THE NATION'S WEALTH - SOME NEW CALCULATIONS FOR AUSTRALIA

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ABSTRACT

This paper has two related purposes. The first is to bring together and review a number of earlier studies which have attempted to estimate the value of Australia's privately held wealth stock. The second is to present new estimates covering the 1980s, based partly on these earlier studies, which value all major components of the nation's private wealth at their market value, or a close approximation. The calculations reported here represent the first aggregate Australian wealth series for which comprehensive market valuation can be claimed.

Australia's aggregate non-human private wealth was found to be $794 billion at 30 June 1985. The series as a whole suggests that previous estimates have significantly undervalued Australia's wealth. At 30 June 1981, the Helliwell-Boxall (1978) study, updated by the Reserve Bank, reported a value of $294.7 billion, while Williams (1983) gave a value of $360.5 billion. The corresponding estimate for the new series is $533.0 billion. Because the new calculations presented here value wealth by component, it is possible to identify omissions and valuation differences which account for most of the variation between these estimates.

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1. Introduction

This paper has two related purposes. The first is to bring together and review a number of earlier studies which have attempted to estimate the value of Australia's privately held wealth stock. The second is to present new estimates, based partly on these earlier studies, which value all major components of the nation's private wealth at their market value, or a close approximation. These calculations use new data for some components of wealth, some of which were not available to earlier studies. The result is a more comprehensive market value of aggregate Australian wealth. The estimates suggest that previous studies have substantially undervalued Australia's private wealth.

In recent times, a number of research projects by both academics and government officials have estimated various components of Australia's wealth.[1] While in combination these studies provide careful assessments of most of the items in the nation's private wealth stock, each on its own has serious deficiencies and reported estimates differ widely. For example, Norton et al (1982) estimate Australia's total private wealth at $230.5 billion for 1981, while Williams (1983) reports an aggregate figure of $360.5 billion for the same year.[2] Since these are widely regarded as the two most authoritative Australian studies in the field, the discrepancy between their results would alone suggest that a re-examination of the issue may be of use. In addition, however, new official and other statistics have recently become available which permit improved aggregate wealth estimates to be generated, and these reinforce the benefit of further calculations.

Aggregate wealth estimates have at least two distinct applications. First, personal wealth is frequently an argument in the consumption function of macroeconometric models, and a series reflecting this variable is required for the specification of such models. Secondly, wealth distribution estimates, however calculated, are likely to miss some personal wealth, and an informed assessment of the distribution requires some sense of how much wealth it

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1. See, for example, Gunton (1975), Raskall (1977), Helliwell and Boxall (1978), and Williams (1983).

2. Norton et al, who extend the pioneering work of Helliwell and Boxall (1978), exclude the value of land in this estimate; Williams excludes the value of unincorporated capital stock. The studies are reviewed in more detail below.

omits. While estimates of an economy's aggregate wealth have other uses as well, it is these two applications which have motivated the present study.[3]

The paper is divided into two substantive sections. Section 2 outlines alternative approaches to the estimation of aggregate wealth, deals with some definitional issues, and discusses earlier Australian estimates. In section 3, I present and interpret my own calculations, and compare them with earlier results. Section 4 offers some concluding comments.

2. Concepts, Methods and Earlier Estimates of Australia's Wealth

(a) Some Definitional Issues

It is first necessary to say what is meant by personal wealth. It consists of physical assets, such as houses and consumer durables, and of claims on other sectors net of liabilities to other sectors. This raises the question of the definitions of assets and liabilities to be included. Truly comprehensive valuation is impractical because of data and conceptual difficulties. Important exclusions are human wealth and "social property", or the rights to benefits from the state - access to communal assets such as government schools and state pension rights for example.[4]

A question related to the definition of wealth is the basis for valuation. Two well known possibilities exist: the "realisation" basis (or the value obtained in a sale on the open market at the date in question) and the "going concern" basis (or the value to a person or household on the assumption that the asset is retained). These valuations may be different for at least two reasons. First, the value of an asset to an intra-marginal holder may exceed its market price, even in a perfect market. Second, markets may not be perfect: an example is occupational pension rights, where realisation value may be zero. In this study, market realisation value has been used: where this is not available an approximation has been employed.

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3. For example, it is sometimes claimed that aggregate wealth figures provide a benchmark against which to measure the burden of a nation's debt.

4. If communal assets such as government schools were added in there would be some double counting in that government bonds and Reserve Bank liabilities included in private wealth are used for deficit financing. Unofficial ABS public sector capital stock estimates are available in Walters and Dippelsman (1986).

The literature on wealth stock estimation, and particularly on the development of sectoral balance sheets, draws a distinction between personal and private wealth. Personal wealth is thought of as the value of assets to which households in some sense have title. Private wealth, by contrast, encompasses all non-public assets. In a simple economy, the two magnitudes would be equal for any given valuation convention. In practice, however, there are at least two differences, leaving aside (for the moment) the question of foreign ownership. Firstly, the wealth of non-profit organisations, such as schools and churches, is private but not personal. Secondly, the difference between the net value of assets of listed corporations and their stock exchange valuation is private, but is not included in personal wealth, since equity holders have title to only the stock exchange valuation of their shares. The wealth estimates presented here do not distinguish between private and personal wealth. The difference between the two magnitudes is not considered to be quantitatively significant when compared with the aggregate value of wealth under either definition, and the terms will be used interchangeably throughout the paper.

(b) Alternative Approaches to Wealth Stock Estimation

Methods of aggregate wealth estimation can be conveniently split into the estate, survey and inventory approaches. The estate method, which uses information on deceased estates and age-specific mortality statistics to estimate both aggregate personal wealth and its distribution, is perhaps the most famous.[5] It has been used for well over a century;[6] Australian studies using this method include Gunton (1971, 1975); Raskall (1977); and Knibbs (1918). Of these, only Knibbs was primarily interested in aggregate wealth assessment, as opposed to wealth distribution. A feature of the estate method is that some wealth will be missing from the aggregate figure, for three reasons. First, the property of wealth - holders excluded from the estate data because their valuation below the dutiable threshold is omitted; second, certain assets are not appropriately valued, and are usually assessed below market value; third, certain types of property may be missing from estimates recorded in the statistics.

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5. The method is outlined in Piggott (1984); for a detailed study see Atkinson and Harrison (1978).

6. The first attempt of which I am aware is that of Baxter (1869), for the U.K.

The second approach, the survey, may also be expected to exclude some part of aggregate personal wealth, because of both under-response and under-reporting, especially by the relatively wealthy.[7]

The inventory approach, by contrast, relies on independent information about the total holdings of particular assets. It amounts to summing the values of privately owned physical and/or financial assets, avoiding problems of double-counting. Adjustments must be made for public debt held by the private sector, and for net foreign asset holdings. There is no reason to suppose that an inventory estimate will be systematically biased, provided that all assets are covered and that they are appropriately valued. The inventory approach has the additional advantage that it can exploit independent estimates of wealth components which have been developed for administrative or policy purposes.

(c) **Previous Estimates of Australia's Current Wealth**

A number of estimates of total Australian wealth since the 1960s now exist, of which the best known are perhaps those of Helliwell and Boxall (H-B) (1978) and Williams (1983). Most employ some form of inventory approach. Table 1 reports aggregate wealth from a number of these studies, for selected years from 1953 to 1981. Several points deserve comment. Firstly, estimates reported in the first four rows of the table are closely related to one another. The Norton et al. (1982) estimates are revisions and updates of the H-B estimates. More recent unpublished Reserve Bank revisions to this series have increased the June 1981 estimate to $295 billion. The most recent Reserve Bank figures are used in section 3. In all these estimates, land valuations (both urban and rural) were taken from the work of Scott (1968), who used local government assessments as a basis for estimation.[8] These are not regarded as reliable guides to market valuation, and estimates of wealth are reported both including and excluding land values. The dwelling stock (excluding land) was valued at replacement cost.

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7. Another approach, the "investment income" approach, has also been used from time to time, especially in the UK. It is not discussed here, but an outline of the approach is provided in Piggott (1984). Atkinson and Harrison (1978) offer a detailed account.

8. Scott's estimates were later updated to 1972 by Parkin et al (1975).

Table 1
Recent Estimates of Total (Personal or Private) Wealth
Australia, Selected Years
$ billion, current prices

		1953	1959	1964	1968	1970	1975	1981
Helliwell/Boxall (1978) (Table 3, pp.59-60)	(1)	–	34.2	46.1	65.1	64.8	107.1	–
	(2)	–	39.9	56.2	80.1	–	–	–
Norton/Garmston/ Brodie (1982) (Table 6.10, p.168)	(1)	–	34.2	46.8	66.5	66.5	114.5	230.5
	(2)	–	40.1	56.9	81.4	–	–	–
Williams (1983) (Table 3, p.58)		–	–	–	63.9	78.6	165.5	360.5
Raskall (1977) (Table 6, p.25)		–	–	–	–	85.7	–	–
Gunton (1975) (Table 6.1, p.119)		18.7	26.6	38.6	55.9	61.9	–	–
Podder/Kakwani (1973) (Derived by Raskall (1977), p.8)		–	–	–	50.2	–	–	–

1. Excluding value of land
2. Including value of land

An important element of these estimates of total private wealth is the value of business assets and inventories. The H-B studies employ an industry assets approach, using share market and balance sheet data for a sample of firms to infer market valuations of business assets and inventories for the whole economy. This includes the non-land capital stock of farms, an imputation which is especially questionable. Adjustments are then made for intersectoral claims and liabilities.

The H-B estimates, then, while of a pioneering kind, can be criticised on a number of grounds. In my view, the following deficiencies are the most important. First, no attempt was made to place a market value on land or housing, even though both residential housing and farms are subject to considerable market volatility, and both are important components of overall

wealth. Secondly, agriculture is so different from the bulk of incorporated activity, both in its experience of output price behaviour and in its production techniques, that valuation of non-land capital in Agriculture by appeal to share market data is unlikely to provide reliable figures. Thirdly, the sample used in generating the market valuation ratio for business fixed assets and inventories covered only 65 firms, which ten years ago accounted for no more than 20 per cent of incorporated business activity. Further, book valuation of assets is a dubious multiplier in moving from the sample to an aggregate estimate, since such valuation will be systematically influenced by accounting practice and, in periods of inflation, asset life. Both may vary between the incorporated and unincorporated sectors. Fourthly, H-B omitted the debt issue of local and semi-government authorities from their estimate of government bonds, and this convention has been continued by the Bank in its updates. The value of government bonds is thus seriously underestimated.

By contrast, Williams (1983) relies on an inventory of the financial assets and liabilities of households, making use of data first constructed by Anstie et al (1983) on personal holdings of equities and reserves of pension funds and life offices. In choosing to use personal holdings of financial assets to value personal wealth other than housing and consumer durables, Williams explicitly excludes the value of unincorporated business fixed assets and inventories, including rural land. He does, however, develop housing stock (including land) valuation estimates, which have been derived from sales data, and these valuations typically comprise more than half of the value of his estimates of total personal wealth. The only other study to estimate the market value of residential land and housing is reported in an unpublished paper by Roger (1981).

Raskall (1977, pp.16-25) provides a further example of the inventory approach. His estimate is at first sight encouragingly close to the total value that might be anticipated if the land-inclusive valuations of H-B were projected forward to 1970. On the other hand, Raskall's valuation of residential land and buildings ($31 billion) is only two-thirds of Williams' ($46 billion) for the same year; unlike Williams, Raskall does not use direct market valuation in deriving his estimate.

In summary, among those studies which use an inventory type approach, agreement on aggregate estimates is patchy. Other approaches yield significantly lower values. The estimates reported by Gunton, who uses the

estate method, reflect the "missing wealth" problem referred to above.
Similarly, under-response and under-reporting can be inferred from Raskall's
calculation of the value of total wealth implied by the Macquarie Survey of
Consumer Finances and Expenditures data used by Podder and Kakwani (1973).

3. New Calculations of Australia's Aggregate Personal Wealth

This section reports and interprets new calculations of Australia's aggregate
personal wealth for the eighties. I make use of new statistical series
recently published by government departments, stock exchange data, and other
specially prepared series to generate personal wealth estimates which value
all significant components of Australia's personal wealth at market prices or
a close approximation. Like the H-B and Williams studies, I use a form of
inventory approach, and in fact take the H-B procedures as a convenient point
of departure.

(a) Valuation Procedures

The following components of personal wealth are separately identified and
valued: residential land and dwellings; household durables; rural land,
improvements, and inventories; other business fixed assets and inventories
(including land); private holdings of government bonds, including local
authority and semi-government issues; and Reserve Bank liabilities to the
private sector. Domestic ownership of foreign assets are then added in, and
the value of assets and inventories owned by the foreign sector is subtracted.

(i) The Housing Stock

The value of residential housing is estimated by combining census estimates on
dwelling numbers with a quarterly price index of dwellings compiled from sales
data.[9] The census data are modified each quarter by estimates of completions
and demolitions.[10] The price index reflects sales in Brisbane, Sydney,
Melbourne and Adelaide. These cities contain about 75 per cent of the

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9. The price index series, which dates from 1973, was prepared by the
   Department of Housing and Construction. The Department intends updating
   the series each quarter.

10. The ABS publishes estimates of housing completions (ABS Cat. No. 8750.0).
    Demolition and other quantity estimates were supplied by the Indicative
    Planning Council.

nation's dwelling stock. Table 2 reports housing stock valuations by Roger (1981) and Williams (1983) and the non-land dwelling stock valuations by H-B and the ABS [Walters and Dippelsman (1986)], to allow comparison with our new estimates (column 5), for selected years from 1973 to 1981.

The series in the first two columns are not comparable with columns 3-5 because they omit land value. Differences between the H-B and ABS estimates reflect different asset life distribution and depreciation assumptions. The series reported in columns 3-5, are derived from census data on quantities and Valuer General and other data on sale prices.

Roger (1981) does not provide details of his calculations, and it is therefore impossible to identify the source of the discrepancies between his estimates and the others. Williams (1983) and I both rely on price series derived by the Department of Housing and Construction (DHC), although the series we use differ in a number of respects. One possible source of the discrepancy between these two series is that earlier DHC price information used by Williams may have seriously underestimated the average value of Sydney dwellings, while this bias was eliminated in the more recent price series used here.[11] Since Sydney Prices receive the highest weighting of all the capital city series in deriving an overall index, the discrepancy between columns 4 and 5 could be partly accounted for by differences between the earlier and current DHC price series. In addition, Williams adjusts his DHC price series to take account of non-metropolitan housing, and separates houses and flats. He undertakes these calculations for 1976, at which point he estimates the average value of an Australian dwelling to be $32,100. If this figure is accepted, then a proportional adjustment using my data would reduce my June 1981 housing estimate from $297 billion to $274 billion. The limitations of these sales data for aggregate wealth estimation are discussed further below (p.18).

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11. For example, in 1983, the DHC reported an average value of $66,000 for a Sydney dwelling, compared with $81,700 by the Real Estate Institute of Australia. The corresponding estimates for 1984 showed much closer agreement: $79,000 (DHC) and $82,200 (REIA). For the other states (Queensland and Victoria), there is close agreement between the two series for both years. This discussion is based on information provided by the ABS.

Table 2
Alternative Valuations of Residential Land and Housing
in Australia: Selected years 1973-1984
$A million; current prices

Year End of June	(1) Helliwell/ Boxall	(2) ABS	(3) Roger	(4) Williams	(5) Piggott
1973	37221	29402	58403	75700	-
1977	78996	62893	117978	149500	-
1979	88895	74600	135110	174500	-
1981	118277	99948	-	250600	297456
1984	159242	138067	-	-	388579

Sources: Col. 1 Reserve Bank series extending H-B estimates.
          Col. 2 Walters and Dippelsman (1986).
          Col. 3 Roger (1981), Tables 3.1 and 3.2.
          Col. 4 Williams (1983), Table 3.
          Col. 5 See text.

(ii) Household Durables

Two series on the value of household durables are maintained in Australia, one for the Australian Treasury, for use in the NIF-10 model, and another for the Reserve Bank. They do not differ significantly and I have used the RBA series in this study.[12]

The value of household durables is estimated using a perpetual inventory model, and they are therefore valued at replacement cost. This is defended as an approximation to market value, since the supply of most durables is elastic, at least in the long run. It is not a wholly satisfactory proxy, however: for example, exchange rate and tariff changes can alter the market value of durables such as motor vehicles, and non-reproducible assets, such as paintings and antiques, are not valued. A further point to bear in mind is that the sale prices of second hand goods are usually lower than replacement cost, because of the "lemons" argument [see Akerlof (1970)]. The probability that an item offered for sale second-hand is in some way defective (a lemon) is greater than the probability for the whole population of such items, and the price such an item commands reflects this probability difference. Essentially, the market fails because of asymmetries in information between buyer and seller. The seller knows the characteristics of the good he is offering; the buyer does not.

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12. For example, at the end of June 1981, the NIF-10 estimate was
    $33.7 billion, while the RBA recorded a value of $33.6 billion.

(iii) Rural Wealth

The capital value of farms, improvements, equipment and inventories has not
been satisfactorily incorporated in either H-B or Williams. As pointed out
earlier, Williams ignores all unincorporated wealth, including unincorporated
rural land. H-B use a book value gross up procedure which extends their
market valuation of corporate stock to the unincorporated sector, including
Agriculture. This is unsatisfactory, since neither production techniques nor
output price movements in the rural sector are well approximated by the
corporate sector.[13]

To overcome these problems, I use a series on the market value of rural sector
capital stock derived from an annual survey of the rural sector.[14] The
survey explicitly values farms, including land, improvements, equipment and
stock, and covers units which in total contribute around three quarters of
gross farm product. Survey estimates are grossed up to national estimates
using the gross farm product ratio.

(iv) Other Business Fixed Assets and Inventories

The valuation of corporate sector business fixed assets and inventories is
undertaken using Sydney Stock Exchange (SSE) share market data.[15] These
data comprise the market value of equity and the book value of net financial
assets for companies covered by the SSE's STATEX service. The difference
between these two totals gives a market value of business fixed assets and
inventories. The STATEX service covers about 85 per cent of the gross profits
of all companies listed on the SSE. Companies listed on the SSE account for
about half all corporate activity.[16] Estimates of gross operating surplus

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13. In fact, in an earlier paper, Helliwell et al (1971) argued that the farm
     sector should be treated separately because "investment in primary
     production is determined by different factors than is other investment,
     and share market data are not of much use in establishing valuations"
     (p.6).

14. This is conducted annually by the Bureau of Agricultural Economics.

15. These data were provided by the STATEX service of the Sydney Stock
     Exchange.

16. While the STATEX service covers the bulk of firms listed on the SSE,
     unlisted companies cannot be covered. These include a large number of
     overseas based companies operating in Australia but not listed on the
     exchange; exempt Australian companies; and a large number of smaller
     private companies. The STATEX service covers about 1000 firms; the ABS
     survey, which the Bureau estimates covers 90 per cent of incorporated
     activity, includes around 5000 firms.

for STATEX firms and for the whole economy are used to scale the STATEX figures to national corporate sector estimates. The reliability of this procedure depends on whether GOS/capital ratios are similar for the STATEX sample and for other companies. No direct market valuation is available for the wealth of non-farm unincorporated enterprises, including land. I proceed by assuming that, if the rural sector is excluded, corporate wealth is related to non-farm unincorporated wealth by the corresponding net capital stock ratio. Net capital stock estimates from the ABS[17] are used to gross up the value of incorporated business fixed assets and inventories to the total non-farm value.

This procedure ignores the value of the physical capital stock of financial enterprises, whether incorporated or not. Rough calculations suggest that this leads my aggregate estimates to understate the value of private wealth by 2-1/2 per cent to 3 per cent or $13 billion at June 1981. This is discussed further below.

(v) Government Bonds

It is conventional to include the market value of non-official holdings of government bonds as part of personal or private wealth. It is debatable whether government bonds do in fact represent net wealth, as Barro (1974) among others has highlighted. I have chosen to calculate and report the value of government debt, and to leave the question of interpretation to the user.

The face value of outstanding government bonds, issued by both the Commonwealth government and local and semi government authorities, is published regularly by the Reserve Bank, together with an analysis by type of holder which permits official and foreign holdings to be netted out. The Bank also maintains a series relating face to market value for Commonwealth bonds (excluding Australian Savings Bonds), and all Commonwealth issues can thus be valued at market prices.

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17. See Walters and Dippelsman (1986).

Table 3
Face Values of Non-Official Domestic Holdings of
Government Bonds, and Market-Face Value Ratios:
Selected years, 1978-1984
$ million, current prices

Year End of June	Commonwealth Bonds (1) Face Value $m	(2) Market-Face Value ratio	Local and Semi-Govt Bonds (3) Face Value $m	(4) Market-Face Value Ratio
1980	18296	0.84	14280	0.80
1982	20309	0.78	18866	0.70
1984	34485	0.93	26122	0.90

Sources:

Columns 1 and 3: RBA Bulletin, December 1985, Tables I9 and I15. Reported face values in column 3 differ from those in Table I 15 of the Bulletin because of adjustments made to account for estimated foreign holdings of these bonds.

Column 2: Defined as the ratio of the market value of holdings by the domestic non-official sector of Commonwealth bonds to the face value. Market value is constructed by deflating the face value of each maturity of bonds on issue at a point in time, by the relevant market price at that time. Data on market prices are publically available (see, for example, Private Investment). Data on the face value of bonds by maturity was obtained from the RBA.

Column 4: An estimated series based on the assumption that this ratio will be slightly less than the equivalent ratio for Commonwealth bonds (Column 2). A discussion of this assumption is in the text.

Local and semi government authority issues are more difficult to value. These issues are not frequently traded; most purchasers select bonds of this type with the intention of holding them until maturity. As well, the maturity of these bonds is usually of greater duration than is the case with Commonwealth issues. These two considerations suggest that if the market value falls below face value for Commonwealth bonds, then the market face value ratio for local issues will be even lower, and that the difference between the market values of the two categories will be greater the higher is the interest rate. This is because the longer is the time to maturity of a bond, the greater the risk attached to it. In Table 3 I reproduce estimates of the market face value ratios of Commonwealth bonds, and "guesstimates" of the local and semi-government ratio, based on the above considerations, using the 10-year bond yield as the interest rate. Also reported are the total face values of

non-official domestic holdings of each. The ratios are applied to face value totals to arrive at a market estimate of privately held government debt.[18]

(vi) Reserve Bank Liabilities

The Reserve Bank's liabilities to the private sector include all currency notes and coin issued, statutory reserve deposits (SRDs) and other minor items. The Bank maintains a series for this wealth component, and I have used this without amendment.

(vii) Foreign sector adjustments

Two kinds of foreign sector adjustments must be made to complete a valuation of Australian owned personal wealth. Australian assets held overseas must be added in, and foreign claims on assets located in Australia must be subtracted.

Levels of Australian investment abroad are derived from ABS data. Some Australian holdings of foreign corporate equities are recorded at paid up rather than market value. The series should therefore be regarded as placing a lower bound on the value of Australian ownership of foreign assets.

The value of foreign claims on assets located in Australia is calculated from ABS data on foreign investment in Australia. Because corporate equities are recorded at paid up value in these series, a market valuation was established by deriving a market to paid up value in a sample of firms on the SSE. Table 4 reports the resulting series from 1980.[19] Unincorporated foreign holdings may not be valued at market prices, since there is no means of identifying movements in the prices of physical assets held by foreigners after purchase.

(b) New Estimates of Wealth

The new estimates of wealth, in aggregate and by component, are reported in Table 5. "True" estimates are reported for the end of June each year. For other quarters, linear interpolation was used for some components. Each component of Australia's personal wealth has been valued at market prices,

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18. It should be noted that the H-B series on government debt, as extended by the Reserve Bank, excludes all Local Government and Semi-Government bonds.

19. This approach, and the series, were developed by Kim Hawtrey and Ian Russell of the Reserve Bank.

together with claims on and liabilities to the public and foreign sectors.
While much of the groundwork for these estimates had been laid in the H-B and
Williams studies, the results reported here represent the first comprehensive
market valuation of the Australian wealth stock.

Table 4
Foreign Sector Adjustments

Year (at June 30)	Australian Ownership of Foreign Assets $A million	Level of Foreign Investment in Enterprises in Australia $A million				
		Corporate Equities			Other[b]	Total
		paid-up value	ratio of market to paid-up value	estimated market value		Gross Foreign Investment in Australia
1980	3438	5811	3.7640	21873	11362	33235
1981	4124	7526	4.1387	31148	14817	45965
1982	5249	8679	2.7980	23284	23774	48058
1983 c	7409	10344	3.5217[a]	36428	35940	72368
1984 c	9362	11015	3.8625[a]	42545	44521	87066
1985 c	15721	11950	4.9907[a]	59638	66227	125865

a. estimated in movements equivalent to movements in share price index.
b. Items in this category may not be valued at market prices.
c. Includes trading banks.
Sources: Australian ownership of foreign assets: Australian Bureau of
Statistics, "Foreign Investment, Australia", Cat. No. 5306.0,
various issues.
Level of Foreign Investment in Enterprises in Australia: RBA
memorandum, "Foreign Investment in Australia".

The results suggest that earlier calculations of Australia's private wealth
stock have substantially underestimated its value. At 30 June 1981, H-B (as
revised) estimated Australia's wealth at $294.7 billion, while Williams (1983)
reports a value of $360.5 billion. My calculations yield a value of
$534.0 billion. Table 6 provides a comparison of all three series, both in
aggregate and by selected components, which allows a partial reconciliation of
these disparate findings. Discussion is confined to June 1981 estimates,
since that is the most recent date for which all three series are available.
Comparing the Williams results with the new estimates, we find that the
estimate for residential land and housing is greater by $46.9 billion in the
new calculations. Unincorporated wealth, not valued by Williams, accounts for
$87.9 billion. These two items account for $134.8 billion of the $173.5 billion

Table 5
Total Personal Wealth Estimates, Australia, by Wealth Component, 1980-85
$A billion, current prices

Year	(1) Residential Land and Dwellings	(2) Household Durables	(3) Rural Wealth (a,c)	(4) Other Business Fixed Assets and Inventories (b,c)	(5) Australian Ownership of Foreign Assets	(6) Non-official domestic holdings of Govt bonds (b)	(7) RBA Liabilities	(8) Total Personal Wealth
80(1)	241.4	30.2	53.3	99.2	3.7	28.1	6.8	462.7
(2)	253.3	30.6	57.2	98.2	4.0	26.8	6.9	477.0
(3)	275.8	31.4	59.3	97.4	4.1	28.3	7.0	503.3
(4)	278.0	32.1	61.4	96.5	4.1	28.9	7.6	508.6
81(1)	287.4	32.8	63.5	95.7	4.2	30.1	7.5	521.2
(2)	297.5	33.6	65.6	94.8	4.2	29.2	7.6	532.5
(3)	308.6	34.4	68.0	97.9	4.5	27.7	7.9	549.0
(4)	319.8	35.9	70.5	101.0	4.8	30.3	8.4	570.7
82(1)	324.6	36.8	72.8	104.1	5.1	29.6	8.2	581.2
(2)	325.3	37.8	75.3	107.1	5.3	29.0	8.6	588.4
(3)	329.2	38.7	78.2	103.1	5.8	33.2	8.5	596.7
(4)	333.0	39.7	81.1	99.2	6.4	38.8	9.3	607.5
83(1)	347.5	40.4	84.1	95.2	6.9	40.1	9.0	623.2
(2)	355.7	41.6	87.0	91.2	7.4	40.3	9.1	632.3
(3)	355.0	42.3	87.9	99.8	7.9	46.6	9.3	648.8
(4)	363.5	43.1	88.8	108.4	8.4	54.5	10.3	677.0
84(1)	374.9	43.9	89.7	117.0	8.9	55.3	9.8	699.5
(2)	388.6	44.3	90.6	125.6	9.4	55.6	10.2	724.3
(3)	400.7	45.0	93.6	123.2	11.0	59.2	10.6	743.3
(4)	416.1	45.6	96.6	120.9	12.5	61.3	11.5	764.5
85(1)	427.7	46.6	99.5	118.5	14.1	63.5	11.4	781.3
(2)	439.9	48.0	102.5	116.2	15.7	59.9	11.7	793.9

Notes:
a. Linear interpolation between the June quarters was used for this component.
b. Linear interpolation between the June quarters was used in some data employed in generating this component.
c. It is assumed that all foreign ownership of physical assets located in Australia represents claims on "Other Business Fixed Assets and Inventories". Some foreign ownership pressumably relates to rural wealth. The estimates in column 3 should therefore be somewhat lower, and those in column 4 somewhat higher than those reported.

difference between the two estimates. This remaining discrepancy should be increased by $13 billion to $51 billion, to allow for the value of land and capital used by financial enterprises. This component is covered by the H-B and Williams estimates, but not by the new calculations.[20]

<div align="center">

Table 6

Comparisons of Total Personal Wealth Estimates, Australia, by Wealth Component, 1980-85

$A billion, current prices

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Year (at June 30)	Piggott				Helliwell-Boxall			Williams	
	Total	Housing	Wealth in Unincorporated Firms	Govt Debt*	Total	Housing	Govt Debt*	Total	Housing
80(2)	477.0	253.3	78.0	33.7	258.6	101.4	22.3	206.3	301.6
81(2)	532.5	295.5	87.9	36.8	294.7	118.5	24.2	250.6	360.5
82(2)	588.4	325.3	99.9	37.6	296.4	137.9	24.4	-	-
83(2)	632.3	355.7	112.5	49.4	333.0	149.2	31.4	-	
84(2)	724.3	388.6	123.8	65.8	380.3	159.8	42.3	-	-
85(2)	739.9	439.9	140.3	71.6	483.1	176.8	46.1	-	-

* Government bonds and Reserve Bank liabilities.
Sources: Piggott: See text, and unpublished calculations.
        Helliwell/Boxall: Reserve Bank series.
        Williams: See Williams (1983).

In aggregate wealth calculations, the 10 per cent discrepancy between the two results which remains unaccounted for would not be considered a major inconsistency, especially since the estimates were generated from very different approaches. The current results are, therefore, broadly consistent with the Williams estimates, once omissions by Williams and residential housing value revisions are taken into account.

In comparing the new estimates with the H-B series, the difference in the value of housing is a major component, accounting for $179.0 billion of the $239.3 billion difference. (Again, the remaining $60.3 billion discrepancy must be increased to $73 billion for comparitive purposes.) Rural land must account for part of this remaining difference, but no estimates of rural land alone are available for 1981. Earlier estimates suggest somewhat more than

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20. See p.19 below for further discussion.

half rural wealth may be accounted for by the value of land. If we assumed a rural land value of, say, $35 billion (rural wealth was valued at $65.6 billion at June 1981), then there remains an unexplained discrepancy of about $38 billion. H-B neglected to include the market value of the non-official domestic holdings of local authority and semi-government bonds in their estimates, which at June 1981 were valued at $12.5 billion. Once the omissions of the H-B estimates have been valued, therefore, the discrepancy between the two series is largely explained for the date under consideration. The present approach has a good deal in common with H-B, so close agreement between the estimates after accounting for coverage differences might be expected. Nevertheless, it is reassuring that the differences in methodology adopted to achieve improved estimates do not dramatically affect the estimated value of those components valued at market prices by both series.

(c) A Critical Assessment

A number of weaknesses in the data and methods used for the new wealth estimates reported here can be readily identified, but three are of significant quantitative importance. They are the price index for residential housing, the valuation of non-farm unincorporated wealth by reference to the market value of corporate equities, and the omission of the wealth used by financial enterprises. They will be discussed in turn.

The use of the price series to value the aggregate stock of housing may be questioned on three grounds. First, the price indices refer to a sample of sales in four capital cities (Brisbane, Sydney, Melbourne and Adelaide), where site values might be thought to be higher than average. Second, a disproportionate number of new dwellings, relative to the total stock, will be sold in any one period, so the average age of dwellings sold will be less than the average for the stock, and the average floor size may be higher. A possible bias working in the opposite direction is that the average site value of newly completed homes is less than the average for the whole stock, since many new completions are located on the fringes of cities. A further point to bear in mind is that sales frequency may be greater when prices are high, so sales data could tend to bias upward the value of the housing stock.[21]
While data limitations preclude any quantitative assessment of these possible biases, they should nevertheless be borne in mind in interpreting the results.

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21. I am grateful to Andrew Edquist for pointing this out to me.

The second major weakness in the valuation procedure is the use of corporate equity market data to value non-farm unincorporated enterprises. The procedure used here is in the spirit of the H-B approach and although substantial improvements have been made, problems remain.[22] The most important of these is the possible impact of differential company and personal tax changes on the relative values of incorporated and unincorporated stock. A further issue is the extent to which expectations embodied in stock market changes can be extended to the unincorporated sector. Finally, the relative values of incorporated and unincorporated assets will be influenced in some degree by the greater liquidity of corporate equity. Once again, these issues cannot be quantified, but they are reservations which need to be recognised in assessing the reliability of the aggregate estimates.

The value of wealth used by financial enterprises cannot be valued using the methods employed here because of accounting conventions surrounding financial leasing and the inclusion of interest received in financial enterprise gross operating surplus. GOS estimates cannot be employed without double counting, since financial enterprises hold large claims on the trading sector. Net capital stock estimates for financial enterprises include the stock underlying financial leasing arrangements.

To gain some sense of the importance of this omission, I formed a rough estimate of the missing wealth based on the assumption that in 1966/67 financial leasing stock represented a negligible proportion of financial enterprise capital stock. I then used GOS financial enterprise data to scale the 1966/67 capital stock figures to give estimates for the 1980s. (The implicit assumption here is that the ratio of profits to value of physical capital stock has remained constant over this period.) I then estimated a market value of this stock by applying the wealth-capital stock estimate observed for corporate trading enterprises. This procedure generated an estimate of $13.4 billion for 1980/81, and of $21.1 billion for 1983/84 - between 2-1/2 per cent and 3 per cent of the estimated aggregate wealth.

Other problems with the calculations reported here are of less quantitative significance. They include certain omissions: the present value of public

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22. The substantial improvements include the separate valuation of rural wealth, the use of SSE data for valuing business wealth incorporating a far greater coverage than H-B found possible, and the use of GOS and net capital stock ratios for grossing up to national totals. H-B used book value ratios to move from their sample to national aggregates, and these have proved to be significantly affected by accounting conventions, such as asset revaluations, and by inflation.

sector (pay-go) occupational pensions;[23] the wealth of private forestry, hunting and fishing, and incorporated Agriculture; the value of vacant land; and the value of non-reproducible durables such as antiques and paintings. Unvalued claims by the public on the private sector include public housing loans and public loans to the rural sector. Except for the first item, these are not thought likely to significantly affect the aggregate estimates.

Calculations of the kind considered in this paper are by their nature imprecise, and the results are not amenable to strict statistical tests to determine their reliability. It may nevertheless be useful to provide a subjective guide to the sensitivity of the aggregate estimates to errors in the valuation of components. Table 7 reports an exercise of this kind, again carried out for June 1981. It was assumed that the value of residential land and housing lay between the Williams and Piggott estimates, and that the calculation of financial enterprise physical asset wealth and unincorporated non-farm wealth could be in error by up to 50 per cent either way. Other errors were ignored. The results yield a range of $483 billion to $564 billion. The lower bound still exceeds the Williams estimate for 1981 by a third, and the corresponding H-B value by nearly two-thirds.

Table 7
Sensitivity Analysis of Aggregate Australian Wealth Estimates: June 1981

Estimated value	$533 billion
Change for assumed maximum residential land and housing error	-$46 billion - 0
Financial enterprise adjustment	$7 billion - $20 billion
Non-farm unincorporated wealth adjustment	-$11 billion - $11 billion

	Low	High
Aggregate wealth range	$483 billion - $564 billion	

4. Concluding Comments

This paper reports new estimates of Australia's aggregate private non-human wealth, in which all major components are valued at market prices or a close

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23. This is considered part of private wealth, since it represents a claim by the private on the public sector that is in the nature of a title. It is therefore distinct from government transfers such as the age pension.

approximation. At June 1985, Australia's total private wealth was valued at $794 billion. The calculations suggest that previous studies have substantially undervalued Australia's wealth. Comparison with the (updated) series reported by Helliwell and Boxall (1978) (H-B), suggests that their calculations capture only a little more than half of the market value of private wealth. The estimates of Williams (1983), the second authoritative series, omits about one third of aggregate wealth. For example, for June 1981, the last date for which calculations are available for all three series, the H-B series estimates Australia's wealth at $295 billion. Williams (1983) reports a value of $361 billion and the new calculations reported here yield a total of $533 billion. In spite of the large differences between these estimates, it is possible to identify omissions in the coverage of the Helliwell-Boxall and Williams estimates which account for most of the discrepancies, and this lends some credibility to the new estimates. When allowance is made for inaccuracy in valuation, a range of $483 billion to $564 billion is calculated for June 1981. Even the lower bound of this range substantially exceeds the H-B and Williams estimates.

APPENDIX 1

EARLY ESTIMATES OF AUSTRALIA'S WEALTH STOCK

It is instructive to briefly examine some calculations of Australia's early wealth stock, both for their intrinsic interest, and because current wealth estimates are, one way or another, descended from these pioneering efforts. Table A1 summarises estimates of total wealth in Australia between 1813 and 1956, reported in current values. Both estate and inventory methods were used, and this partly accounts for the discrepancies between some of the estimates. Knibbs (1918), in particular, was very concerned with the problem of under-estimation of private wealth via the estate method. For 1915, he compares estimates from an inventory approach, from the War census, and from an estate estimate - one of the few occasions on which these approaches have been compared in a single study anywhere in the world. The census estimate of £1,643 million actually exceeds the estimate from the inventory approach, because the census includes items such as the value of government debt held by individuals which are excluded from an inventory of private sector wealth. Knibbs estimates these items to be worth £140 million (see his Preface). By contrast, the estate method gives an estimate of £1,000 million (p.128).

Table A1
Estimates of the Private Wealth of Australia: 1813-1956
£ million - current prices[1]

Author	Year								
	1813	1838	1863	1878	1888	1890	1903	1911	1915
Coghlan	1	26	163	–	875	1019	982	–	–
Laughton	–	–	–	–	–	–	–	1031	–
Knibbs	–	–	–	258	666	748	885	1418	1620[2]
Garland/ Goldsmith	–	–	–	–	–	–	1309	–	–

	1921	1923	1927	1929	1947	1956
Wickens	2166	2423	3064	3351	–	–
Garland/ Goldsmith	2823	–	–	4350	7018	21763

1. Sources: Knibbs (1918), p.130; Garland and Goldsmith (1959), Table X, p.351, Yearbook of the Commonwealth of Australia, No. 26, 1933, p. 492.
2. This is Knibbs' estimate by the inventory method in Knibbs (1918). He also reports estimates by census and by the estate method. See text for discussion.

It should also be noted that Gunton (1975) has provided a complete series of aggregate private wealth estimates from 1914 to 1969 using the estate method.[1]

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1. See Gunton (1975), Table 6.4 p. 125-26.

APPENDIX 2

DETAILED DATA SOURCES

Table 1
Derivation of Estimates of Value of Residential Land and Housing

		(1) Number of Dwellings Completed	(2) Sales by Housing Authorities	(3) Demolitions	(4) Net change in Stock [(1)+(2)-(3)]	(5) Total Stock	(6) Value $ Million
80	(1)	27465	125	2325	25265	4993519	241432
	(2)	30653	125	2325	28453	5021972	253333
	(3)	30890	125	2325	28690	5050662	275827
	(4)	34660	125	2325	32460	5083122	278032
81	(1)	28560	124	2325	26359	5109482	287373
	(2)	31370	124	2325	29169	5138651	297456
	(3)	34080	65	2325	31820	5170471	308569
	(4)	36130	65	2325	33870	5204341	319848
82	(1)	28450	65	2325	26190	5230531	324617
	(2)	30320	64	2325	28059	5258590	325260
	(3)	31370	-88	2325	28957	5287547	329240
	(4)	30300	-88	2325	27887	5315434	333023
83	(1)	20690	-88	2325	18277	5333711	347534
	(2)	22400	-88	2325	19987	5353698	355743
	(3)	25620	-37	2325	23258	5376956	354997
	(4)	29680	-37	2325	27318	5404274	363454
84	(1)	25280	-37	2325	22918	5427192	374910
	(2)	30130	-38	2325	27767	5454959	388579
	(3)	32080	-391	2325	29364	5484323	400696
	(4)	35630	-391	2325	32914	5517237	416127
85	(1)	29550	-391	2325	26834	5544071	427681
	(2)	31590	-391	2325	28874	5572945	439889

NOTES TO TABLE 1

1. **No. of Private Dwellings Completed**:

   Source: ABS Cat. No. 8705.0 'Building Activity'
   Table 2 - Summary of Private Sector Building Activity
   Figure is the original series

2. **Sales by Housing Authority**:

   Source: Annual Report on the Housing Assistance Act
   (Dept. of Housing and Construction).

3. **Demolition**

   10,000 demolitions are assumed a year for all dwellings - 93 per cent of which is owned by persons i.e. 9,300 demolitions in private sector i.e. 2325 per quarter.

4. **Change in Stock**:

   = No. of dwellings (1)
   + Sales by H. Authority (2)
   - Demolitions (3)

5. **Total Stock**:

   Figure for June 1981 is from 1981 Population census, i.e., 5138651.

   Stock at quarter (t + 1) = Stock at (t) + change in stock (col. 4) at (t+1).

6. **Value of Residential Land and Buildings** (col. 6)

   The value estimates were obtained by multiplying entries in column 5 by the house price series supplied by the Department of Housing and Construction (DHC). Although this price series was derived as a composite of publicly available price series, such as those provided by BIS-Shrapnel and the various State Valuers-General, DHC does not yet consider its estimates reliable enough for detailed work on the housing market. Accordingly, DHC has requested that the series not be reproduced here. The series is considered adequate for calculations within the broader framework of aggregate wealth estimates.

TABLE 2: DERIVATION OF AGGREGATE CORPORATE WEALTH

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	STATEX SAMPLE DATA								AGGREGATE DATA				
	Market Capitalisation	Net Financial Assets	Earnings Before Interest	Dividend Received	Interest Received	Corporate Wealth (1)-(2)	GOS+TVSA (3)-(4)-(5)	Corporate Wealth (GOS+TVSA) (6) ÷ (7)	GOS	TSVA	GOS+TVSA (9)+(10)	WBC (8)x(11)	Companies in Sample
1979-80	31489.6	-4879.9	5813.48	189.58	268.69	36369.46	5355.2	6.79	13814	2719	16533	112281	318
1980-81	32792.3	-5714.3	6408.75	205.34	433.99	38506.55	5769.4	6.67	15990	2093	18083	120592	348
1981-82	29090.5	-11056.3	6582.62	236.51	698.04	40146.80	5648.07	7.11	16382	2318	18700	132921	363
1982-83	42486.8	-10958.1	8949.88	273.31	985.71	53444.9	7690.9	6.95	17568	2292	19860	138010	380
1983-84	49100.5	-10073.5	9485.70	321.47	1051.48	59174.0	8112.8	7.29	23185	1418	24603	179452	400
1984-85	52358.0	-9351.5	10131.60	421.18	1154.69	61709.51	8555.61	7.21	25843	2475	28318	204253	352

Notes: 1. Business Wealth (incorporated) (Col. 6) is market capitalisation less net financial assets.

2. The value of gross operating surplus (GOS) plus Traded Value Stock Adjustments (TVSA) for the sample is derived from Earnings before interest (Col. 3) less dividend received (Col. 4) and less interest received (Col. 5).

3. The ratio of Business Wealth to (gross operating surplus plus TVSA) is in Col. 8 and is used to calculate the aggregate Business Wealth by multiplying this ratio by the sum of GOS and TSVA.

Sources:

1. For the sample: Market Capitalisation (Col. 1),
Net Financial Assets (Col. 2),
Earnings before interest (Col. 3),
Dividend received (Col. 4),
Interest received (Col. 5),
Companies in sample (Col. 13).

are from: Sydney Stock Exchange (SSE)'s STATEX services.

2. Col. 8:   Gross operating surplus (GOS) and Traded Value Stock Adjustment (TVSA) are from Table 2, Australian National Accounts 1984-1985, A.B.S. Cat. No. 5204.0.

| | Level of Australian Investment Abroad | | | | | Level of Foreign Investment in Australia | | | | |
| | Corporate Equities[1] | | Accounts Payable (2) | Other Instruments (1) | Total | Corporate Equities | | | Other | Total adjusted |
	Direct	Portfolio				Paid up value	Ratio of market to paid up value	estimated market value		
1979-80	872	118	1685	1319	3994	5811	3.7640	21873	11362	34836
1980-81	942	147	1788	1350	4227	7526	4.1387	31148	14817	48179
1981-82	1231	445	1867	1785	5328	8679	2.7980	23284	23774	50373
1982-83 [3]	1773	1058	4578		7409	10344	3.5217	36428	35940	72368
1983-84	2918	1199	5245		9362	11015	3.8625	42545	44521	87066
1984-85	5264	2483	7974		15721	11950	4.9907	59638	66227	125865

Notes: 1.   From 1984-85, corporate equities in portfolio is at market value - before that it is on a mixture of bases including paid up value.

2.   "Accounts Payable" is the exports Trade Credit Nei - see sources.

Source: 1.   For 1979-80 to 1981-82:   ABS Cat. No. 5305.0 Foreign Investment - Australia 1983-84 Table 41.

2.   For 1979-80 to 1981-82:   "Accounts Payable" is from ABS Cat. 5303.0 Balance of Payments 1983-84, Table 4.

3.   ABS. Cat. No. 5306.0 Foreign Investment, Australia September quarter 1985 Table 3.

TABLE 4
NON-FARM BUSINESS FIXED ASSETS AND INVENTORIES - ANNUAL ESTIMATES - ADJUSTMENTS FOR UNINCORPORATED WEALTH AND FOREIGN OWNERSHIP
$ MILLION

	Estimated aggregate incorporated wealth	Unincorporated wealth	Foreign Ownership	Net Non-Farm Business Fixed Assets and Inventories
79-80	112281	20772	34836	98199
80-81	120592	22328	48179	94841
81-82	132921	24590	50373	107138
82-83	138010	25532	72368	91174
83-84	179452	33199	87066	125585
84-85	204253	37787	125865	116195

Notes:
1. Unincorporated Wealth is calculated as being 0.185 of incorporated Business Wealth.
2. Foreign ownership is calculated from Table 3.
3. Net Business Fixed Assets is derived as the sum of WBC and Unincorporated Wealth minus Foreign Owned Investments.

TABLE 5
DERIVATION OF QUARTERLY NET NON-FARM BUSINESS FIXED ASSETS AND INVENTORIES
$ MILLION

		Incorporated and Unincorporated Business Wealth	Foreign Ownership	Business Fixed Assets - Net
1980	(1)	130539	31317	99222
	(2)	133035	34836	98199
	(3)	135531	38172	97354
	(4)	138028	41508	96520
1981	(1)	140524	44843	95681
	(2)	143020	48179	94841
	(3)	146643	48728	97915
	(4)	150266	49276	100990
1982	(1)	153888	49825	104063
	(2)	157511	50373	107138
	(3)	159019	55872	103147
	(4)	160527	61371	99156
1983	(1)	162034	66869	95165
	(2)	163542	72368	91174
	(3)	175819	76043	99776
	(4)	188097	79717	108380
1984	(1)	200374	83392	116982
	(2)	212651	87066	125585
	(3)	219998	96766	123232
	(4)	227346	106466	120880
1985	(1)	234693	116165	118528
	(2)	242040	125865	116175
	(3)			
	(4)			

Notes: The annual figures (i.e. as at June each year) are taken as the values for the second quarter of each year; simple linear interpolation is used to calculate the intervening quarters by taking the difference between two successive June quarters and dividing it by 4 and the result is added to the first June quarter to derive the September quarter, to the September quarter to derive the December quarter etc..

e.g. to calculate the level of Foreign Owned Investment for quarters 1980 (3), 1980 (4), 1981 (1) the difference between quarters 1980 (2) and 1981 (2) is calculated = 48179 - 34836 = 13343
hence: quarter 1980 (3) = quarter 1980 (2) + 13343/4 = 34836 + 3336 = 38172

Table 6
Annual Data for Local Authority and Semi-Government
Bonds at Face Value
$ million

| Year
(Value at
June 30) | Total | Of which | |
		other holdings	Foreign Owned holdings*
1980	16315	4070	2035
1981	19093	5717	2859
1982	22991	8250	4125
1983	28352	11936	5968
1984	33320	14381	7191
1985	38678	19331	9665

Note

*   Foreign owned holdings are derived from the assumption that
    about half of "other holdings" are held by the foreign
    sector. This assumption is supported by the flow estimates.

Source: Reserve Bank Bulletin December 1985, Table I15.

Table 7
Derivation of Quarterly Data for Non-Official Holdings of Government Bonds

		Local Authority & Semi Govt Bonds			(4) Foreign owned holdings face value $ million	(5) Foreign owned holdings mrkt value $ million	Commonwealth Bonds held domestically			(9) Total Net Non-Official Holdings of Govt Bonds (3)-(5)+(8) $ billion
		(1) Face Value $ million	(2) Ratio of Market to Face Value	(3) Market Value (1)x(2) $ million			(6) Face Value $ million	(7) Ratio of Market to Face Value	(8) Market Value (6)x(7) $ million	
1980	(1)	15673	0.81	12695	1829	1481	19840	0.85	16864	28.1
	(2)	16315	0.80	13052	2035	1689	18294	0.84	15367	26.8
	(3)	17009	0.81	13777	2241	1815	19254	0.85	16366	28.3
	(4)	17703	0.78	13808	2449	1909	20688	0.82	16964	28.9
1981	(1)	18398	0.77	14166	2653	2043	21921	0.82	17975	30.1
	(2)	19093	0.77	14702	2859	2201	20306	0.82	16651	29.2
	(3)	20067	0.71	14248	3176	2255	20251	0.78	15796	27.7
	(4)	21041	0.77	16202	3492	2689	20965	0.80	16772	30.3
1982	(1)	22016	0.70	15411	3809	2666	21697	0.78	16924	29.6
	(2)	22991	0.70	16094	4125	2888	20309	0.78	15841	29.0
	(3)	24331	0.77	18735	4586	3531	21930	0.82	17983	33.2
	(4)	25671	0.82	21050	5047	4139	25379	0.86	21826	38.8
1983	(1)	27011	0.81	21879	5507	4461	26369	0.86	22677	40.1
	(2)	28352	0.80	22682	5968	4774	26321	0.85	22373	40.3
	(3)	29594	0.85	25155	6276	5335	30047	0.89	26742	46.6
	(4)	30836	0.90	27752	6583	5925	35130	0.93	32671	54.5
1984	(1)	32078	0.87	27908	6891	5995	36709	0.91	33405	55.3
	(2)	33320	0.90	29988	7191	6478	34485	0.93	32071	55.6
	(3)	34660	0.91	31541	7810	7107	37347	0.93	34733	59.2
	(4)	35999	0.91	32759	8428	7669	38494	0.94	36184	61.3
1985	(1)	37339	0.90	33605	9047	8142	40947	0.93	38081	63.5
	(2)	38678	0.88	34037	9665	8505	37375	0.92	34385	59.9

Notes:
1. Linear Interpolation is applied to the annual date of Local Authority and Semi-Govt Bonds (LSB) to derive quarterly figures.
2. Flow estimates suggest that about half of "other holdings" component of total LSB is held by the foreign sector and hence must be adjusted to exclude this factor. The foreign owned part of 'other holdings' is also computed at market value and quarterly figures are interpolated from annual figures.
3. Total Net Non Official Holdings of Govt. Bonds = Total Holdings of LSB and VGS at Market Prices minus Foreign owned Holding at Market Prices.

Sources:
1. Face values of government bonds: RBA Bulletin, December 1985, Table I9 and I15, and additional unpublished data.
2. Ratios of Market to Face values - Reserve Bank, unpublished data. The ratio for Commonwealth bonds (CB) was derived from market data. The LSB ratio is an estimate based on the CB ratio and the rate of interest.

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