amounts. SoFIE excluded Māori assets.
- SoFIE included the value of consumer durables and household goods. HSS excluded most consumer durables except leisure and sporting equipment worth more than \$1,000.
- Minor differences exist in the way many variables were asked, including dollar limits placed on values.

3.2 Aggregate data from administrative sources

The Reserve Bank produces annual estimates of household assets and liabilities as at the end of December. These data are sourced from financial institutions, at the aggregate level.

Aggregate figures will include data for people:

- overseas either permanently or long term with assets and liabilities in New Zealand
- living in non-private dwellings such as rest homes, hospitals and student accommodation (halls of residence).

The aggregate figures exclude the value of household investment in businesses unless held as publicly-listed shares, net farm wealth and household consumer durables.

One advantage of constructing balance sheets as part of the national accounting framework would be complete coverage of physical and financial net assets of the

household and business sectors, and integration with the external, resolving domestic and foreign ownership issues.

3.3 The results

Estimates from the three sources are given in Table 5. Note these are all in current dollars and for SoFIE are estimates as published (that is they have not been adjusted for methodological differences between the two sources).

Table 5
Comparisons between HSS, SoFIE and Available Aggregate Level Data
By asset and liability type

Asset type	Household Savings Survey (2001)			SoFIE (2003/04)		Aggregate data	
	Individuals	Couples	Total value		Total value	2001	2004
	Number of people		\$(billion)	Number of people	\$(billion)	\$(billion)	\$(billion)
Māori assets ⁹	25,800	24,100	8.8				
Trusts	13,300	50,500	28.7	75,836	20.5		
Farms	15,800	56,100	38.3				
Businesses	41,300	168,600	38.6				
Commercial property	6,600	20,600	7.3				
Total business investments ¹⁰			84.2	467,990	100.2		
House living in	305,500	546,700	159.2		203.8		
Time share	2,300	10,900	0.1	24,518	0.2		
Holiday home	7,200	34,500	4.4		9.5		
Rental property	32,400	79,800	18.9		28.7		
Overseas property	7,800	15,100	4.2		3.9		
Other property	28,700	40,300	9.9		16.9		
Total property			196.6	1,578,194	263.0	247	429
Superannuation	108,800	272,700	24.7	331,092	12.0	22	20
Life insurance	70,100	188,400	8.8	447,095	13.9	9	9
Credit cards (positive balances)	24,200	26,900	0.1	3,3579	0.1		
Bank deposits	828,700	793,100	26.0	2,538,353	28.5	49	65
Shares	113,900	253,500	14.0		15.8	16	19
Managed funds	59,200	105,600	11.9		12.3	26	25
Other financial assets	31,000	54,700	5.8				

⁹ Māori assets held communally were not collected in SoFIE.

¹⁰ The value of business investments (farms, commercial property and business assets) were collected as a single value in SoFIE.

Total financial investments ¹¹			31.6	716,735	28.1		
Total financial assets ¹²			91.3		82.7	130	150
Motor vehicles	586,100	795,900	16.9	2,399,761	19.1		
Money owed to respondent	74,000	74,200	3.8		1.4		
Cash	25,200	35,900	0.2		0.1		
Collectibles	146,400	305,200	6.9		2.2		
Other assets	307,200	473,300	6.7	410,263			
Leisure and sporting equipment ¹³					6.2		
Total other assets ¹⁴			17.6		9.9		
Household items ¹⁵				2,928,419	77.6		
Total assets without Māori assets and HHL items ¹⁶			435.2		495.3		
Total assets ¹⁷	930,900	855,900	444.0	2,927,946	556.3	377	579

Liability type	Individuals	Couples	Total value		Total value	Total value	Total value
	Number of people		\$(billion)	Number of people	\$(billion)	\$(billion)	\$(billion)
Mortgages	158,100	361,000	54.5	913,833	72.3	71	104
Bank liabilities (including accounts in overdraft)	199,900	231,800	6.7	551,105	10.6	5	6
Credit card (money owing)	313,900	503,000	1.9	1,185,916	2.3	3	5
Student loan	191,400	89,500	3.5		3.9	4	6
Hire purchase	139,400	182,500	0.7		1.1		
Other debt	59,300	52,600	0.9	779,985	1.5	1	2
Total other debt¹⁸			5.1		6.5		
Total debt¹⁹	930,900	855,900	68.3	2,927,946	91.8	84	123
Net worth²⁰					463.9		
Net worth without household items²¹			367.0		403.6	293	457

¹¹ Sum of shares, managed funds and other financial assets.

¹² Sum of superannuation, life insurance, credit cards, bank deposits and financial investments.

¹³ In the HSS, leisure and sporting equipment was collected with other assets.

¹⁴ Sum of money owed to respondent, cash, collectibles, leisure and sporting equipment and other assets not included elsewhere.

¹⁵ Household items were not collected in the HSS.

¹⁶ These figures cover the same range of asset types and are comparable.

¹⁷ Total assets as collected in the surveys.

¹⁸ Sum of student loan debt, hire purchase debt and other debt.

¹⁹ Sum of mortgages, bank liabilities, credit card debt, and other debt.

²⁰ Total assets as collected minus total debt.

²¹ Total assets excluding household items in SoFIE.

Figure 5

HSS and SoFIE as Percent of Aggregates

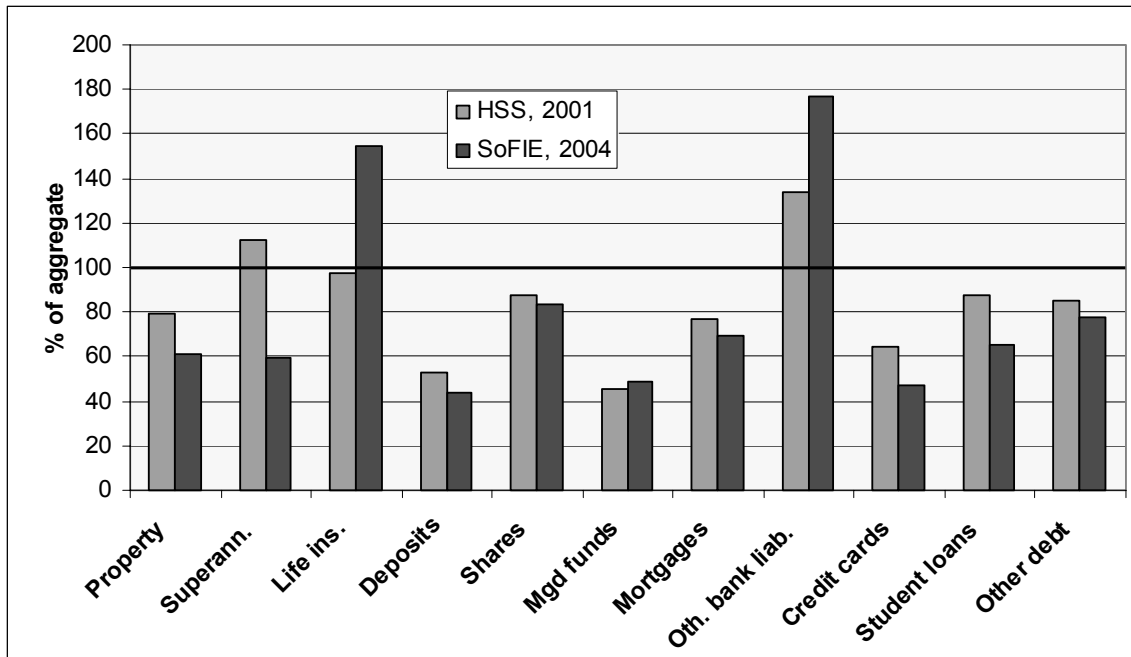
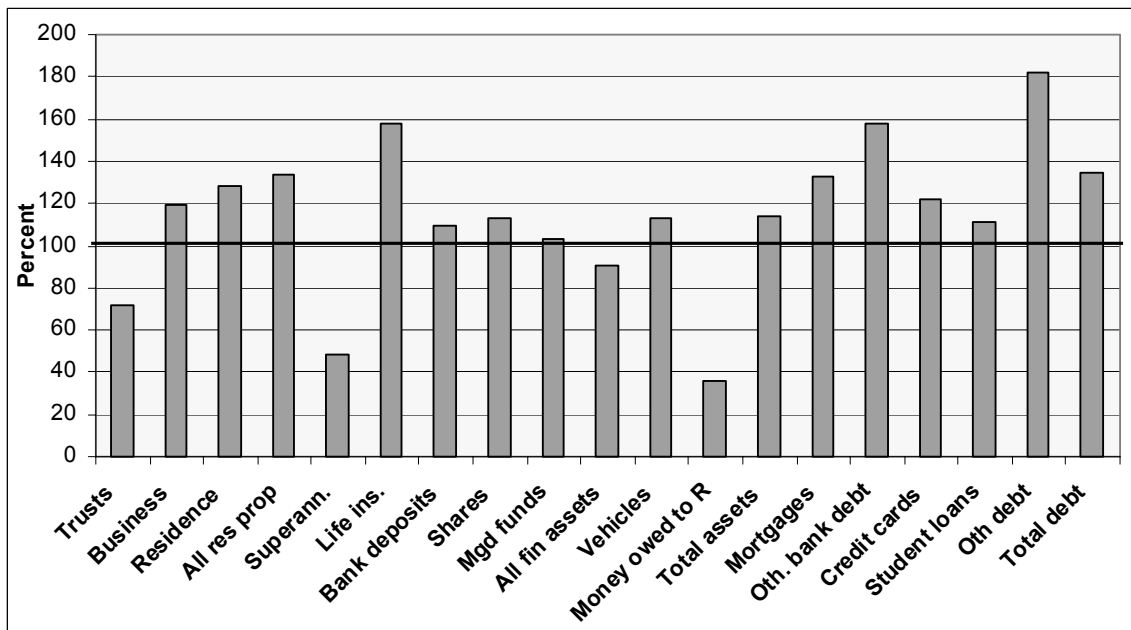


Figure 6

SoFIE as Percent of HSS



Many items cannot be compared. Nonetheless, given the differences in concepts and coverage between the surveys and the aggregate administrative sources, they compare reasonably well which gives us confidence in the robustness of the survey findings. In addition, the survey data provides some results that are not available in the aggregate data, giving us a first look at this data, for example the level of assets held as antiques and collectibles. However, this also means we have no way of validating these particular estimates.

3.4 Differences between survey and aggregate (administrative) data

The main areas of difference between the aggregate data and the survey data are discussed below.

3.4.1 *Trusts*

Setting up family trusts for the protection of assets such as property (houses and farms) and financial investments is increasing in popularity. The complexity of many of these arrangements makes collection of accurate data on their value difficult. Both surveys aimed to collect information from the settlor of the trust, with very little information being available on beneficiaries. This means that overall the value of assets held in trusts as future assets for individuals have not been included in the survey data. Net worth values will therefore be understated, perhaps significantly.

The values given in the tables for trust assets are the debt still owed to the settlor by the trust. Therefore, the assets in trusts that have been entirely forgiven, or where the settlors no longer reside in New Zealand or have died will not be included.

As SoFIE asked much less detail on trusts than was possible in the HSS, the SoFIE figure appears to be understated in comparison with the HSS.

3.4.2 *Property*

The aggregate data is sourced from QVNZ. Respondents to the surveys were asked to supply the registered valuation if this was available. Some of these registered valuations are up to three years old, and in areas where the property market is increasing can be very out of date. Consequently, for SoFIE, where the data are collected continuously over a year, the survey data will be adjusted by a regional property index to make these data more current. This adjustment increases the value of property assets overall by 30 percent, but has not been done for this paper.

The QVNZ figures will include property owned by businesses, overseas residents and residents of non-private dwellings. It excludes unfinished dwellings and vacant land.

3.4.3 *Business wealth*

Neither survey is a particularly good estimator of household ownership of business assets (including farms). In SoFIE, the value of any business, farm or commercial property owned by the respondent was collected as a single combined value, rather than individual amounts. Much less detail was asked of the respondents in order to estimate the current value.

Many farms and commercial rental properties will be held in trust and so may not have been included in the survey figures.

3.4.4 *Superannuation*

The HSS appears to overestimate the value of superannuation when compared with the aggregate administrative data. This may be due to classification differences, particularly with respect to bank accounts and unit trusts used for superannuation purposes. Both surveys do not include schemes where owners are currently receiving income. In HSS more detail was asked about the length of the time in the scheme and the level and frequency of contributions than could be asked in SoFIE. In HSS this information was used by the Government Actuary to value some schemes, such as defined benefit schemes. Thus the HSS is likely to be a more accurate indicator of the level and value of superannuation schemes.

The SoFIE figure is particularly low, both in terms of the number of people reporting ownership of superannuation schemes and in the estimated value of these schemes. An investigation into whether this is a result of respondent error is currently being conducted.

3.4.5 *Bank deposits*

The surveys show significantly lower values for bank deposits than the RBNZ figures. This is likely to be due to:

- no high income over-sample
- non-coverage of people in non-private dwellings particularly the elderly in rest homes
- no children in the survey figures
- survey figures exclude non-residents or people overseas for large parts of the year. (RBNZ data does exclude those non-residents registered for non-resident withholding tax.)

3.4.6 *Mortgages*

The survey estimates are both about 70 percent of the aggregate value for this liability type. Mortgages held by trusts and the lack of a high income over-sample are likely to be the main reasons for the difference between the survey data and the aggregate data.

A small amount of the difference is offset by overestimates in the “other bank liabilities” category, indicating possible problems with the treatment of loans taken for purposes other than housing.

3.4.7 *Conclusion on measures of net worth*

While overall the two household-wealth survey sources compare well with each other and with the aggregate sources, there are some areas of difference. Work is

continuing within Statistics New Zealand to investigate these differences and to consider the long-term strategy for the collection of household wealth data.

4 Ways forward

Saving measures were last comprehensively reviewed in 1998–1999 by the Steering Group on Net Worth and Saving Statistics, established on the recommendations of the Retirement Income Policies – 1997 Periodic Report Group (PRG). Conclusions of the steering group then were that the top priorities were:

- a household longitudinal survey with full coverage of assets and liabilities
- development and execution of a one-off cross-sectional survey of household net worth and saving
- improving private sector data on household balance sheet measurement.

Interestingly, improvements to national accounts data were not ranked highly in the final analysis by the steering group, with the priority placed clearly on improved net worth measures and reconciliation between existing flows and (enhanced) net worth measures. In contrast, an interim report²² prepared by Statistics NZ's National Accounts division did identify improved saving statistics within the National Accounts (including sector accounts, balance sheets and flow of funds) as the third key element, beyond the longitudinal and net worth statistics.

As demonstrated by the preceding discussion of net worth measures above, the major recommendations of the steering group have been implemented and substantial advances made in our measurement and understanding of New Zealand's saving levels, trends and behaviours. SoFIE and the HSS have addressed the first two recommendations. While further refinements can be made and the continuity of these measures is not assured, overall they appear to rate well as measures of net wealth. The third had no specific funded actions as far as we are aware, although initiatives by the RBNZ would appear to fulfil some of the objectives behind that proposal.

In addition, a number of critical data enhancements underpinning the SNA sector accounts have been made, including: enhanced coverage of the Business Frame; expanded scope of the Annual Enterprise Survey and use of tax data, for example, in coverage of commercial property rental, financial and superannuation investment businesses; improvements to balance of payments and international investment data through new and revamped investment surveys; and regular production of Local Government and Crown Accounts that could underpin a Government Sector Income and Outlay Account.

Unfortunately, not all steps have been forward. Since the time of the steering group report, the experimental institutional sector accounts have been discontinued, with the exception of the household income and outlay account. Issues have also been raised in regard to the household income measure potentially omitting a portion of income earned by trusts and individual's earnings on foreign-owned assets. Balance sheets and flow of funds tables have not been produced. A number of developments are proposed or underway.

²² Paper 4.1 "A Strategy to Improve Statistics on Savings and Wealth".

4.1 Improved measurement of income

Work is underway to enhance the coverage of both trust income and New Zealanders' earnings on individually-held overseas assets.²³ In both cases, income would appear to be understated. Whereas any increment to foreign investment income could be expected to raise national income and saving, adjustments to trust income are likely to affect sector allocations (underestimating household income/saving and overestimating the allocation to producer enterprises), but not necessarily total income or saving figures. In respect of trust income, we plan to produce adjusted figures with the revised national accounts scheduled for release in May 2007. Additional data may be required to redress the issues involved in measuring New Zealanders' earnings on individually-held overseas assets, and thus the timetable for completion is more uncertain.

4.2 Completion of institutional sector accounts

A significant amount of work has already been done on developing institutional sector accounts. Data from a number of existing robust survey vehicles has been brought together into a consistent and coherent framework in a developmental system. No major new data sources are needed, although more use could be made of enhanced access to tax data. In order to complete this work a number of issues need to be addressed. Data needs to be analysed and compared to ensure flows between sectors are consistently recorded, for example, resident to non-resident transactions recorded in the BOP statement need to be consistent with aggregates recorded in the Annual Enterprise Survey (AES) collection. More specifically a key component of work involves the reconciliation of major income and transfer transactions between sectors. Central to this sector allocation are interest and dividend flows especially between households and various financial institutions such as banks, funds and trusts. Development of the sector accounts would also need to link into recent development work done for the Crown accounts, the non-profit institutions satellite account and the Local Authority Survey. A production system that enables the compilation, analysis and output production of the accounts would also need to be put in place.

4.3 Development of flow of funds and financial accounts, balance sheets and revaluation accounts

To ensure both consistency and to better understand the inter-relatedness of the various sectors, financial accounts, balance sheets and revaluation accounts need to be developed for all sectors of the economy, not just for the household sector. From the development of sector balance sheets, measures of household wealth and income could be constructed that are consistent within the overall framework. A significant advantage of this comprehensive approach over the current net wealth measures reported above would be integration and possible summation of the household and business (producer enterprise and non-profit organisation) sectors, where boundaries are contentious. This would provide a complete picture of the NZ private sector position and its financial health.

²³ The recent inclusion of self-employment income within the LEED dataset may assist the measurement of entrepreneurial income.

Restricted to annual accounts, most of the financial account entries would largely be obtained by taking the change in financial assets and liabilities as recorded in consecutive balance sheets. Disentangling volume and price (revaluation) changes is an acknowledged problem that would need to be resolved. The basic data required to develop these accounts (excluding the revaluation accounts) is generally available for the corporate sector (via AES and RBNZ statistics) and for the government sector (via the Local Authority Survey, CFIS and Crown Accounts). However, a large amount of work, including some re-development of AES to accommodate consolidated enterprise accounts, would still be involved in the compilation of these accounts. There are no specific plans for their commencement.

4.4 Sustaining household saving analyses

The development of SoFIE and the HSS has advanced household saving measurement and analyses significantly. Further insights are anticipated as the longitudinal information in SoFIE accumulates and is analysed over the next few years. However, SoFIE is scheduled to complete its last phase of collection in 2010/11, the same year that the HSS is scheduled to repeat. Neither SoFIE nor the HSS is assured of extension or future replication, with the funding stream also terminating at that time. It would be unfortunate if the movement towards integrated income, saving and net worth statistics was halted, with neither aggregate national accounting wealth measures nor household-based wealth collections being supported beyond 2011.

5 Conclusions

This paper has presented and compared alternative measures of saving from flow and stock perspectives, and has compared and contrasted aggregate and unit level data statistics. The national accounts HIOA encompasses a much broader definition of income and consumption than does the household survey-based HES, and provides a superior measure of saving when measured as a flow. Nonetheless, when adjusted to a comparable basis, the analysis overall demonstrates greater conformity between these measures than it does differences between them. Some issues in the HIOA's income coverage were identified, whereas we established that it is necessary to adjust HES expenditure upwards if it were to be used for saving analysis.

Unit level and aggregate data measures of household net wealth were also examined, with strengths and weaknesses identified. Given the differences in concepts and coverage between the HSS and SoFIE surveys and the aggregate administrative sources, they compare reasonably well which gives us confidence in the robustness of the survey findings. In addition, the survey data provides some results that are not available in the aggregate data, and of course they permit distributional and microeconomic analyses not possible from the aggregate data.

Significant improvements have been made in measuring New Zealand's overall and household saving over the past six years, particularly with the household wealth statistics now available and improved measures of New Zealand's interactions with the rest of the world. Further possible statistical developments were reviewed, with some earmarked for immediate action and others put forward for future consideration and action. Preliminary assessment suggests these initiatives would impact more on the sectoral allocation of income and saving than on the aggregate levels, but given the intense interest in household sector behaviour the enhancements proposed would be a significant contribution to critical policy debates around New Zealanders' saving.

Appendix 1: The SNA Framework

The following set of simplified accounts illustrates the structure and content of national accounts tables. Each of these accounts can be produced for the nation and for each economic sector (producer enterprises, financial intermediaries, general government, households and the private non-profit organisations serving households).

PRODUCTION ACCOUNT

Intermediate consumption <i>Consumption of fixed capital</i> <i>Value added, net</i>	Gross output
Total input	Total output

INCOME AND OUTLAY ACCOUNT

Final consumption expenditure Interest paid, etc Other payments <i>Saving</i>	<i>Value added, net</i> Interest received, etc Other income
Total current expenditure	Total current income

CAPITAL ACCOUNT

Gross capital formation Purchases of land, net Purchases of intangible assets, net <i>Net lending</i>	<i>Saving</i> <i>Consumption of fixed capital</i> Capital transfers, net
Total capital expenditure	Total financing of capital expenditure

FINANCIAL ACCOUNT

Change in cash and deposits Change in investments Change in other financial assets	<i>Net lending</i> Change in loans/mortgages Change in other liabilities
Net acquisition of financial assets	Net incurrence of liabilities

RECONCILIATION ACCOUNT

Revaluations of financial assets Revaluations of fixed assets Revaluations of other assets	Revaluations of liabilities Changes in net worth
Revaluations of assets	Revaluations of liabilities

BALANCE SHEET

Financial assets Fixed assets Intangible non-financial assets	Liabilities Net worth
Total assets	Total liabilities

Appendix 2: Household Income and Outlay Account

(year ended 31 March)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Disposable income										
Compensation of employees	39,450	42,066	43,769	44,739	45,834	48,163	51,749	55,200	59,009	63,258
Gross operating surplus - owner-occupied dwellings	6,243	6,719	7,018	7,262	7,230	7,203	7,305	7,489	7,907	8,272
Entrepreneurial income										
Farm	1,939	2,025	1,861	1,889	2,556	4,399	4,859	3,102	3,219	3,208
Non-farm	8,625	8,899	9,315	10,103	10,575	10,500	11,158	11,751	12,601	13,327
Investment income receivable										
Actual interest	3,128	3,638	3,355	2,925	2,286	2,902	2,673	2,876	2,884	3,472
Earnings attributed to insurance/pension policyholders	1,526	1,819	1,686	1,593	1,452	1,650	1,643	1,667	1,658	1,780
Dividends	948	1,193	1,228	1,466	3,634	890	1,040	1,288	1,540	1,755
Total primary income receivable	61,859	66,360	68,231	69,978	73,566	75,707	80,426	83,373	88,819	95,072
Social security benefits in cash	926	925	914	853	804	767	729	752	794	790
Social assistance benefits in cash	11,070	11,481	12,065	12,274	12,281	12,464	12,705	12,756	13,272	13,284
Pension fund benefits	2,982	3,319	3,576	3,455	3,656	3,307	3,339	3,268	2,778	2,736
Other current transfers										
Interest concessions	8	6	3	2	0	2	4	3	8	7
Residents	1,537	1,610	1,769	1,859	1,913	1,900	1,888	2,010	2,081	2,136
Overseas	412	377	366	424	433	482	505	500	495	489
Total secondary income receivable	16,935	17,719	18,693	18,867	19,087	18,922	19,170	19,289	19,427	19,443
Total income receivable	78,793	84,078	86,925	88,845	92,653	94,629	99,596	102,662	108,246	114,515
Investment income payable										
Consumer debt interest	1,018	1,186	1,106	967	937	1,082	1,205	1,418	1,602	1,770
Housing interest	2,873	3,556	3,972	3,945	3,592	3,870	4,246	4,553	5,229	6,321
Total primary income payable	3,891	4,742	5,078	4,912	4,528	4,952	5,451	5,971	6,831	8,091
Income tax	15,360	15,649	15,749	15,112	15,244	17,031	17,910	19,535	20,431	21,560
Other current taxes	467	455	469	484	418	390	405	408	434	435

Social security contributions	1,150	1,423	1,553	1,799	1,445	1,146	1,292	1,490	1,469	1,501
Pension fund contributions	4,130	4,094	3,847	4,155	4,314	3,843	3,336	2,992	3,079	3,355
Other current transfers										
Fines and penalties	105	105	125	167	204	213	236	267	276	272
Private non-profit organisations	440	415	435	441	449	457	494	532	573	619
Residents	1,393	1,400	1,580	1,569	1,590	1,550	1,613	1,785	1,906	1,977
Overseas	87	57	59	60	60	63	69	77	83	92
Total secondary income payable	23,132	23,599	23,818	23,788	23,724	24,692	25,355	27,087	28,251	29,811
Total income payable	27,024	28,341	28,896	28,700	28,253	29,643	30,806	33,058	35,082	37,902
Balance on primary income	57,967	61,618	63,153	65,065	69,038	70,756	74,975	77,402	81,988	86,981
Balance on secondary income	-6,198	-5,880	-5,125	-4,921	-4,637	-5,770	-6,186	-7,798	-8,824	-10,368
Adjustment for change in net equity of pension funds	1,431	1,077	568	983	931	814	277	-50	556	837
Gross disposable income	53,201	56,815	58,597	61,128	65,332	65,800	69,066	69,554	73,719	77,450
Less consumption of fixed capital	1,604	1,692	1,752	1,823	1,880	1,985	2,076	2,205	2,429	2,732
Disposable income	51,597	55,123	56,846	59,305	63,452	63,815	66,990	67,349	71,290	74,718
Use of disposable income										
Final consumption expenditure	53,556	56,931	59,243	61,956	64,458	67,087	70,500	75,212	80,119	85,787
Saving	-1,959	-1,808	-2,397	-2,651	-1,006	-3,272	-3,510	-7,863	-8,829	-11,069
Use of disposable income	51,597	55,123	56,846	59,305	63,452	63,815	66,990	67,349	71,290	74,718

Glossary of Terms

Primary Income Receivable

Gross Operating Surplus of Owner Occupied Dwellings

This item represents the surplus, inclusive of interest paid, from the notional activity of the operation of owner-occupied dwellings. Following the United Nations System of National Accounts (SNA), the New Zealand SNA treats persons owning their own home as both 'landlords' and 'tenants' and imputes a value for the economic activity involved in home ownership. As landlords, homeowners make payments to cover maintenance, insurance and local authority rates. As tenants, homeowners pay imputed rent. The difference between the income (ie imputed rent) and the expenses is the gross operating surplus.

Compensation of Employees

This is the payment of salaries and wages whether in cash or in kind (such as fringe benefits) to employees. Includes contributions paid on employees' behalf to superannuation funds, private pension schemes, the Accident Compensation Corporation (ACC), casualty and life insurance schemes, etc.

Entrepreneurial Income

The net current income of unincorporated businesses, plus salaries and wages paid to working proprietors of private companies. In the case of the latter, these payments are regarded to be more in the nature of a proprietorial withdrawal than a wage payment. The unincorporated businesses are those owned and operated by households, either as sole proprietorships or as partnerships. Entrepreneurial income is split into farm and non-farm.

Investment Income Receivable

Dividends

This is the income that householders receive in the form of dividends as the result of directly owning shares in companies.

Actual Interest

This is interest that householders receive from their investments in banks etc.

Earnings Attributed to Insurance/Pension Policyholders

This consists of the earnings of life insurance, non-life insurance and pension funds, which are imputed to households who, following the United Nations SNA guidelines, are considered to be the owners of the fund assets. It should be noted that while actual payments from pension funds are regarded as a reduction in householders' net equity in life insurance reserves and pension funds (ie as dis-saving) and therefore do not reflect transfers between sectors, the income and outlay account adopts the SNA93 convention of 'dual recording'. By this, actual pension contributions and benefits are recorded gross in the account in order to present income information that better matches the perception of households. However, in order to reconcile this treatment with the fact that households are considered to be the owners of these funds, an adjustment entry is introduced in order to derive a correct savings figure.

Secondary Income Receivable

Social Security Benefits in Cash

This consists of receipts from the ACC, which is classified as a social security fund. Because they are benefits in cash it includes all cash benefits and lump sum payments paid to individuals and households by the ACC as income maintenance.

Social Assistance Benefits in Cash

Includes all cash benefits paid to individuals and households by public authorities, private non-profit organisations and private enterprises, for example unemployment benefits, national superannuation and education scholarships.

Pension Fund Benefits

These are benefits payable to households by enterprises administering private funded pension schemes.

Other Current Transfers

See Secondary Income Payable for definitions.

Primary Income payable

Investment Income Payable

Consumer Debt Interest

This consists of interest paid on hire purchase, credit advances, student loans etc.

Housing Interest

This relates to interest paid through home ownership, such as mortgage interest, and includes the value of interest concessions.

Secondary Income Payable

Income Tax

This relates to income tax paid by resident households. It is the cash amount received by Inland Revenue during that year.

Other Current Taxes

Included here are motor vehicle registrations, cheque and credit card duty, broadcasting fee, gaming licences, etc.

Social Security Contributions

This consists of contributions made to ACC and private workplace insurance, which are classified as social security funds.

Pension Fund Contributions

These are payments (or contributions) made by households to enterprises administering private funded pension schemes.

Other Current Transfers

Interest Concessions

Defined as reimbursements by government to lending authorities who, following government policy, charge qualified borrowers an interest rate below the normal rate. In the household account, households are recorded as receiving this reimbursement from government as income and then paying out the full amount of the interest owed to the lending authorities (including the value of the interest concession).

Fines and Penalties

Included here are court fines, infringement fees, criminal fines, etc.

Transfers to Private Non-profit Organisations

Included here are subscriptions and donations paid to sports clubs, hobby clubs, churches and charities such as the Red Cross.

Other Current Transfers to/from Residents

The SNA93 guidelines recommend that current transfers between households be recorded gross, so a number of items in this category are included on both the income and outlay sides of the accounts.

Transfers consist of three main components:

(1) *Gifts and Maintenance Payments*

This item covers gifts between households and maintenance payments. On the income side other small sources of income are included such as honoraria, and income not elsewhere classified. It is these items that are responsible for the difference between the income and outlay of other current transfers etc. to and from residents.

(2) *Gambling*

The Totalisator Agency Board effectively redistributes money between households, once it has deducted an amount to cover operating costs and profit. This deduction is classified as a payment for a service and is included in household consumption expenditure and the balance, which is equal to dividends received, is included as a transfer on both sides of the account. Lotto and lottery winnings (net of the service charge) are excluded as they are classified as capital transfers, impacting more on household net wealth rather than current income.

(3) *Non-Life Insurance Premiums (net) and Insurance Claims*

Non-life insurance premiums (net) are the premiums paid by households less the service charge, which is included in household consumption expenditure. This relates to housing and non-housing insurance. Insurance claims are the claims households receive from insurance companies.

Overseas

These figures are derived from the Balance of Payments data. The outlays consist of personal remittances and donations, but exclude legacies which are classified as capital transfers. The income includes miscellaneous transfers such as allowances, pensions and gifts.

Adjustment for the Change in Net Equity of Pension Funds

Refer above, *Earnings Attributed to Insurance/Pension Policyholders*. This item is the adjustment that ensures the saving of households is the same as it would have been if pension contributions and benefits had not been recorded as current transfers.

Use of Disposable Income

Final Consumption Expenditure

All outlays on consumer goods and services, including expenditure on durables such as motor vehicles and furniture, and the imputed rent of owner-occupied dwellings. Households consist of New Zealand resident individuals and families and consumption expenditure relates to their outlays both within New Zealand and overseas.

Savings

The residual item in the household income and outlay account, as the difference between all current income and outlay items.

References

- Bollard A, Hodgetts B, Briggs P and Smith M (2006). *Household savings and wealth in New Zealand*, Reserve Bank of New Zealand, 2006.
- Briggs P (2006). *Family trusts: ownership, size and their impact on measures of wealth and home ownership*, Reserve Bank of New Zealand.
- Department of Statistics (1991). *Report of the Review Committee: Income & Wealth Statistics*, p 28.
- Haig R M L (1921). "The Concept of Income – Economic and Legal Concepts", in R A Musgrave and C S Shoup (eds) *Readings in the Economics of Taxation*, London, Allen & Unwin, London, p 54–79.
- Inland Revenue. *Briefing for the Incoming Minister of Revenue – 2005*, New Zealand Inland Revenue Department.
- OECD (2005). *National Accounts of OECD Countries, General Government Accounts*.
- Savage J (1997). *Savings in New Zealand: A Background Paper*, Report for the Office of the Retirement Commissioner, NZIER.
- Simons H C (1938). *Personal Income Taxation*, University of Chicago Press, Chicago.
- Statistics New Zealand. *Balance of Payments and International Investment Position: Year ended 31 March 2006*.
- Statistics New Zealand (2001). *Household Savings Survey*.
- Statistics New Zealand. *National Accounts: Year ended March 2005*, Hot Off The Press.
- Statistics New Zealand. *National Accounts: Year ended March 2006*, Hot Off The Press.
- Statistics New Zealand. *Survey of Family, Income and Employment Dynamics (Wave Two): Up to September 2004*, Hot Off The Press.
- Statistics New Zealand (1999). *A Strategy to Improve Statistics on Savings and Wealth*, Report for Steering Group on Net Worth and Saving Statistics.