The Measurement of Saving in Australia

This paper analyses the various available measures of household and overall private saving, with a particular focus on their strengths and weaknesses from a conceptual and practical perspective. The paper is intended as an overview of the important factual information on the measurement of saving in Australia.

EXECUTIVE SUMMARY

The most commonly quoted measure of saving is the net household saving ratio, as published by the ABS. It is determined residually and can be affected by underlying measurement and classification problems. As such, it may not provide an accurate indication of the underlying saving behaviour of households.

The pure economic definition of saving is the change in the wealth or net worth of households from one period to the next. In this context, an important limitation of conventional measures of saving is that they do not take into account the effect of changing asset values on the wealth of households. There have been several attempts to estimate Australian net private sector wealth. Although such measures are inherently volatile, they suggest that saving through the 1990s has exceeded the long run average.

Consideration of possible alternative measures of saving raises questions as to how the measure itself is to be defined and how to define (especially over time) sectors in the economy. There are conceptual and practical arguments about whether to use a gross or a net (that is, gross saving less depreciation) measure of saving. The net household saving ratio can be affected by the approach used for the measurement of depreciation. For example, the use (consistent with international standards) of replacement cost in depreciating dwellings means that when the cost of building a house increases, the measured household saving ratio may fall even though household net worth, at least initially, increases. Further, international comparison of net saving measures is difficult because the methods for calculating depreciation vary significantly across countries. As a result, gross measures of saving enable international comparisons to be more soundly based.

The household sector is defined as including both individuals and unincorporated enterprises. Consequently, changes in the structure of the business sector, particularly small business, can have a significant effect on whether income (and hence saving) is classified as belonging to the household

or the corporate sector. The trend towards incorporation over recent decades suggests that some of the saving that was previously measured as accruing to the household sector would now be measured as accruing to the corporate sector.

As a result, it may be more accurate to assess trends in private saving as a whole rather than the saving of the household sector. The measure of private saving which can be derived from the National Accounts takes into account household saving and the undistributed income of private corporations. However, it generally does not include the effect of asset price movements. The increase in private saving as a percentage of GDP in the early to mid-1970s, and the downward trend since then, is much less pronounced than that of household saving. Gross private saving rose from around 19 per cent of GDP to around 22 per cent of GDP in the early to mid-1970s, and is currently around 15½ per cent of GDP. A similar trend is evident in some other developed countries. By comparison, household saving in Australia is currently around 3 per cent of net household disposable income, compared with an average of around 11 per cent in the 1960s and a peak of around 18½ per cent in the mid-1970s.

Several studies have noted that traditional measures of saving are distorted by the National Accounts inclusion of interest receipts and payments on a nominal rather than real (post inflation) basis. A measure of private saving which is adjusted for the effects of inflation on nominal interest receipts and payments is likely to be more representative of private saving behaviour. After the gross private saving measure is adjusted for inflation, the decline since the mid-1970s appears more muted, with the current inflation adjusted private saving rate around 3½ per cent of GDP lower than it was at the end of the 1960s.

The net (of depreciation) private saving measure that can be derived from the National Accounts is more suggestive of a downward trend over recent decades than the gross private saving measure. Net private saving (unadjusted for inflation) rose from an average of 9 per cent of GDP in the 1960s to around 12 per cent in the mid-1970s and is currently around 4½ per cent of GDP, about 2 per cent of GDP below the average of the past two decades. Adjusting the net private saving measure for inflation reduces the extent of this decline. That said, the current inflation adjusted net private saving rate is around 4 per cent of GDP lower than it was at the end of the 1960s.

A range of other adjustments could be made to the conventional measurement of private saving to reflect more accurately the conceptually ‘pure’ definition of saving. These include the treatment of consumer durables and investment in human capital, the impact of capital gains tax of saving measures and the treatment of the statistical discrepancy.

In summary the significant decline in the ABS net household saving ratio since the mid-1970s appears to reflect measurement and classification limitations rather than a significant change in saving behaviour. Broader measures of the

saving behaviour of Australian households, such as gross and net private saving (particularly after adjustment for inflation) and changes in net worth, present a different picture. While there are uncertainties about the appropriate definition and measurement of saving, these broader measures of private saving have shown a much less pronounced downward trend than the ABS net household saving ratio over recent decades.

INTRODUCTION

This paper analyses the various available measures of household and overall private saving, with a particular focus on their strengths and weaknesses from a conceptual and practical perspective. The paper is intended as an overview of the important factual information on the measurement of saving in Australia.

MEASURES OF HOUSEHOLD AND PRIVATE SAVING

There is a range of measures of household and overall private sector saving. This section discusses several such measures, with a particular focus on conceptual and practical measurement issues.

Household saving

The most commonly quoted measure of household saving in Australia is the ***net*** household saving ratio published as a memorandum item by the Australian Bureau of Statistics (ABS) in its National Accounts publications.[1] The net household saving ratio is defined by the ABS as the proportion of the net disposable income of all households that is not consumed by households in that period. In this context, net disposable income is the gross disposable income of the household sector net of depreciation[2] on the capital assets of the household sector in the period.

As illustrated in Chart 1, the ABS net household saving ratio averaged around 11 per cent of net household disposable income in the 1960s, rising to a peak around 18½ per cent in the mid-1970s. According to this measure, the net household saving ratio fell from around 13 per cent to around 6 per cent over the course of the 1980s, and from around 6 per cent to around 3 per cent thus far over the course of the 1990s.

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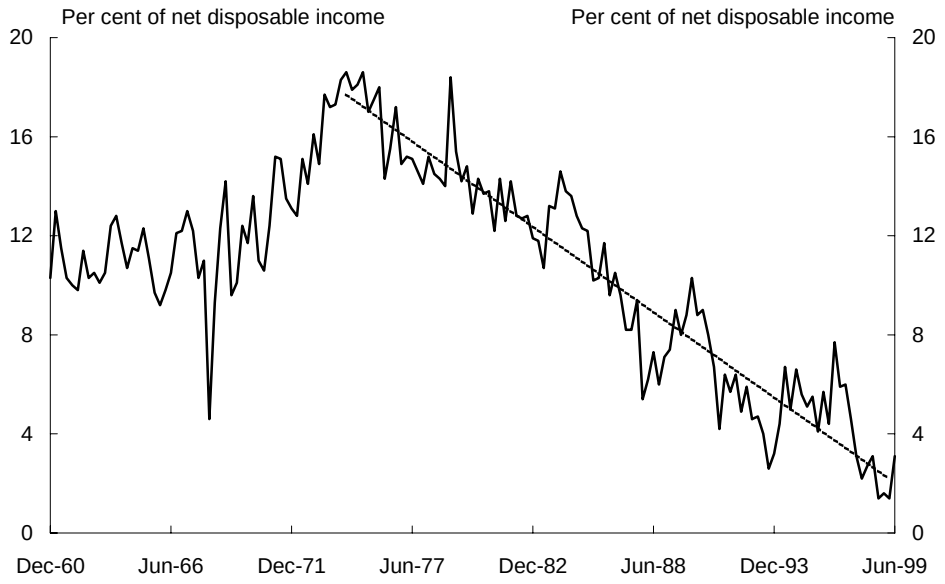
1 Australian Bureau of Statistics, *Australian System of National Accounts*, Catalogue Number 5204.0; *National Income, Expenditure and Product*, Catalogue Number 5206.0.

2 Depreciation is referred to in the National Accounts as 'consumption of fixed capital'.

Chart 1: ABS net household saving ratio



Source: ABS Cat. No. 5206.0.

The trend in this measure of household saving in Australia has been broadly similar to that experienced in some other developed countries[3] (see Chart 2). For example, although the measured household saving ratio did not peak quite as high in the United States in the 1970s and hit a higher peak in Canada in the early 1980s, since then the ratio in these two countries has trended down to be at historically low levels. Japan, generally considered a high saving country, has a measured household saving ratio consistently about 7 to 10 per cent higher than the United States, Canada and Australia, but this ratio also declined over the period between the mid-1970s and late 1980s. During the 1990s, Japan's household saving ratio has been relatively steady.

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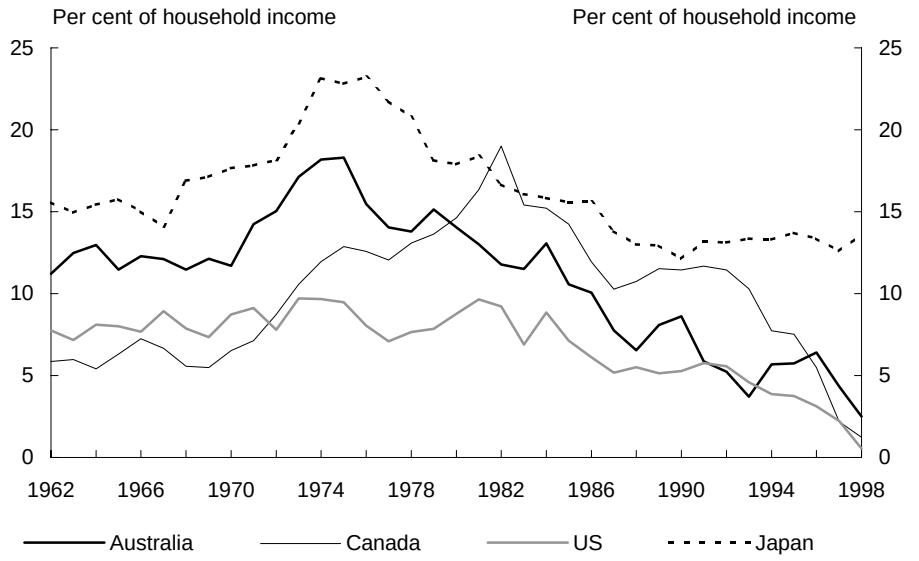
3 Measures of the household saving ratio are not strictly comparable across countries because each country produces its national accounts using its own conventions that often differ substantially. As a consequence, the discussion is restricted to a comparison of broad underlying trends.

Chart 2: Household saving ratios — international comparison



Source: OECD Economic Outlook No. 65.

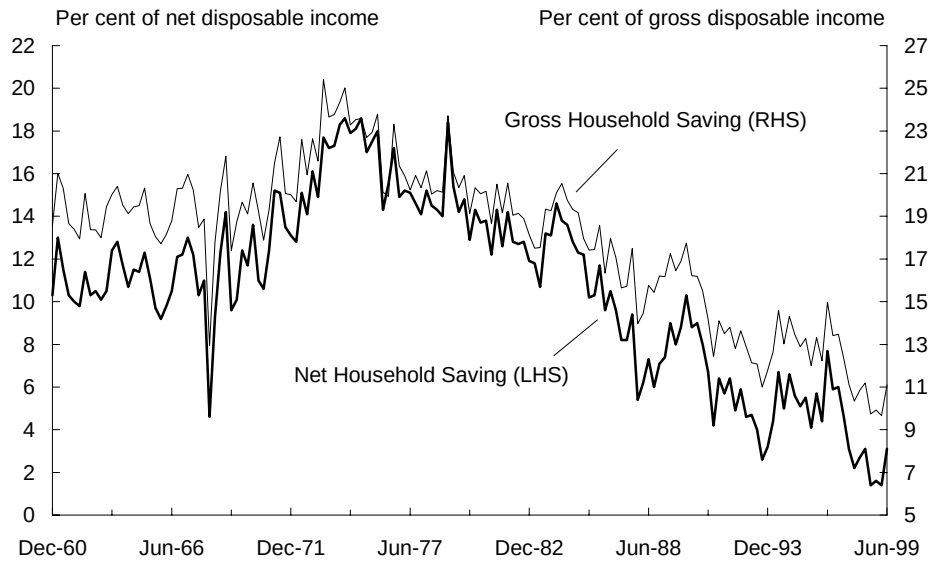
Gross versus net household saving

There are conceptual and practical arguments about whether to use a gross measure or a net (that is, gross saving less depreciation) measure of saving.

From a conceptual point of view, net saving is appropriate because it more closely reflects the theoretical notion of saving representing the change in the wealth or net worth of households from one period to the next. However, net saving can be affected by the approach used for the measurement of depreciation, including whether depreciation is calculated using a capital stock that is valued at historical or current cost and the amortisation method employed. For example, consistent with international standards, current cost is used to estimate the depreciation of dwellings (a significant component of household depreciation); however where the price of new houses rise, the consequent increase in the value of the existing stock of dwellings is not included in household income. This means that when the price of new houses increase, the measured household saving ratio may fall even though household net worth, at least initially, increases.

Chart 3 compares the ***gross*** household saving ratio with the ***net*** household saving ratio over the past four decades. Using the gross household saving ratio measure, the apparent decline in household saving over recent decades is muted slightly, as is the rise in household saving in the mid-1970s.

Chart 3: ABS gross and net household saving ratios



Source: ABS Cat. No. 5206.0.

The gap between the gross and net household saving ratios reflects the estimated depreciation of household capital assets, as measured by the ABS. The annual rate of depreciation of the household capital stock used by the ABS in constructing these measures was broadly constant during the 1960s at around 6 per cent. This fell to a broadly constant annual rate of 4.5 per cent in the 1970s, as the increased share of dwellings in the household capital stock (which depreciate at a lower rate) more than offset the effects of increases in new house prices. As illustrated in Chart 3, this fall in the rate of depreciation led to a narrowing of the gap between the gross and net household saving ratios in the early 1970s.

The subsequent widening of the gap between the gross and net household saving ratios in the mid to late 1980s reflects the rapid increase in the value of the household capital stock due largely to sharply higher new house prices which, in turn, led to increased levels of depreciation. For example, the ABS estimates that the value of the housing capital stock increased by 70 per cent between 1986-87 and 1989-90.

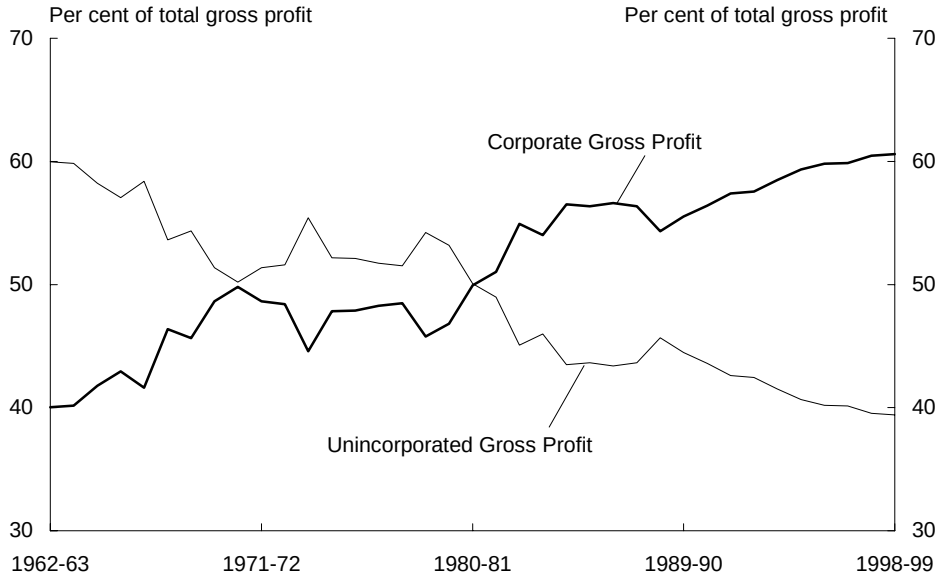
International comparison of net saving measures is difficult because the methods for calculating depreciation vary significantly across countries. As a result, gross measures of saving enable international comparisons to be more soundly based.

A broader measure of 'household' saving which includes saving by unincorporated enterprises

It is often assumed that a clear delineation exists between saving by the household and business sectors. However, in practice this distinction is not clear cut, particularly in relation to unincorporated enterprises. Reflecting data limitations — and consistent with international standards — the household sector as measured by the ABS includes, amongst other things, the gross profit[4] of unincorporated enterprises (eg, sole traders and partnerships). The ABS notes that 'household and unincorporated enterprises are included in the one sector because the owners of ordinary partnerships and sole proprietorships frequently combine their business and personal transactions'.[5]

Consequently, changes in the structure of the business sector, particularly small business, can have a significant effect on whether income (and hence saving) is classified as belonging to the household or the corporate sector. In particular, recent decades have seen a significant trend towards corporatisation by Australian business. This can be illustrated by the steady increase in the proportion of gross profit earned through company structures and the corresponding decline in the proportion earned by unincorporated businesses (Chart 4).

Chart 4: Share of gross profit — corporate and unincorporated enterprises



Source: ABS Cat. No. 5206.0.

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4 In ABS publications, gross profit is known as the gross operating surplus.

5 ABS, *Australian National Accounts — Concepts, Sources and Methods*, ABS Cat. No. 5216.0, page 16.

There are several possible factors that could explain this trend towards corporatisation by Australian business. Corporatisation, for example, offers limited liability and other commercial advantages.

The consequences of this trend toward corporatisation on the measurement of the household sector saving ratio are often overlooked. To the extent that the increasing corporatisation of Australian business reflects changes in the structure of the small business sector, then (unless all corporate profits are distributed to households as dividends) the income measured as accruing to the household sector will be lower than otherwise. This is because the ABS measure of household income includes dividends paid from the corporate sector to the household sector but does not include the household sector's interest in undistributed income of the corporate sector (even when realised as a capital gain).

On the other hand, the relationship between small business households' consumption and the income of their business is unlikely to be affected significantly by whether their business is incorporated or unincorporated. Therefore, the trend towards corporatisation by Australian enterprises is likely to have reduced the ***measured*** household saving ratio over time, as income attributed to the household sector will decline relative to household consumption.

An illustration of the magnitude of this shift on the gross household saving ratio can be gauged by estimating what the gross household saving ratio may have been under the assumption that unincorporated enterprises'[6] current share of gross profits had prevailed over the past three decades (see Chart 5). Under this assumption, the fall in the gross household saving ratio from the early-1970s is much less pronounced and, while the current level of the ratio is still low by historical standards, it is higher than its level for most of the 1960s.

That said, there is a range of technical and data difficulties in making such an adjustment and hence the results should be regarded as only being indicative of broad trends. It also points to the potential benefit in examining trends in overall gross private saving (which is unaffected by such structural changes) rather than the much more narrow definition of household saving. This issue is discussed further below.

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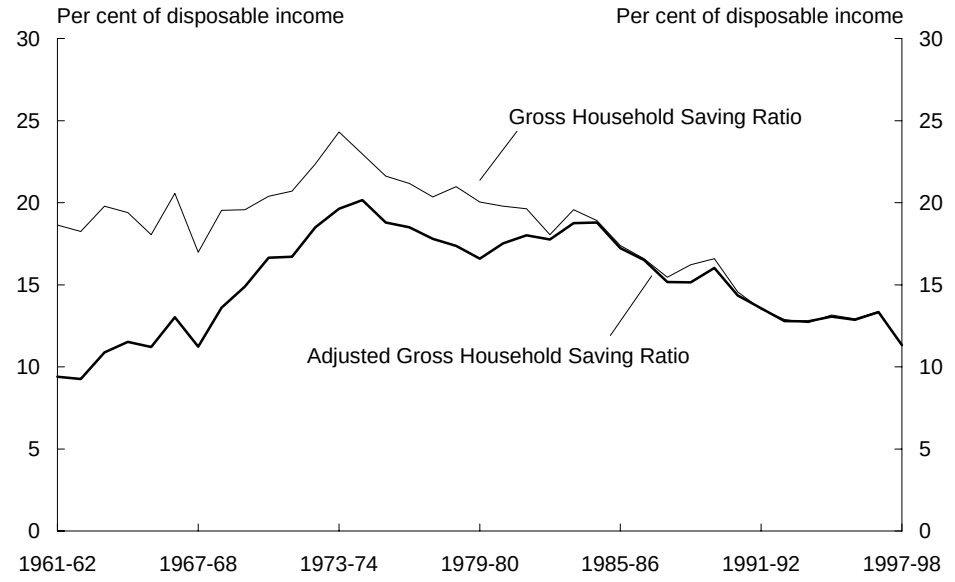
6 Adjusted such that dividend flows to households remain fixed through history at their current levels as a proportion of income.

Chart 5: Gross household saving ratio adjusted for a constant share of gross profit



Source: ABS Cat. No. 5204.0 and Treasury estimates.

Private Saving

Private and household saving are often (incorrectly) used interchangeably when referring to Australia's saving performance. As noted above, household saving as measured by the ABS refers only to saving by the household sector, including unincorporated enterprises. It does not include changes in the value of the household sector's interest in private corporations, whether by reason of changes in undistributed income or asset price fluctuations. On the other hand, private saving is the sum of saving by the private (financial and non-financial) corporation and household sectors. This key difference between household and overall private sector saving is vital in gaining a better understanding of what households consider to be *their* saving. However, it still needs to be borne in mind that, while the National Accounts measure of private saving takes into account the undistributed income of private financial and non-financial corporations, it generally does not include the effect of asset price fluctuations.[7]

As private corporations are ultimately owned by households, saving by private corporations[8] is, at least conceptually, also household saving.[9] The extent to

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7 The principal exception being the extent to which asset price fluctuations reflect the capitalisation of undistributed income.

8 That is, the retained profits or undistributed income of corporations.

which households 'see through the corporate veil' and adjust their saving (and consumption) decisions accordingly is not clear. It is likely that this will vary according to a range of factors, probably including how widely the corporation's shares are held and the level of disclosure of financial information by the corporation.

Although the ABS does not publish a measure of overall private saving, it has previously published the gross profit of private non-financial and financial corporations, enabling a National Accounts consistent measure of private saving to be constructed. However, the ABS no longer separates the income of financial corporations between the private and public sectors. As such, it is no longer possible to derive private saving directly from ABS data. While it is possible to construct a measure of private saving by estimating the private-sector's share of the income of financial corporations, data limitations make this distinction in history difficult. The measures of private saving, private corporation saving and household saving in Chart 6 are derived from data calculated under the current National Accounts methodology employed by the ABS (SNA 93) to the extent it is available, supplemented by data calculated under the previous National Accounts methodology (SNA 68). However, as discussed in ***Appendix A***, this is not the only approach that could be used to construct this measure.

An OECD study[10] found that the offset (inverse correlation) between private corporation and household saving in the United States was between 50-75 per cent. Chart 6 suggests that there is a similar inverse relationship between household and corporate saving in Australia. In other words, the increase in the early to mid-1970s, and the downward trend since then, in private saving as a percentage of GDP is less pronounced than that for household saving. Whereas gross household saving rose from around 14 per cent of GDP in the 1960s to peak at little below 18 per cent of GDP in the mid-1970s, the rise in gross private saving was a little more modest, from around 19 per cent of GDP to around 22 per cent of GDP over the same period. Similarly, while the gross household ratio fell from a little below 18 per cent of GDP in the mid-1970s to around 7½ per cent of GDP in 1997-98, the fall in gross private saving over this period was much more modest — from around 22 per cent of GDP to around 15½ per cent of GDP.

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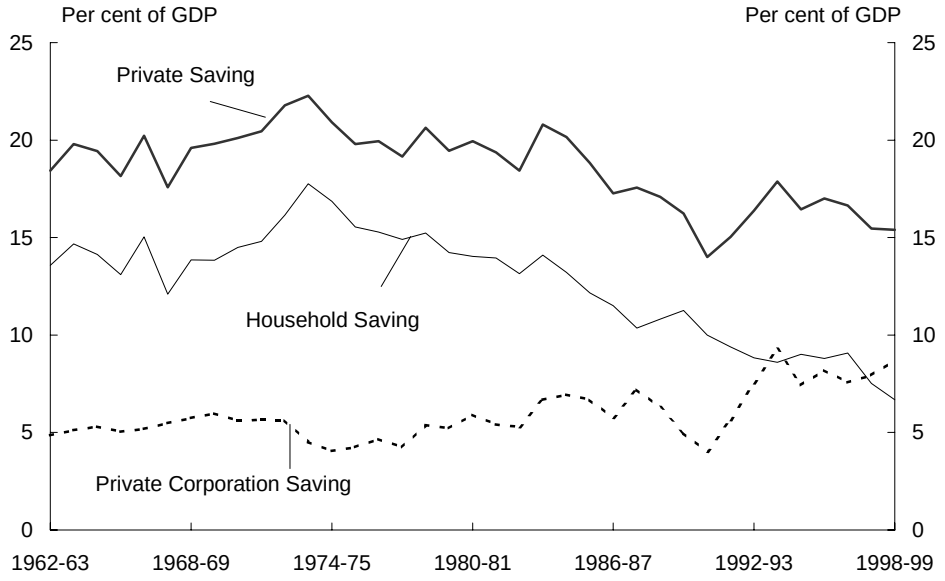
9 Although to obtain saving by Australian households it is necessary to adjust this amount to reflect net foreign holdings.

10 Dean et al (1989).

Chart 6: Components of gross private saving

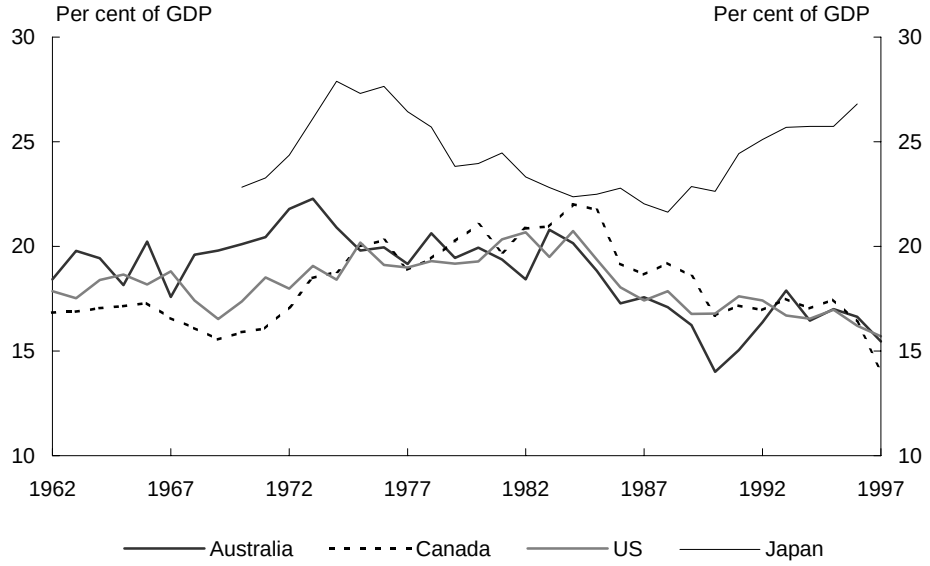


Source: ABS 5204.0, 5206.0 and Treasury estimates.

The trend in the measured private saving ratio in Australia has been broadly similar to that experienced in some other developed countries[11] (see Chart 7). In Canada and the United States the measured private saving rate also increased in the 1970s before falling back to a little below the average rate for the 1960s, and in both countries is now at broadly similar levels as a percentage of GDP to the level in Australia. Japan has had a measured private saving ratio consistently higher than that of Australia, Canada and the United States. Its measured private saving ratio has been trending upwards slowly over the 1990s, widening the gap between Japan's private saving ratio and that of the other countries in Chart 7.

11 The caution in footnote 1 about cross country comparisons of saving measures is equally applicable here.

Chart 7: Gross private saving — international comparison



Source: OECD Annual National Accounts and Treasury estimates.

Inflation adjusted private saving measure

The measure of gross private saving outlined above includes, in the net income of the private sector, the nominal interest received on interest-bearing debt instruments less the nominal interest paid on debt. However, as noted in several previous studies,[12] the nominal interest payment on debt has two components: a real component and an inflation component (the latter reflecting the change in the value of the loaned funds caused by inflation). As, conceptually, the inflation component of the interest payment represents a repayment of capital in real terms, it should not be regarded as income when received or an expense when paid. A number of researchers have argued that households distinguish between these components of interest receipts or payments. This implies that a measure of private saving which is adjusted for the effect of inflation on nominal interest receipts and payments is likely to be more representative of private saving behaviour.[13]

As Chart 8 shows, the decline in the inflation-adjusted measure of gross private saving appears more muted. In summary, in the high inflation times of the

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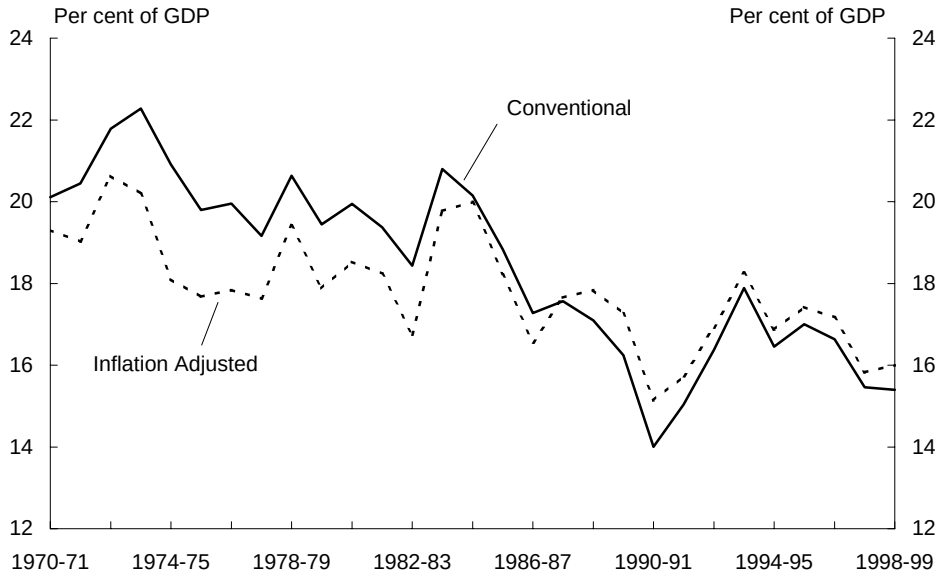
12 The merits in applying the above adjustments to interest payments and receipts have been acknowledged by Anstie, Gray and Pagan (1982), as well as several other researchers, including Makin (1990, 1995), O'Mara and Walshaw (1992), Access Economics (1992), Nevile (1993), Fitzgerald (1993), Flynn (1993) and Bartley and Phipps (1995).

13 By limiting the inflation adjustment to interest-bearing debt, it is implicitly assumed that (in aggregate) an increase in value of the underlying non-interest bearing assets compensates the owners of these assets for the effects of inflation.

1970s, the inflation adjustment reduces the estimate of the gross private saving ratio significantly. In contrast, with much lower inflation in the 1990s, the inflation adjustment is much less significant and has the effect of increasing the measure of the gross saving ratio slightly, as the private sector interest bearing liabilities starts to exceed interest-bearing assets. Note that while the private sector has become a net debtor in relation to interest-bearing securities in the 1990s, the total assets of the private sector still exceeds its liabilities by a significant margin. In the ABS National Balance Sheet, the net worth of households has increased by an average real rate of around 4 per cent per annum since 1989-90 (see below). In other words, households have moved away from interest bearing deposits to other assets.

Chart 8: Inflation adjusted gross private saving



Source: Treasury update of estimates in Bartley and Phipps (1995).

It should be noted that although conceptually the household saving ratio could also be adjusted for the effects of inflation, data limitations render such adjustments impractical and/or unreliable. This is because the adjustment requires a detailed breakdown of cross holdings of interest bearing debts between the household and private corporation sectors. Such a breakdown is not required to adjust the private saving measure (as the cross holdings of interest bearing debts between the household and private corporation sectors cancel when aggregated to construct private saving). Nevertheless, it is likely that the household saving ratio would be affected in a broadly similar manner as the gross private saving measure by the effects of inflation over this period.

Other issues in measuring private saving

There is also a range of other adjustments that could be made to the conventional measurement of private saving, to reflect more accurately underlying consumption / saving behaviour. These issues are discussed briefly below.

Consumer durables

The ABS classifies as consumption all of the expenditure by households on goods, including expenditure on consumer durables (broadly, goods that produce benefits beyond the year in which they were purchased). Several studies[14] have argued that, conceptually, expenditure on consumer durables should be capitalised and apportioned to the periods in which the benefit from the durable good accrues. In practice, where the expenditure on consumer durables is relatively constant as a share of income, these adjustments are likely to largely cancel each other out.[15]

The exclusion of consumer durables from final consumption would clearly lead to an increase in the measured level of gross household and private saving as a proportion of disposable income. However, the more relevant issue is how the classification of expenditure on consumer durables affects the longer term trend in saving measures. Where expenditure on consumer durables is constant as a proportion of disposable income, the classification of consumer durables will not affect the underlying trend in saving measures significantly. However, where the expenditure on consumer durables rises (or falls) as a proportion of disposable income, its classification can have a significant effect on the trend in measures of gross saving.

Chart 9 shows that expenditure on consumer durables declined as a proportion of disposable income from around 14 per cent in the early 1960s to around 12 per cent at the start of the 1980s, after which it has remained broadly constant. As all expenditure on consumer durables is classified as final consumption, there is an inverse relationship between the rate of consumer durable expenditure and National Accounts measures of saving. Thus, the higher rate of consumer durables expenditure in the 1960s and 1970s suggests a downward bias in saving measures over this period relative to the 1980s and 1990s, where the rate of consumer durables expenditure was lower.

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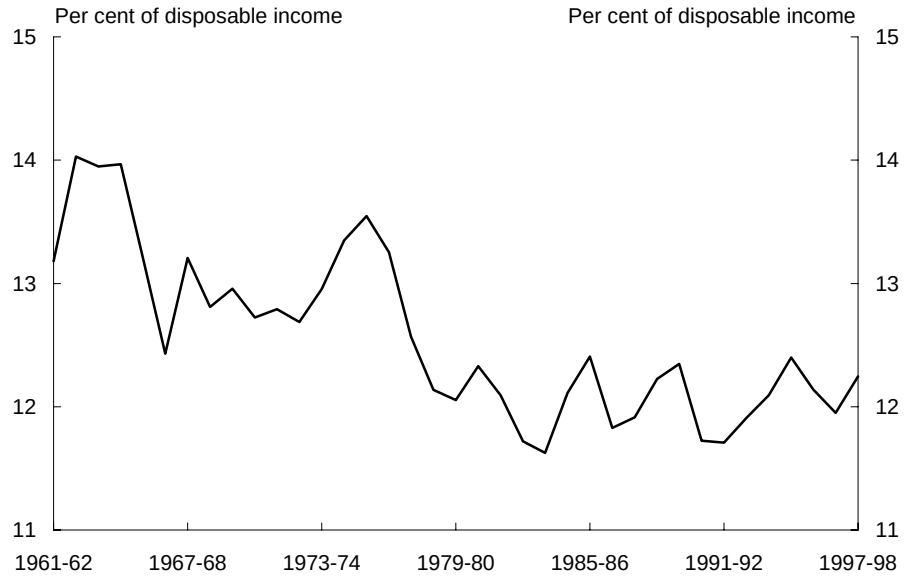
14 See for example, Eisner (1988), Makin (1990, 1995), Depta, Ravalli and Harding (1994).

15 In other words, as a proportion of disposable income, new investment in consumer durables broadly offsets the depreciation of the existing stock of durables.

Chart 9: Expenditure on consumer durables[(a)]



(a) Expenditure on consumer durables is defined as including furnishings, household equipment, and goods for recreation and culture. These categories include some items that probably are not consumer durables, such as non-durable household goods, as more detailed disaggregation of this expenditure is not available.

Source: ABS Cat. No. 5204.0.

Investment in human capital

On the other hand, it has been argued that increased expenditure on the development of 'human capital' has tended to depress saving measures over recent decades. Several studies have noted that education and health expenditure, currently classified as consumption, have at least an element of investment in that they are likely to give rise to future benefits.

Depta, Ravalli and Harding (1994) separated private sector expenditures on education and health into (immediate) consumption and investment components. They found that investment in education by the private sector increased from around ½ per cent of GDP in the 1960s to around 1 per cent of GDP at the start of the 1990s. Although health investment was found to have increased from 2 per cent of GDP to 4 per cent of GDP over the same period, this was almost entirely attributable to the public sector.

Unlike consumer durables, this increase in the share of GDP devoted to investment in human capital over time suggests that the treatment of such expenditure as consumption has resulted in a downward bias in the trend in private saving measures over recent decades.

The impact of capital gains tax on saving measures

Both the ABS household saving ratio and the private saving measure derived from the National Accounts, as outlined above, reduce the amount of saving by the household and private sector respectively for the effects of various taxes on income, including capital gains tax. However, capital gains (either realised or unrealised) are not included in the income of these sectors. This inconsistency results in a negative bias on these ***measures*** of private saving.

One approach to addressing this issue is to include taxable net capital gains in the definition of income of these sectors. Although this would be relatively straight-forward for the household sector, it would, in turn, raise additional consistency issues. For example, why would capital gains or losses that are untaxed[16] be excluded from such an adjustment? This adjustment is much more problematic for the private sector as a whole, as it would require a complex consolidation process to avoid double counting.

A simpler, although perhaps less conceptually pure, approach to achieving consistency is to disregard (ie, add back in) capital gains tax in arriving at saving measures. The rationale for this approach is that if an item is not included in the income component of a saving measure then consistency requires that a tax on that item should not be included in the expense component of the measure. This adjustment increases the ***measured*** level of the household and private saving.

Statistical revisions and discrepancies

The National Accounts measures of private saving outlined above involve, in effect, the subtraction of an item measured on an expenditure basis from a combination of income accounts. Implicitly, this assumes that there is no discrepancy between these numbers. However, while in principle these measures of output should be equivalent, in practice as the data sources for each measure are independent they can produce different results. As a result, a balancing adjustment — referred to as the statistical discrepancy[17] — is required to reconcile these measures.

Several studies[18] have noted the potential for the statistical discrepancy to have an impact on private saving measures. For example, if the statistical discrepancy is positive — that is, output on the income measure exceeds that on the expenditure measure — this suggests that either income is overstated, expenditure is understated or both. Edey and Britten-Jones (1990) found that

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16 For example, due to exemption, indexation or transitional rules.

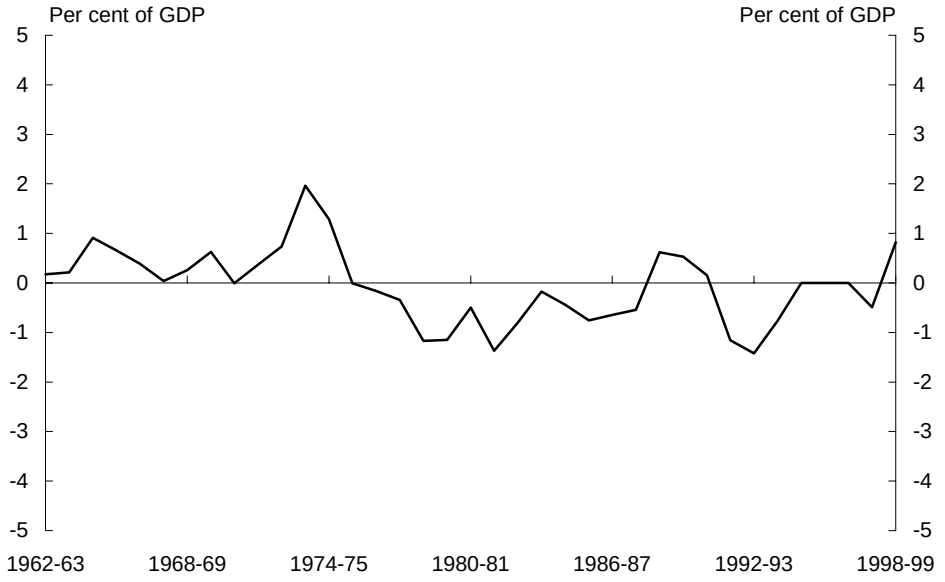
17 In this case it is the statistical discrepancy on the expenditure account less the statistical discrepancy on the income account. In practice this simplifies to output on the income basis less output on the expenditure basis.

18 See for example Gregory (1989), Edey and Britten-Jones (1990) and Fitzgerald (1993).

where the statistical discrepancy was subtracted[19] from the private saving measure, the trend over recent decades did not appear to be disturbed. As they noted, this is likely to be the maximum impact of the discrepancy between the expenditure and income accounts on the private saving measure.

Chart 10 illustrates the size of the likely maximum adjustment to the private saving measure by showing the statistical discrepancy as a percentage of GDP. The positive statistical discrepancy through the 1960s to the mid-1970s, and in the late 1980s, may have resulted in measured private saving being overstated over these periods, particularly in the mid-1970s where the statistical discrepancy was around 2 per cent of GDP. Conversely, the negative statistical discrepancy from the late 1970s to the mid-1980s, and in the early 1990s, suggests that measured private saving may have been understated over these periods.

Chart 10: Size of statistical discrepancy as a per cent of GDP



Source: ABS Cat. No. 5204.0, 5206.0.

Beginning with 1994-95, and for each subsequent year up to the year prior to the latest complete financial year (currently 1996-97 for the annual National Accounts and 1997-98 for the quarterly National Accounts), balanced supply and use tables have enabled the ABS to reconcile the differences between the three broad approaches to measuring GDP.[20] As a result, the same measure of

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19 The statistical discrepancy is subtracted in this instance as it is assumed that a positive discrepancy means that either income is lower or final consumption is higher than implied in the private saving measure, both of which reduce the private saving measure.

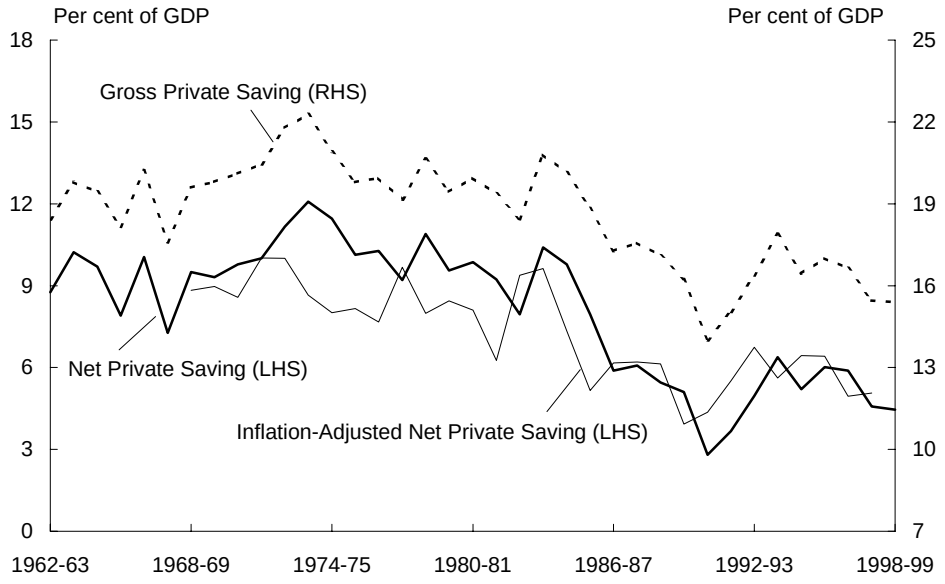
20 See ABS information paper, *Upgraded Australian National Accounts* for further explanation.

GDP is obtained regardless of approach, so the quarterly statistical discrepancies in these financial years sum to zero. However there is currently a non-zero statistical discrepancy for the 1997-98 and 1998-99 financial year, as the balanced supply and use table for these years[21] has not yet been compiled.

Net private saving

A downward trend over recent decades is somewhat more evident in the net private saving measure. Chart 11 compares the gross, net and inflation-adjusted net private saving measures over time. Although movements in these measures of private saving have been broadly similar over recent decades, the net private saving measures have fallen a little more as private sector depreciation as a percentage of GDP has increased, although, as with the gross saving measure, adjusting the net private saving measure for inflation reduces the extent of this decline. More detail on the calculation and components of net private saving is contained in ***Appendix B***.

Chart 11: Comparison of net and gross private saving



Source: ABS Cat. No. 5204.0, 5206.0 and Treasury estimates.

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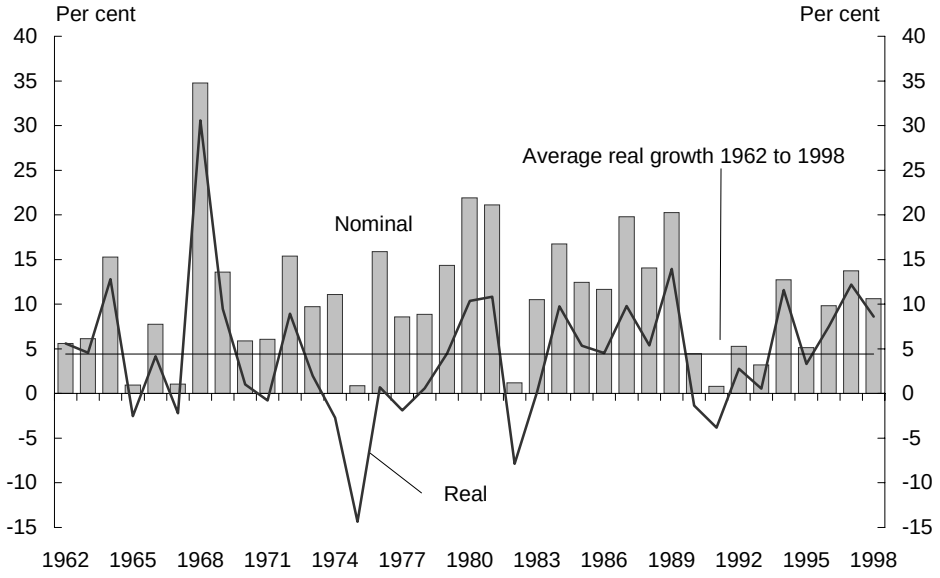
21 Although the statistical discrepancy has been eliminated for the 1997-98 financial year in the quarterly national accounts, this will not be translated to the additional detail of the annual national accounts (used in calculating the private saving measure) until the 1998-99 annual national accounts are released.

Changes in net worth

The pure economic definition of saving is the change in the wealth or net worth of households from one period to the next. In this context, an important limitation of conventional measures of saving is that they do not take into account the effect of changing asset values on the wealth of households.

There have been several attempts to estimate Australian net private sector wealth. Treasury has published annual estimates of Australian net private sector wealth since the Summer 1990 issue of the *Economic Roundup*. These estimates relate to financial and physical wealth only and do not make any attempt to value natural resources or human capital. Chart 12 shows annual economic saving of the private sector as measured by the annual growth in real and nominal private net wealth (at market value) over the period since the early 1960s. The growth in real wealth has been volatile over time, particularly through the 1970s and 1980s, where high inflation appears to have had a significant impact. In the 1990s, growth in real wealth has generally exceeded its long run average with lower volatility than previous decades due to lower inflation. Although the rate of growth of both nominal and real wealth was slower through the year to June 1998 than in the previous year, real wealth continued to grow faster than its long run average.

Chart 12: Growth in Australian net private sector wealth at market value[(a)]

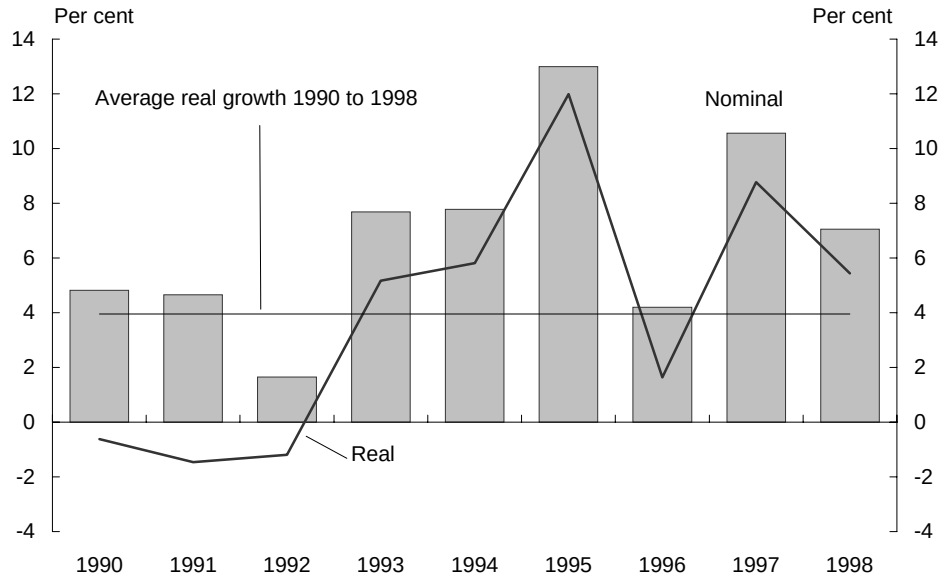


(a) As at June 30.
Source: Treasury update of estimates in the Summer 1999 *Economic Roundup*.

With the publication by the ABS of the National Balance Sheet it is also possible to obtain a measure of net household saving based on the change in net worth

from 1989-90 to 1997-98. The National Balance Sheet values some assets ('produced assets') on a replacement cost basis and other assets on a market value basis, whereas the Treasury wealth measure estimates the value of all assets on a market value basis. This is the principal difference between the ABS and Treasury wealth measures. Although the ABS measure includes some asset categories not included in the Treasury measure, neither of the measures attempts to value human capital. Chart 13 shows the annual growth in real and nominal private wealth of households under the ABS measure. As with the Treasury measure, real net wealth has grown strongly through most of the 1990s. However, the relatively short history of this series cautions against reading too much into these data in relation to longer term trends.

Chart 13: Growth in private net worth



Source: ABS Cat. No. 5241.0.

In summary, the Treasury and ABS measures of net private sector wealth suggest that the real net worth of Australian households has grown strongly in the 1990s. As net wealth measures include the full effects of asset revaluations (both appreciation and depreciation), they are not directly comparable in level terms to the private saving measures in Charts 8 and 12. Nevertheless, net wealth measures are consistent with the view that private saving (whether measured on a gross or net basis) has shown only a mild downward trend, if any, over recent decades.[22]

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22 The higher level of fluctuations in net wealth measures reflects the inclusion of asset revaluations in these measures.

Conclusion

The significant decline in the ABS net household saving ratio since the mid-1970s appears to reflect limitations in the measurement and classification of this measure rather than a significant change in saving behaviour.

Broader measures of the saving behaviour of Australian households, such as gross and net private saving (particularly after adjustment for inflation) and changes in net worth, present a much different picture. While there are uncertainties about the appropriate definition and measurement of saving, these broader measures of private saving have shown a much less pronounced downward trend than the ABS net household saving ratio.

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APPENDIX A

Alternative approaches to constructing a SNA 93 consistent measure of gross private saving

The ABS does not currently publish a measure of overall private saving. Rather, it publishes separate income and capital accounts for the household (including non-profit institutions serving households and unincorporated enterprises) and the non-financial private corporations sectors. Under current international standards (known as SNA93), the ABS also publishes a capital account for the aggregate financial corporation sector. To construct an overall measure of private saving, this financial corporation saving needs to be allocated between the public and private sectors and added to the saving by the household and non-financial private corporation sectors. Another difficulty with deriving a consistent measure of private saving over time is that, at present, the ABS has only recalculated the income and capital accounts for the public and private non-financial corporation sectors back to 1989-90. The remainder of this Appendix discusses three alternative approaches for trying to overcome these problems.

These approaches make use of the fact that, prior to the adoption of the current international standards (SNA93), the ABS separately identified the public and private components of the financial corporation sector. These data are available from 1969-70 to 1996-97 and was prepared on the basis of the previous international standard known as SNA68. However, this data are not directly comparable with that which has been prepared on an SNA93 basis. Not least of these difficulties are the differences in the 'asset boundary' between the two standards. Another complication is the reclassification of the state government central borrowing authorities from the general government sector under SNA68 to the financial corporation sector under SNA93.

Approach 1: Split SNA 93 National Saving using SNA 68 private and public splits

This approach to constructing SNA 93 consistent measures of private and public saving uses the split between the two saving measures already available under the SNA 68 standard. This approach involves taking the ratio of private saving to national saving under the SNA 68 and multiplying this by national saving on an SNA 93 basis. The same is then also done for public saving (or alternatively it can be derived as a residual of the other two). This means that the total of the public and private saving measures calculated is consistent with the SNA 93 calculation of national saving.

A limitation of this approach is that it does not capture some differences in the classification and definition of the components of public and private saving in the SNA 68 and SNA 93 methodologies. In particular, it is unclear whether the difference between national saving on an SNA 68 and an SNA 93 basis has been

allocated correctly since the approach ignores information on the allocation of this difference between the general government, non financial public, non financial private and household sectors. For example, the new treatment of unfunded superannuation for general government employees under SNA 93 will have had a significant impact on the saving of the general government and household sectors.[23]

A second limitation of this approach is that SNA 68 data are only available up to 1996-97. As a result, it has been assumed that the split between public and private saving in 1997-98 and 1998-99 is the same as in 1996-97.

The main strengths of this approach are that it is simple to calculate and that its limitations are relatively transparent.

Approach 2: Use SNA 93 data when available, and use SNA 68 data when they are not

An alternative approach to the construction of private and public saving would be to use SNA 93 data to the extent they are available and use SNA 68 data when they are not.

Under the SNA93 standard, data are available for household and general government saving back to 1959-60. Data are also available for non-financial corporation saving (broken down between the public and private sectors) from 1989-90 to 1997-98. To construct a public and private saving measure, financial corporations can be split between public and private using SNA68 data going back to 1959-60. This allows public and private saving to be calculated from the 'bottom up', adding each of the components, from 1989-90 to 1996-97. Non-financial corporations can then be split between public and private from 1959-60 to 1989-90 using SNA68 data, and then 'spliced' onto the SNA93 series. It is necessary to assume that the split between public and private financial corporations remains the same in 1997-98 and 1998-99 as it was in 1996-97 and the split between public and private non-financial corporations is the same in 1998-99 as in 1997-98.

This approach has the limitation of being more complex than Approach 1. As it uses both SNA 93 and SNA 68 data to 'construct' private saving, there is a greater prospect of it being affected by classification and definitional difference between these methodologies.

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23 See Table 4.2, ABS Information Paper, *Upgraded Australian National Accounts*, ABS Cat. No. 5253.0.

Approach 3: Use SNA 93 data on saving when available, and the relationship between net lending, saving and investment when it is not

Another approach to calculating private saving is through the relationship between public, private and national net lending, saving and investment. Public saving is calculated first, with private saving the residual from national saving.

Public net lending (or the PSBR) is required to calculate the level of public saving and hence private saving. General government net lending is available on a SNA 93 basis and is used directly (as is the case in Approach 2, where general government saving was able to be used directly). Public non-financial net lending is available from 1989-90 to 1997-98 on a SNA 93 basis. Over this period it again is used directly. Prior to 1989-90, public non-financial net lending is sourced from the RBA Australian economic statistics (on an SNA 68 basis). Public financial net lending is imputed, as the residual of total financial net lending (which is published on an SNA 93 basis) and private financial net lending (which is published on an SNA 68 basis up to 1996-97). It is assumed that subsequent to 1996-97 public financial net lending is zero, as all excess funds are distributed to the general government sector.

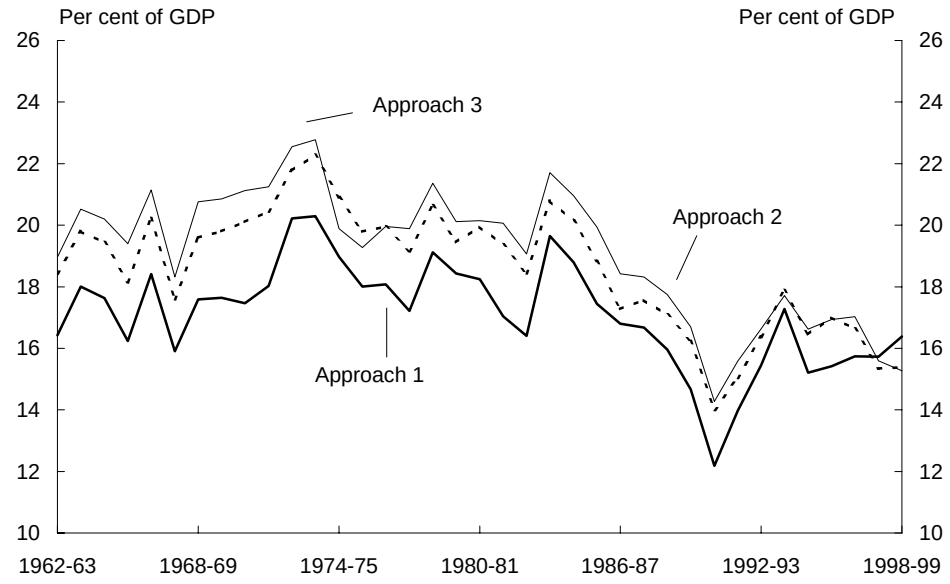
With public net lending (calculated as the sum of the three components above), public saving is calculated as public net lending plus public investment (available on a SNA 93 basis). Private saving is derived as national saving (available on a SNA 93 basis) less the calculated level of public saving.

Which approach is preferable?

There are reasonable grounds for adopting each of these approaches to constructing a SNA 93 private saving measure would be acceptable. Indeed, as shown in Chart 14, they follow a similar trend over time. In this paper, Approach 2 is adopted. Although more complex than Approach 1, it is considered to be more likely to provide an accurate reflection of the private saving as measured by the SNA93 national accounts. Although Approach 3 may prove to be superior in time, further work is required to test the validity of assumptions underpinning its construction.

Short of the ideal solution to this dilemma — ie, the publication of a national accounts consistent measure of private saving by the ABS — analyses of private saving in Australia should be cognisant of the fact that there are several approaches to the measurement of this measure.

Chart 14: Comparison of measures of private saving



Source: ABS Cat. No. 5204.0, 5206.0 and Treasury estimates.

APPENDIX B

Construction and components of the net private saving measure

To assist international comparisons, the analysis in the body of this paper focuses on gross, rather than net, measures of private saving derived from the National Accounts. However, as noted in the paper, when properly measured the net measure of saving is more conceptually correct. The purpose of this Appendix is to outline how net private saving measure can be derived from the national accounts and to show the effect of using net rather than gross private saving on the components of private saving.

How is net private saving calculated?

Net private saving is defined as gross private saving less private sector depreciation. ***Appendix A*** outlines how gross private saving is constructed. A similar methodology is employed in calculating SNA 93 consistent measure of private sector depreciation (and thus net private saving).

The ABS does not publish a SNA 93 consistent measure of depreciation for the private sector as a whole, although it does publish depreciation for the economy as a whole. However, prior to the adoption of the current international standards (SNA93), the ABS separately identified the public and private components of depreciation in the annual national accounts. As with gross private saving, this data are available from 1969-70 to 1996-97 and was prepared on the basis of the previous international standard, SNA 68.

This approach to constructing SNA 93 consistent measures of private and public depreciation uses the split between the two saving measures already available under the SNA 68 standard. This approach involves taking the ratio of private depreciation to national depreciation under the SNA 68 and multiplying this by national saving on an SNA 93 basis. The same is then also done for public depreciation (or alternatively it can be derived as a residual of the other two). This means that the total of the public and private saving measures calculated is consistent with the SNA 93 calculation of national saving.

The resultant private sector depreciation is subtracted from gross private saving determined under Approach 1 of ***Appendix A*** to arrive at net private saving.

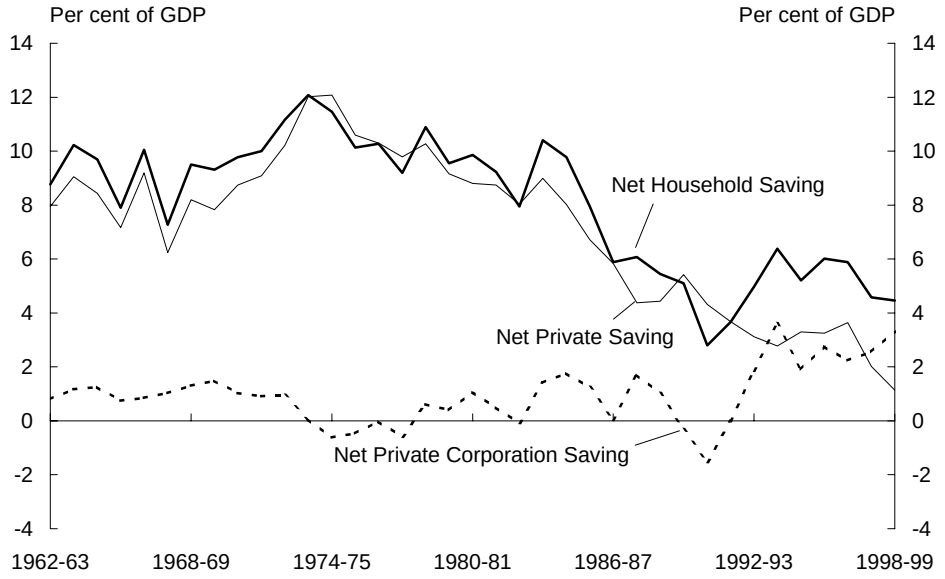
A limitation of this approach is that it does not capture some differences in the classification and definition of the components of public and private depreciation in the SNA 68 and SNA 93 methodologies. In particular, there were significant changes to the calculation of depreciation in the move to the SNA 93 basis that could have affected the public / private mix of total depreciation.

Components of net private saving

Chart 15 illustrates the components of net private saving as a percentage of GDP. Over the 1960s net private saving averaged around 9 per cent of GDP,

reflecting a similar level of net household saving and slightly negative net saving by private corporations. Although net household saving increased considerably in the 1970s, this was largely offset by an increase in net dissaving by private corporations. By the start of the 1990s, a combination of lower net household saving as a percentage of GDP and higher net dissaving by private corporations as a percentage of GDP led to net private saving falling to around 3 per cent of GDP. Since then, net private saving has recovered to around 4½ per cent of GDP, with a continued decline in net household saving as a percentage of GDP being more than offset by a significant turnaround in net saving by private corporations.

Chart 15: Components of net private saving



Source: ABS Cat. No. 5204.0, 5206.0 and Treasury estimates.

Net private saving — international comparison

As noted in the paper, international comparison of net saving measures is complicated by the significant variation in depreciation calculation methods across countries. Nevertheless, for completeness this section compares these measures across the countries considered in the body of the paper.

The trend in net private saving rate in Australia has been broadly similar to that experienced in some other developed countries[24] (see Chart 16). In the United States the net private saving averaged around 10 per cent of GDP from the 1960s to the mid-1980s, before falling to around 7½ per cent of GDP since then. Net

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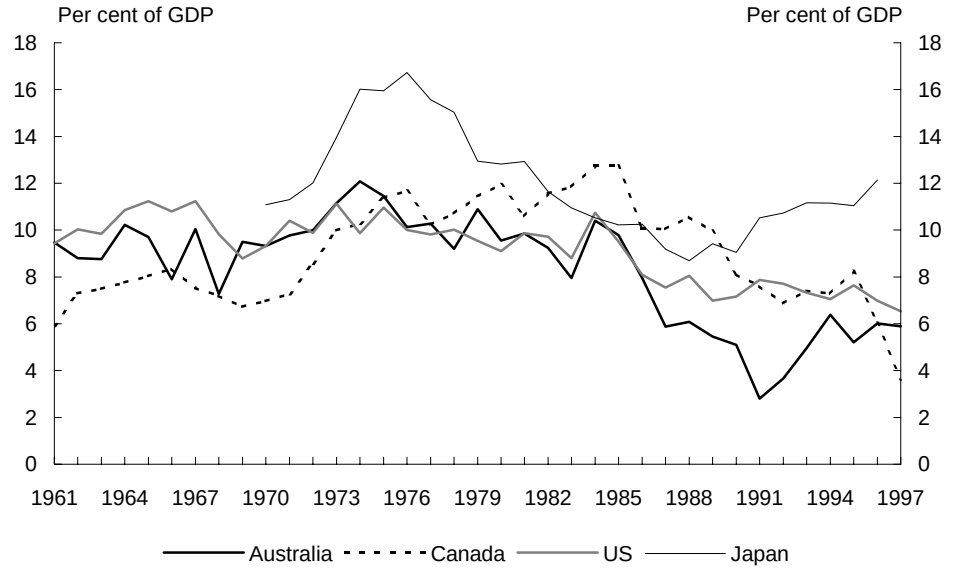
24 The caution in footnote 1 about cross-country comparisons of saving measures is equally applicable here.

private saving in Canada was around 6 per cent of GDP at the start of the 1960s before increasing to around 12 per cent of GDP in the mid-1980s. Since then the Canadian net private saving rate has fallen back to around 4 per cent of GDP. Net private saving in Japan rose from slightly above the rate of the United States, Canada and Australia at the start of the 1970s to peak above 16 per cent of GDP in the mid-1970s. In the 1980s Japan's net private saving rate was similar to that of the United States and Canada. Since then, Japan's net private saving rate has risen to around 12 per cent of GDP at present, significantly above the rate in Australia, Canada and the United States.

Chart 16: Net private saving — international comparison



Source: OECD Annual National Accounts and Treasury estimates.