

The Measurement of National Wealth. Income and Wealth, Series VIII - 1959

THE NATIONAL WEALTH OF AUSTRALIA

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I. PREVIOUS ESTIMATES

AUSTRALIA made a promising beginning half a century ago in estimating its own wealth. One of its earliest and most enterprising statisticians, T. A. Coghlan, is credited with estimates of private wealth extending from 1813 to 1903.² Another statistician, A. M. Laughton, estimated the private wealth of Australia in 1911 at £A1,031 million,³ and in 1918 G. H. Knibbs, Commonwealth Statistician, published a distinguished survey of the private wealth of Australia, based on the results of the war census of 1915, supplemented by inventory and devolution estimates.⁴ The war census questionnaire of 1915 contained a schedule of questions relating to the approximate value of real and personal property held by persons either on their own account or on account of other persons or companies. A special return was obtained from all Australian companies. Wealth and income were classified to give a frequency relationship and a 'plutoprosodic' graph with multiple contours was drawn, for males and females. The devolution estimates were based on probate returns and an average rate of devolution, which emerges from an elaborate argument. However, the outcome of these calculations was not satisfactory, and Knibbs turned to the inventory method, using the war census totals, and other collections of data which he had available, and which gave him reasonably adequate results. His final estimate is shown below:

Private Wealth of Australia, June 1915

	£ million
Land and improvements	1,106
Other assets	514
Total	<u>1,620</u>

¹ The authors wish to acknowledge the help they were given by many people in Australia, both within the Commonwealth Government and the Commonwealth Bank and outside. They wish in particular to acknowledge the assistance of Mr. R. H. Scott and his colleagues in the Economic Department of the Commonwealth Bank of Australia.

² *Official Year Book of the Commonwealth of Australia*, No. 26, 1933, p. 490.

³ Mentioned by Knibbs, see below.

⁴ *The Private Wealth of Australia and its Growth, together with a Report of the War Census of 1915.*

According to these estimates, land and improvements represented 68 per cent of the total, and private wealth was about six times net income.

Knibbs suggested at the conclusion of his survey that an inventory estimate of wealth should be made every five years, and that the quinquennial inventory estimates should be supplemented by a decennial inventory of wealth. C. H. Wickens, as Commonwealth Statistician, continued the inventory estimates and, using Knibbs' classification and methods, periodically published estimates of private wealth.¹ By 1929 aggregate private wealth had risen to £3,351 million, while the percentage of land and improvements remained virtually unchanged at 67 per cent.² It is of interest to note the concept which these figures cover. 'They represent the estimated value of the private wealth of Australia at 30th June, 1929, and include values for property in Australia owned by absentees. Property outside Australia owned by Australian residents is, of course, not included, and no account is taken of immaterial wealth such as title deeds, mortgage deeds, debentures, etc., the estimate being based entirely on the material private wealth itself, without regard to the individual titles thereto. Communal wealth in the property of Commonwealth and State Governments, and of local governing bodies, is not included, nor has any allowance been made for the interests of private investors by way of loans in such property.'³

After 1929 comes a gap. The earlier rate of progress was not maintained and there was no decennial inventory. A national register was taken in 1939 which included some wealth questions, but the tabulation of the returns was never fully completed. Land and buildings amounted, so we were informed, to a value of about £A1,700 million.

Virtually the only work done in the last quarter-century are the summary estimates of aggregate reproducible tangible assets for 1942, 1949, and 1953 made by the Queensland Bureau of Industry, and their more detailed estimates, also including land, for 1952/53 for Queensland alone.⁴ The last of these estimates is of particular interest, since it is closer in its method to the approach taken in this paper than any of the earlier attempts.

¹ *Official Year Book*, *op. cit.*, p. 492.

² *Ibid.*

³ *Ibid.*

⁴ *Economic News*, May 1950 (unsigned but probably attributable to Mr. Colin Clark); September and November/December 1955 by R. E. Dyne and O. M. May.

II. SCOPE AND METHOD OF PRESENT ESTIMATES

The reason why the Commonwealth Statistician discontinued his estimates of Australian wealth is fairly clear. The statistics were not sufficiently comprehensive, and valuations were unreliable. These difficulties persist, and the methods which must be used to obtain any comprehensive figures of Australian wealth could perhaps fairly be described as somewhat adventurous. Census information which could be used for wealth estimation is very limited, and official inventories are scattered. Valuation involves a number of difficulties conceptual, statistical and practical, and methods of valuation have to be adapted to the information which is available. However, there is no need to labour the basic difficulties of wealth estimates, particularly in a country where little previous work has been done.

The concept of national wealth which has been used for this paper involves some addition to that used previously by the Commonwealth Statistician. We have included 'communal wealth', in the form of an estimate of the value of public works, and have also made some attempt to allow for international assets and liabilities.

Broadly, our concept of national wealth corresponds to the concept of net worth in a consolidated national balance sheet, with the proviso that no account is taken of the minor intangible assets, such as the value of patents and goodwill, which might theoretically be included in the national balance sheet. Our estimates, therefore, cover tangible assets, both reproducible and non-reproducible, and net foreign assets. In that respect they may be said to be close to international usage.

The specific items for which values are shown are:

1. Reproducible tangible assets --

- (a) Buildings --
 - (i) Dwellings
 - (ii) Other
- (b) Motor vehicles --
 - (i) Cars
 - (ii) Other
- (c) Equipment --
 - (i) Agricultural
 - (ii) Non-agricultural

- (d) Livestock
 - (e) Inventories –
 - (i) Farm
 - (ii) Non-farm
 - (f) Public works
 - (g) Consumer durables
2. Coin bullion –
 - (a) Silver and copper coin
 3. Non-reproducible tangible assets –
 - (a) Unimproved land value
 - (b) Invisible and other non-structural improvements to land
 4. Net foreign assets –
 - (a) International assets
 - (b) International liabilities

It has not proved possible to follow, consistently, one principle of valuation for all types of assets. Value of unimproved land has been estimated on the basis of current market prices, and livestock and inventories are, so far as is possible, also related to the market. For reproducible tangible assets, the basis of valuation is an estimated replacement cost conceived as price adjusted depreciated original (historical) cost. The use of different methods involves some difficulties, and throughout the paper problems of valuation are constantly recurring. These are mentioned where relevant, but some general preliminary observations may be offered here:

- (1) It has been necessary to rely very heavily on index numbers for converting to current values. Price-index numbers are a particularly acute problem in Australia, and little more can be said than that we are aware that many problems have been ignored. Technically Australian price-index numbers are probably no better and no worse than in most other countries, and it is just as inappropriate in Australia as elsewhere to use index numbers for purposes for which they were not designed. We have endeavoured to avoid this misapplication, where possible, and have devised some composite indexes for particular uses, but it should be emphasized that the valuations of tangible assets in base-period prices are no better than the price

indexes on which they are based, and the indexes which have been used, we must admit, are often quite rough.

- (2) The fact that land values are based on the market while other assets are on a replacement-cost basis does open up some possibility of duplication, particularly in relation to public works. In Australia, over the years, public-works projects have often involved relatively high capital outlays, and in some cases current charges are not adequate to cover running costs and depreciation. Current losses on public works would, on our method, not show themselves in any reduction of the value of the works, but there could be a capital increment to land values as a result of the virtual subsidy from current works operations. This could lead to some duplication, but what the scale of this duplication is we have no means of estimating.
- (3) We have been very much concerned about the general problem of valuation of Australian land. The land valuations which find their way into Australian statistics are, we believe, very conservative, and it has been necessary to make arbitrary adjustments to them. The degree of undervaluation varies, and an accurate adjustment would involve extensive inquiries in all States. The difficulties are referred to in more detail in Section IV, but it may perhaps be mentioned at this stage that our estimate of total land values has been taken as high as we think is reasonable, having regard to all the difficulties. Nevertheless, it could still be conservative.
- (4) This deficiency, however, is in one sense balanced by the gap which has been left in our estimation of Australia's international liabilities. We have found it extremely difficult to correct the figure of Australia's foreign liabilities for price changes and other differences between book and market values. This is mainly because of deficiencies in the price indexes and uncertainties about the interpretation of the figures collected from companies with overseas affiliations. We have, therefore, preferred to use the official figures, without correcting for price changes. In this respect our figure for total Australian wealth has been overstated, as it understates the value of foreign direct investments.

III. REPRODUCIBLE TANGIBLE ASSETS

1. *Methods of estimation*

The method adopted for estimating the stocks of reproducible tangible assets was, in most cases, to sum the depreciated values of annual expenditures on the various assets for the period of the life ascribed to them, and to convert these values to an estimate of replacement cost.

We had, in fact, little choice. The statistics which we had seemed inadequate, in most cases, to support any other method. But the method has the virtue of ensuring uniformity of valuation, even if the basis of the valuation is itself not ideal.

What was involved was, first, the conversion of annual expenditures in current prices to constant prices; secondly, the calculation of annual depreciation charges and the calculation and summation of the depreciated values of the annual expenditures; and, finally, the conversion of the sums of the depreciated annual expenditures back into prices ruling at the end of the years for which the stock estimates were required. The difficulties inherent in this method, apart from the inadequacy of basic data, are the lack of homogeneity within the expenditure aggregates with which it is necessary to work, together with all the difficulties and problems associated with price-index numbers.

The necessity for aggregation at the expense of homogeneity makes the choice of depreciation rates difficult and, in the result, somewhat arbitrary. It was also difficult to choose the basis for calculating depreciation, and we therefore decided to calculate depreciation on both a straight-line and declining-balance basis for nearly all assets; the only exceptions were consumer durables and motor vehicles, for which it seemed apparent that straight-line depreciation would be inappropriate.

The life finally attributed to each type of asset was chosen somewhat arbitrarily. Little information was available. Generally, the lives chosen were a matter of judgment based on general knowledge and experience in the United Kingdom and the United States of America. Another somewhat arbitrary choice was made for the remaining balance, which it was necessary to write off in the declining-balance calculation of depreciation. This remaining balance was arbitrarily set at a fairly low proportion, so that the implied annual rates of depreciation on the declining-balance basis are fairly high.

The following schedule shows the length of life attributed to each type of asset, the percentage of the original cost finally written off, and the annual rate of depreciation implied in the straight-line and the declining-balance calculation of depreciation.

Depreciation Schedule

Type of Asset	Assumed Life	In Declining-balance Calculation		In Straight-line Depreciation
		Percentage of Original Cost Finally Written Off	Annual Rate of Depreciation (%)	
Consumer durables . . .	12 yrs.	4	22½	—
Dwellings . . .	70 "	5	4	1½
Other structures . . .	50 "	6	5½	2
Motor vehicles:				
Cars . . .	15 "	8	15	—
Commercial vehicles . . .	10 "	10	20	—
Producer durables . . .	20 "	9	11½	5
Public works . . .	40 "	5	7¼	2½

Exceptions to the use of the method described above applied to the estimates of livestock values, farm inventories, and non-farm inventories. In these cases it was possible to make direct estimates of the values of the stocks. Statistics of livestock numbers and quantities of farm inventories, and also of prices for these items, were available. For non-farm inventories, estimates of book values were available for a large sample of private industry, and these were blown-up to obtain a total.

2. Sources of data

The main primary sources for the expenditure series for the period from 1938/39 to 1955/56 were the estimates shown in the Commonwealth Statistician's White Papers on National Income and Expenditure.¹ For the period from 1948/49 to 1955/56 the White Paper for 1955/56 was used. Figures for 1946/47 and 1947/48 were taken from the White Paper for 1954/55. For the period from 1938/39 to 1945/46 the White Paper for 1950/51

¹ Estimates prepared in the Commonwealth Bureau of Census and Statistics for presentation annually with Budget papers for the Commonwealth; issued by the Commonwealth Government Printer.

was used, this being the last year in which complete estimates for the war period were given. It was necessary to make some adjustments to the figures shown in the 1950/51 White Paper. For instance, expenditure on motor vehicles was not divided, in the White Paper, between cars and commercial vehicles. Adjustments were also required for expenditure on dwellings and public works which, as then given, included some maintenance expenditure.

The main primary source for the period from 1928/29 to 1938/39 was a paper (unfortunately available only in mimeographed form) presented to the Australian and New Zealand Association for the Advancement of Science in 1939 by Dr. (now Sir) Roland Wilson under the title 'Public and Private Investment in Australia'.

Prior to 1928/29, only estimates of expenditure on building and public works were required. For building, use was made of statistics of permits issued for new buildings by local government authorities as published by State Statisticians. These figures covered the period to the beginning of the century and were checked with census data for the years 1911, 1921, and 1933. Use was also made over this period of the annual reports on building operations of the Sydney Metropolitan Water, Sewerage, and Drainage Board. These basic sources were used to estimate annual expenditures on building. Estimates of expenditure on building prior to the turn of the century were taken from a monograph by N. G. Butlin.¹ For expenditure on public works prior to 1928/29, figures from 1919/20 were taken from a note by W. A. Sinclair.² For the period prior to 1919/20 back to the beginning of the century, the primary source used was the Commonwealth Statistician's *Finance Bulletins* for those years.

For some items, other sources were drawn upon than the main ones mentioned above. In the case of expenditure on agricultural equipment, recourse was had to the Commonwealth Statistician's *Production and Oversea Trade Bulletins*. The Commonwealth Statistician's publications were also exploited for the basic information underlying the estimates for the value of non-farm inventories and of livestock, supplemented in the latter case by information published by the Statisticians for in-

¹ *Private Capital Formation in Australia, Estimates 1861-1900, 1955.*

² 'Public Capital Formation in Australia, 1919/20-1929/30', *The Economic Record*, November 1955.

dividual States. The information used for the estimates of the value of farm inventories was taken from reports of the National Council of Wool-Selling Brokers and the Australian Wheat Board and from the Commonwealth Statistician's Production Bulletins. In all these cases the information in the primary sources was used as a basis for estimating expenditure or stocks.

The main price indexes used for conversion of the expenditure series in current prices to constant prices were the Commonwealth Statistician's 'C' series index (of retail prices), wholesale-price index, and average weekly earnings index (the latter linked to the nominal male wage index wherever necessary); the Commonwealth Bank's import price indexes; and a construction cost index obtained by linking together the best indexes available for the several periods for which information was required. Although these were, in the main, of unofficial character, they appear reasonable when compared with the nearest approach in the official indexes to what was sought.

The same indexes were also used for the conversion of the wealth estimates from constant prices to replacement cost. For this purpose also, additional information was required for livestock and farm inventories; this was taken mainly from the Commonwealth Statistician's publications.

Additional notes on the primary sources of data, where they were not sufficient in themselves for our requirements, are given in an appendix.

3. *Quality of data*

It is very difficult to assess the quality of the data. Of the expenditure series, the figures from the Commonwealth Statistician's estimates of national income and expenditure, covering the period from 1938/39 to 1955/56, can be accepted with a reasonable degree of reliance. Most of the figures for the preceding decade might also be accepted without much reservation, although they would probably be less accurate than those for the later period. Prior to 1928/29, however, the reliability of the figures lessens, except, in the case of expenditure on public works, back to 1919/20, although not beyond that point.

Nevertheless, as the accuracy of the expenditure series becomes more questionable, so does their influence on the final results become less. The depreciated value of annual expenditures in the first quarter of the century, for instance, still

remaining in the estimates of stocks of assets after World War II is relatively small; the levels of expenditure in the last two decades overshadow those of the earlier periods; and it is unlikely that the errors in the expenditure series used for the earlier periods covered would have much, if any, significant effect on the wealth estimates for the period from 1946/47 on.

The price indexes are, perhaps, more questionable than the expenditure series. Except in the case of motor vehicles, none of them is wholly appropriate, and in many cases it was necessary to use some of them in combination to take account of the influences involved. Nevertheless, they are, probably, a reasonably reliable measure of changes in prices over the long run, and it was the long run which was involved.

4. *The estimates*

The resulting estimates of the stocks of reproducible tangible assets are shown in the following tables. The estimates resulting from calculating depreciation on both a straight-line and declining-balance basis are shown and, in both cases, the figures are presented in constant and current prices. The constant-price estimates are in terms of average 1936/37–1938/39 prices, and the current-price estimates are in terms of prices at the end of the years shown.

These estimates are given for each of the years from 1946/47 to 1955/56 in the case of straight-line depreciation, but estimates for the intervening years are omitted for the declining-balance calculations. However, it is probable that the year-to-year changes in the stock of assets are less reliable and have much less significance than the change over longer periods; perhaps no less than the change over a decade or a considerable fraction of it should be considered in interpretation.

IV. NON-REPRODUCIBLE TANGIBLE ASSETS

Land is the most important item in this group of assets. Valuation of land in Australia presents some complex problems, particularly for country land. The complexity is not surprising. Land value is essentially the capitalization of a residual product – an arbitrary multiplication, so to speak, of a net uncertainty. In a country which depends for a very important part of its rural production on export markets, the level of export prices must, over a long period, have an important influence on rural

TABLE I
Stocks of Reproducible Tangible Assets at Depreciated Replacement Cost
 Constant (1936/37—1938/39) Prices (£A million)

End of Fiscal Year	1946/47 Declining- balance Depreciation	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1955/56 Declining- balance Depreciation
	Straight-line Depreciation											
Consumer durables ¹	206	206	232	255	281	323	347	357	377	401	424	424
Dwellings	366	585	589	598	611	631	655	674	695	720	744	504
Other structures	205	323	322	324	326	331	337	335	347	355	369	241
Cars ¹	39	39	47	63	94	124	150	160	180	214	240	240
Other vehicles ¹	18	18	23	31	45	64	78	81	85	92	99	99
Agricultural equipment	46	62	64	67	74	83	96	102	109	117	125	95
Non-farm equipment	182	262	261	268	279	298	319	334	359	382	405	305
Livestock	228	228	238	246	254	262	261	268	275	281	289	289
Farm inventories	13	13	23	21	25	23	18	20	32	32	37	37
Non-farm inventories	377	377	422	428	426	428	487	425	436	461	452	452
Public works	509	868	883	910	954	1,019	1,081	1,141	1,200	1,261	1,320	900
Total straight-line depreciation	—	2,981	3,104	3,211	3,369	3,586	3,829	3,897	4,095	4,316	4,504	—
	Declining-balance Depreciation											
Total declining-balance depreciation	2,189	—	2,313	2,403	2,576	2,785	3,011	3,074	3,242	3,431	—	3,586

¹ Declining-balance Depreciation.

TABLE II
Stocks of Reproducible Tangible Assets at Depreciated Replacement Cost
 Current (End Year) Prices (£A million)

End of fiscal year	1946/47 Declining- balance Depre- ciation	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1955/56 Declining- balance Depre- ciation
		Straight-line Depreciation										
Consumer durables ¹	272	272	334	403	486	669	864	925	988	1,075	1,208	1,208
Dwellings	820	1,310	1,502	1,680	1,906	2,309	2,699	2,979	3,162	3,456	3,735	2,530
Other structures	459	724	821	910	1,017	1,211	1,388	1,481	1,579	1,704	1,852	1,210
Cars ¹	87	87	96	132	210	327	453	486	520	621	744	744
Other vehicles ¹	30	30	42	62	99	161	211	223	235	254	297	297
Agricultural equipment	95	128	149	165	206	282	346	379	405	455	514	390
Non-farm equipment	375	540	608	659	778	1,013	1,148	1,242	1,335	1,486	1,665	1,254
Livestock	288	288	357	411	482	771	804	745	802	883	915	915
Farm inventories	45	45	108	77	112	103	79	84	117	112	118	118
Non-farm inventories	550	550	700	800	920	1,160	1,540	1,370	1,420	1,585	1,655	1,655
Public works	870	1,484	1,634	1,829	2,223	2,986	3,762	4,073	4,296	4,747	5,425	3,699
Total straight-line depreciation	—	5,458	6,351	7,128	8,439	10,992	13,294	13,987	14,859	16,378	18,128	—
		Declining-balance Depreciation										
Total declining-balance depreciation	3,891	—	4,605	5,188	6,279	8,348	10,208	10,741	11,447	12,653	—	14,020

¹ Declining-balance Depreciation.

land values, and where, as in the case of Australia, export prices fluctuate fairly widely, the determination of residual product, and therefore of value, becomes extremely uncertain. In addition, it is clear that changes in general interest rates will eventually affect the capitalization rate for land and the level of land values. It may be observed of the period 1947/56 that export prices have risen substantially and helped to force up rural land values; while interest rates, and rural costs, have also risen, and have tended to exert a contrary influence on land values.

Land valuation in Australia is based very largely on current sales, the market reflection of value. Turnover of properties, while it varies to some extent cyclically, is relatively small. The market must be regarded as sporadic and discontinuous, and the test of a few sales cannot be treated as very reliable evidence of value. To a certain extent it is possible to check the evidence of sales by calculating a 'productive' value, but even so, the basis of valuation is not very reliable, certainly not in the short run.

In addition, there is a considerable diversity of tenures in the Australian system of land holdings. Some land is held on freehold tenure, while at the other extreme, particularly in the pastoral areas, land is held under lease from the Crown, with varying conditions of resumption and reappraisalment. In between there are other types of leases, conditional purchases, etc., with a wide range and variety of conditions. Clearly, any attempt to value these leases must reduce them to a common-tenure basis, but it is extremely difficult to be certain in the figures we have used that variations due to differences in tenure have, in fact, been excluded. In particular, we cannot be certain that even when they are ostensibly on a freehold basis, valuations have not been reduced by the capitalized value of the leasehold rentals. The States, it may be observed, have revenue from leasehold rentals of about £A8 million p.a. A similar problem, of course, occurs where land is subject to an established land tax, and in fact it is difficult to escape the conclusion that Australian land values, especially in metropolitan areas, have been reduced by the incidence of land taxes.

Valuation data in Australia are extremely uneven in quality. Probably the most competent valuations, in a technical sense, were made by officers of the Commonwealth Land Tax Department. Unfortunately the valuations which have been made

covered only estates in land greater than an exemption limit, which varied from £A5,000 unimproved value in 1946 to £A8,750 in 1952. After 1952 the tax was discontinued. The Commonwealth Land Tax valuations are therefore not particularly helpful for our purpose. In the States there are some very competent valuing authorities, but they cover mainly the metropolitan and non-country areas. To obtain total figures for each State we must aggregate the local valuations, but the local valuations (except where State valuers are operating) are often very conservative. It is a common practice to undervalue rateable land, and make the necessary adjustments in the rate applied to the land, in order to keep argument with rate-payers to a minimum. The figures of local land valuations, therefore, require heavy adjustments. Generally, we are informed, local valuation is on a freehold basis. Estimates have also been made of the amount of land which is exempt from local rates and therefore is not included in the valuation statistics; but the value of all land included in public reserves, forests, and roads has been excluded from the estimates.

Land-value totals are available for all the States, but have to be adjusted to bring them up to June 1956. The latest date for which complete figures are available is June 1954, and in June 1954, in fact, most of the valuations were lagging well behind the rise in the market. The lag varies from State to State, and the dispersion around the average seems fairly wide. A reasonable estimate of the lag, for the whole of Australia, would be about two years. Even if we apply the 1954 figures to 1952, however, it still seems to be necessary to make some adjustment for 'undervaluation'. Our procedure, therefore, is to add to this notional 1952 land-values total a rough percentage to bring it to the 1952 market, and then write up the total values by the estimated increase in value from 1952 to 1956. Our information is defective, but it is suggested that a reasonable estimate of the 'undervaluation' in 1952 would be 30 per cent, and that the increase in land values from 1952 to 1956 would be of the order of 25 per cent. This gives a total value for land in Australia as at June 1956, including rateable and exempt land, of about £A3,000 million.

For 1947 the problem is no less difficult. During the war the normal process of local valuation was suspended and a system of land-sales control operated from 1942 until September 1949.

This meant that during that period the official valuations were held, to an uncertain but a substantial extent, below the normal market level. We assume that, for our purposes, the degree of under-valuation of land values prevailing in June 1945 (before the post-war revaluations commenced) can be taken as about 30 per cent. We therefore commence with rateable values, add an allowance for exempt values, add 30 per cent for under-valuation, and thus obtain a total land value for 1945 of £A1,230 million. This seems a defensible figure for June 1945 in relation to 1956. If we took a corresponding figure in 1950 of say £A1,700 million, and for June 1952 of £A2,400 million, then the progression of values would be as follows:

1945-1950	.	.	.	+ 38 per cent
1950-1952	.	.	.	+ 40 " "
1952-1956	.	.	.	+ 25 " "

This seems to be reasonable in the light of what information there is about the movement of land values. The movement from 1945 to 1947 was relatively small. We then obtain the picture shown in Table III.

TABLE III
Australian Unimproved Land Values
(£A million)

	1945	1947	1950	1952	1956
Rateable values	856				1,637
Exempt values	90				178
	946				1,815
Allowance for valuation lag	} 284				} 1,185
Allowance for undervaluation					
Total unimproved value	1,230	1,280	1,700	2,400	3,000

These figures give us Australian land values on an 'unimproved' basis which is, in effect, what the market value of the land would be if the improvements (if any) had not been made. They thus exclude the value of all dwellings and other structures which have been estimated separately. In addition, they exclude a number of other improvement expenditures: all non-structural improvements, and in particular what are known in Australia as 'invisible' improvements, such as clearing and timber treatment, pest and weed eradication, pasture improvements and water and

drainage improvements. To our estimate of unimproved land, therefore, it is necessary to add the value of invisible and other non-structural improvements. Unfortunately, there is no information on which an estimate of invisible improvements can be based. The problem is complicated, of course, by the fact that a considerable part of the expenditure on these improvements would be written off in the year in which it was incurred, and even on a strict accounting basis the expenditure each year would be only partly capitalized. However, it is assumed that for 1956 the value of invisible, etc., improvements would be about £A600 million. This would represent somewhat less than half the unimproved value of country land in Australia in 1956. Arbitrary (but relatively somewhat smaller) amounts have also been allowed for earlier years as shown in Table IV. It should be observed also that this item is not, strictly, non-reproducible, but it is retained under this heading, because of its intimate association with land value.

TABLE IV
Australian Land Values, Including Invisible Improvements
(£A million)

	1945	1947	1950	1952	1956
Total unimproved value.	1,230	1,280	1,700	2,400	3,000
Invisible, etc., improvements	250	260	325	480	600
	1,480	1,540	2,025	2,880	3,600

A separate estimate was made of country land value in 1947 and 1956. From the rateable values it is possible, roughly, to separate country lands (including some town lands incorporated in country areas). An addition must be made for exempt values, and an allowance for valuation lag somewhat above the average. The allowance for under-valuation should also be considerably larger for country than for non-country lands, since State valuations cover a large part of the metropolitan areas. Invisible, etc., improvements are assumed to relate wholly to country land, being absorbed into unimproved value in non-country areas. We then assign a proportion of the value of dwellings and other structures to country areas, on a population basis, assuming the average value of country dwellings to be about 10 per cent below the average value of all dwellings.

TABLE V
Value of Country Land
 (£A million)

	June 1947	June 1956
Rateable values	470	676
Exempt values	25	34
Allowance for valuation lag	} 165	690
Allowance for undervaluation		
Unimproved value	660	1,400
Invisible, etc., improvements	260	600
Country proportion of dwellings	360	700
Country proportion of other structures	210	400
Improved value	1,490	3,100

This total may be compared with the only other estimate known to us made by Mr. H. G. Collins of the Commonwealth Bank. Mr. Collins' unpublished estimate of Australian country land at June 1956 is based on unit values (per sheep area, per acre of wheat land, etc.) applied to the total numbers of sheep, etc., and acres under cultivation. This, together with an estimated value of buildings, gives him a total of £A3,400 million, which suggests that our calculations may be conservative. Both methods, however, lean very heavily on judgments and arbitrary estimates, and in both of them the margin of error would be large.

For non-country land this leaves us with the following results:

TABLE VI
Value of Non-Country Land
 (£A million)

	June 1947	June 1956
Unimproved value	620	1,600
Dwellings	950	3,035
Other structures	514	1,452
Improved value	2,084	6,087

Our results, for Australian country land, show the relation of unimproved to improved value at 45 per cent in 1956. For all Australian land the relation is 33 per cent. The relation of total improved land value to total tangible private assets on a straight-line basis is 56 per cent. This compares with the 1929 figure of

68 per cent, and is a significant indication, despite all the statistical uncertainties, of the change in the structure of Australian wealth.

Other non-reproducible tangible assets cannot be included. There is some information available about subsoil assets, but nothing which would enable us to make any adequate additions to our calculations. They have therefore been excluded.

V. INTERNATIONAL ASSETS AND LIABILITIES

It is again a matter of some complexity to estimate Australia's net holding of foreign assets. The statistical information which is available is defective, although considerable improvements have recently been made. The figures for government debt are reasonably good; there is a fair amount of useful information on company assets and liabilities; but individual holdings present considerable difficulties. In particular, it is possible that some overseas holdings of Australian land escape statistical attention. Problems of valuation recur continuously throughout this section, and no consistent principle can be applied in view of the nature of the available data.

Australian public-authority securities domiciled abroad are known accurately, although no information is available about the extent of Australian holdings of these securities. Government securities redeemable in Australia are analysed between the different holders at the end of each June, on a face-value basis, and a reasonably good figure is available for foreign holders.¹ This is supplemented by a survey of nominee holdings of public authority securities on account of overseas residents.²

The usual kind of information is available about monetary gold and foreign-exchange holdings, but holdings of exchange other than by official and banking institutions are not known, and Australian currency holdings can be given only for overseas banks. This omission is probably not serious.

The official Australian balance of payments estimates³ show a fairly full analysis of capital items, although there is a substantial residual item in some years covering errors and omissions, and short-term capital movements. In particular, the

¹ Commonwealth Bank of Australia, *Statistical Bulletin*, October 1956.

² Commonwealth Bureau of Census and Statistics, Canberra, *Survey of Companies with Oversea Affiliations, 1947/48-1954/55*.

³ Commonwealth Bureau of Census and Statistics, *The Australian Balance of Payments 1951/52* and supplementary documents to 1955/56.

phenomenon of 'leads and lags' sometimes shows itself in a very conspicuous form, but this loses in importance if we are interested in decadal or longer movements. The capital items in the balance-of-payments statistics draw on information provided by the 'Ticket' system, which is a complete classification by the Australian banks of their transactions in foreign exchange, and also on the Commonwealth Statistician's annual survey of companies in Australia with overseas affiliations.¹

The information on direct and portfolio investment has been obtained from surveys which have been conducted each year since 1948. They provide aggregates of the face value of paid-up capital, debentures, etc., with separate figures of 'direct' holdings, inter-company accounts between associate companies, net assets of branches and annual figures of undistributed profits of subsidiaries from 1947/48 for Australian subsidiaries and from 1952/53 for overseas subsidiaries. In the surveys investment is regarded as 'direct' when there is ownership of 25 per cent or more of a company's Ordinary Shares (or voting stock) by one company or number of companies incorporated in one country, or ownership of 50 per cent or more of a company's Ordinary Shares (or voting stock) by individuals or companies in one country. The term 'subsidiary' is applied to all companies in which there is 'direct' holding, irrespective of the degree of control, if any, which is actually exercised.

The figure for direct investment in Australian companies at June 1947 represents the 'direct' overseas holdings of paid-up capital, etc., in Australian companies, inter-company balances owing by Australian subsidiaries to overseas parent or associate companies, and the book value of net assets in Australia of branches of overseas companies. No allowance has been made for the reserves of Australian subsidiary companies at that date. The annual movement in these items, together with the undistributed profits of Australian subsidiary companies accruing to overseas parent companies and certain adjusting items, have been added to direct investment in the base year to give direct investment as at the end of June in each of the subsequent years. A similar procedure was followed in calculating direct investment abroad by Australian companies, except that undistributed profits of overseas subsidiaries have been included only

¹ Commonwealth Bureau of Census and Statistics, *Survey of Companies with Overseas Affiliations, 1947/48-1954/55*.

TABLE VII
Australian Foreign Liabilities
 (£A million)

	As at 30 June									
	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
1. Foreign holdings of Australian currency ¹	4	3	6	52	48	12	5	4	4	4
2. Foreign holdings of public authority debt.	566	557	545	545	528	604	614	621	639	664 ⁴
(i) Overseas issues	566	557	545	545	528	551	567	578	600	627
(ii) In Australia	n.a.	n.a.	n.a.	n.a.	n.a.	53	47	43	39	37 ⁴
3. Other liabilities	239	275	315	389	451	538	565	630	724	806 ⁴
Direct investment ²	210	243	282	352	413	494	518	582	668	743 ⁴
Portfolio investment	29	32	33	37	38	44	47	48	56	63 ⁴
4. Total ³	809	835	866	986	1,027	1,154	1,184	1,255	1,367	1,474 ⁴

¹ Overseas banks only.

² Excludes undistributed profits of subsidiaries prior to 30 June 1947.

³ Apart from the omissions referred to above, this total excludes investment in real estate, trade claims, and borrowing by individuals and unincorporated businesses.

⁴ Estimated.

TABLE VIII
Australian Foreign Assets
 (£ million)

	As at 30 June									
	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
1. Monetary gold ¹	30	27	27	39	44	50	50	57	62	73
2. Foreign exchange ¹	170	254	419	590	760	322	512	513	366	282
3. Other assets	23	25	28	30	33	35	42	46	55	64 ⁵
(i) Direct investment ²	20	22	26	28	31	33	40	45	53	62 ⁵
(ii) Portfolio investment ³	3	3	2	2	2	2	2	1	2	2 ⁵
4. Total ⁴	223	306	474	659	837	407	604	616	483	419 ⁵

¹ Holdings of official and banking institutions only. Foreign-exchange item includes British Government Securities held by Central Bank.

² Excludes undistributed profits of subsidiaries prior to 30 June 1952.

³ Excludes portfolio investments by individuals.

⁴ Apart from the omissions referred to above, this total excludes investment in real estate, trade claims, and loans to individuals and unincorporated businesses.

⁵ Estimated.

from 1952/53. Portfolio investment in each case has been taken as the difference between the total face value of paid-up capital, etc., and 'direct' holdings of such capital.

We have given careful consideration to the possibility of re-valuing Australia's overseas assets and liabilities at current prices. There are, of course, no suitable indexes, and experiments in devising an appropriate index have not been encouraging. Moreover, some, perhaps a large proportion, of Australia's overseas liabilities would be fixed in money terms representing, for example, loans, debentures, and current accounts, but we have no means of deciding what proportion is 'fixed'. A distinction must be made, in this respect, between companies with United States and with United Kingdom affiliations; in practice, we would expect to find very different patterns of capital formation. In addition, a considerable number of Australian companies have revalued their assets during the last decade and made corresponding adjustments in their capital structure. It would be surprising if the same is not true of the overseas companies, and therefore much of the asset revaluation may in fact have already been taken into the figures.

All these difficulties and uncertainties lie in the path of re-valuation. It seems clear, however, that both Australian assets and liabilities should be increased. The addition to assets would be small, while the addition to liabilities could be substantial. Any estimate which would be at all convincing would require much fuller investigation than we have been able to give to it. Even after further investigation, however, a doubt must persist whether the new total would be very meaningful in the context of exchange control and supervision over the outflow of capital.

VI. NATIONAL WEALTH - AGGREGATE ESTIMATES

It is now possible to bring together our estimates for reproducible and non-reproducible tangible assets, together with coin and net foreign assets, which we show in Table IX, for the years 1947 and 1956.

For 1947 National Wealth was £A6,432 million; in 1956 the corresponding total had risen to £A20,709 million. These estimates are expressed in current prices and based on straight-line depreciation (except for vehicles and consumer durables), and it should be recalled that there are various minor omissions from the total, noted in previous sections and in the Appendix.

If the alternative declining-balance depreciation estimates for structures and producer durables had been used, the estimates for 1956 would have been about 8 per cent lower, with declining-balance rates equivalent to twice straight-line rates, but about

TABLE IX
*Australian Current Prices (1947-56); Straight-line-depreciated
 Replacement Cost*
 (£A million)

	June 1947	June 1956
<i>Reproducible Tangible Assets</i>		
1. Consumer durables	272	1,208
2. Buildings –		
Dwellings	1,310	3,735
Other	724	1,852
3. Vehicles –		
Cars	87	744
Other	30	297
4. Equipment –		
Agricultural	128	514
Non-agricultural	540	1,665
5. Livestock	288	915
6. Inventories –		
Farm	45	118
Non-farm	550	1,655
7. Public works	1,484	5,425
8. Total	5,458	18,128
<i>Coin Bullion</i>		
9. Silver and copper coin	20	35
<i>Non-reproducible Tangible Assets</i>		
10. Unimproved land values	1,280	3,000
11. Invisible, etc., improvements	260	600
12. Total	1,540	3,600
<i>Net Foreign Assets</i>		
13. Foreign assets	223	419
14. Foreign liabilities	809	1,474
15. Total (net)	–586	–1,054
National wealth	6,432	20,709

18 per cent lower with the higher rates, suggested on p. 329 as representing probably the shortest lives, and hence the lowest wealth estimates that can be defended. The difference is considerably larger, as Table XII shows, for the five types of reproducible assets, to which the alternative declining-balance

method can be applied,¹ but is reduced in its effect on total national wealth by the weight of inventories, livestock and land which are not affected by this choice of methods. Table XII also indicates that it makes more difference for the 1947 estimates whether straight-line or declining-balance depreciation is used.

VII. NATIONAL WEALTH - SOME INTERPRETATIONS²

We turn now from statistics to interpretation. The brief remarks which follow on a few economic aspects of the estimates of Australian national wealth are, however, called interpretation by courtesy only. They are presented here as an indication that we have an interest in these figures which extends beyond mere compilation, and with the idea that they might throw some light, however inadequate, on the problems of Australian economic growth.

1. *The growth of national wealth*

Together with an analysis of the structure of national wealth and a study of wealth-output ratios, measurement of the long-term rate of growth of real (deflated) wealth, particularly reproducible tangible wealth, is probably the most important function of national wealth estimates. In the case of Australia this function is unfortunately gravely hampered by the absence of estimates between 1929 and 1947 and, more still, by the basic differences between the methods of the estimates for 1929 and earlier years, on the one hand, and for the last decade, on the other. Nevertheless, with judicious use of the available data some idea can be obtained of the rate of growth of wealth over the past half-century, and tentative generalizations can be ventured about periods of more or less rapid growth.

The figures on which we can place a substantial degree of confidence, notwithstanding the numerous reservations in detail

¹ For vehicles and consumer durables even Tables I and II use declining-balance depreciation.

² Throughout Section VII we are using, so far as estimates of reproducible tangible wealth for 1947 and 1956 are concerned, the figures employing straight-line depreciation for structures and for equipment except motor vehicles. This has been done partly because the use of straight-line depreciation at the rates indicated on p. 329 yields results which appear to be more in conformity with whatever bench-marks are available than the estimates using declining-balance depreciation. (This argument loses weight, as Table XII indicates, if the declining-balance estimates are recalculated using somewhat lower rates, for instance, rates equal to twice the straight-line rates underlying the estimates of Tables I and II.)

that have been mentioned in previous sections, are unfortunately limited to the last decade. This is hardly long enough to enable us to speak about long-term trends. For that period the estimates indicate an average annual rate of growth of real (deflated) total wealth of 4.0 per cent and a slightly higher rate – 4.6 per cent – for reproducible tangible assets (straight-line depreciation) alone. If these figures are adjusted for the substantial increase in population we obtain per head rates of growth of 1.6 per cent for total wealth and of 2.2 per cent for reproducible tangible wealth. The latter rate is, of course, much more significant, if only because of the acute conceptual and statistical difficulties of deflating values of land and foreign assets and liabilities.

While we cannot make an entirely satisfactory adjustment for growth of net foreign indebtedness, we know that the proportion of Australia's national wealth held by foreigners is small enough – the statistics show it to be in the neighbourhood of 5 per cent in 1956, and it certainly is less than 10 per cent – that its increase during the past decade is not likely to reduce the rate of growth of domestically owned wealth substantially below the figures for total wealth.

The last decade has been a period of sustained prosperity and expansion. Export prices rose by about 90 per cent from 1947 to 1956. Population increased by 24 per cent over the period, assisted by an immigration equal to 12 per cent of the population of 1946. There was also an increase in interest rates, bank overdraft rates rising from $4\frac{1}{2}$ to $5\frac{1}{2}$ per cent and the yield on long-term government securities increasing from $3\frac{1}{4}$ to about 5 per cent, but this rise, as could be expected in such a situation, did not inhibit a rapid increase in real wealth. There was no major setback during the decade, but the annual rates of growth of reproducible tangible wealth showed considerable year-to-year fluctuations, particularly when adjusted for the much smoother growth in population. They varied between increases of less than 2 per cent and about 7 per cent before adjustment for population growth; but on a per-head basis between a small negative fraction and a maximum of slightly more than 4 per cent. The fluctuations were, however, erratic, with no long runs of years of rapid or slow growth. The general configuration is convex – the top being reached in 1950/51 and 1951/52 with about $6\frac{1}{2}$ per cent a year (almost 4 per cent per head), and

somewhat lower averages for the two three-year periods at the beginning and the end of the period (slightly over 4 and almost 5 per cent respectively for aggregates, $1\frac{1}{2}$ and $2\frac{1}{2}$ per cent for per-head figures).

This rate of increase should be considered against the background of movements in earlier periods. The difficulty is that estimates of national wealth for earlier decades are quite different in method. However, the differences do not seem to be sufficiently large to make broad comparisons impossible, and we feel that we can hazard some generalizations about long-term average movements in earlier periods.

(a) Between 1890 and 1903 private wealth – the only aggregate for which estimates are available – probably declined if allowance is made for price changes and population growth. The absolute aggregate figures, as estimated by Coghlan,¹ show a small decrease from £A1,019 million to £A982 million. This may have been offset by the slight price decline which is indicated in the available indices – Melbourne wholesale prices (building-material prices, however, increased by about 10 per cent) and cost of construction. Meanwhile, population increased by about 25 per cent. Hence it is difficult to see (unless the relation between Coghlan's estimates for 1890 and 1903 in current values is much farther off the truth than we have reason to assume) how real private wealth per head can have helped declining substantially during this period. Though the proportion of public to private wealth may well have increased, the relative size of these two components is such – one to three in 1903² – that this movement could only have mitigated but not offset the indicated decline in private real wealth per head. For total real wealth per head the annual decline may have been as large as 1 per cent.

There are three pieces of evidence that confirm the likelihood of a decline in real national wealth per head between 1890 and 1903, two direct, the other indirect. First, this period witnessed a serious and long drawn out depression.³ Secondly, real income per head of the population declined. The decline amounted to about one-eighth if Clark's estimates are accepted.⁴ In the face of this decline a growth in real wealth per head would imply an

¹ *Official Yearbook* 1933, p. 490.

² See Table XIV.

³ See, e.g., E. A. Shann, *Economic History of Australia*, Chapter XIX.

⁴ *The Conditions of Economic Progress*, 3rd ed. It is assumed that the 1891 figure for New South Wales can be regarded as representative for Australia as a whole.

increase in the capital-output ratio of a size which is difficult to accept. Thirdly, domestic net capital formation in the decade 1891-1900 was probably negative.¹

In assessing the significance of the decline in per-head real wealth between 1890 and 1903 account should also be taken of the probable decline in Australia's net foreign indebtedness. Domestically owned wealth, therefore, declined less than total national wealth.

(b) From 1903 to 1915 the Australian economy was in a relatively quiet phase of growth. Export prices rose by little more than 10 per cent to the outbreak of war, while retail prices increased about 25 per cent. Population grew by 26 per cent over the period. Interest rates were rising. At the turn of the century yields on government securities were about 3 per cent, but in 1915 they reached about 4½ per cent. It was a situation which was particularly discouraging to the growth of rural land values.

From 1903 to 1915 total real wealth per head appears to have changed little, the increase of 30 per cent in current values being largely offset by price increases. Reproducible tangible assets alone appear to have fared a little better, the per-head average in current prices advancing by almost 40 per cent and thus leaving some, though not a wide, margin for an increase in deflated values. Such a small rise is not much out of line with the trend of real national income per head, which increased by only 5 per cent between 1901-3 and 1915-16.¹

(c) After 1915 the rate of growth quickened. Export prices more than doubled from 1915 to 1924 and in 1929 were about 50 per cent above 1915. Retail prices were 33 per cent higher, and population rose by nearly 30 per cent.

There is little doubt that real wealth per head rose between 1915 and 1929, but the size of the increase can be estimated only approximately. The estimates show advances in wealth per head of 60 per cent for the aggregate and 70 per cent for reproducible tangible assets. The increase in real reproducible wealth per head, therefore, may have been of the order of 10-15 per cent, or

¹ Butlin (*op. cit.*, p. 9) gives only figures for gross capital formation excluding maintenance. It is, however, almost certain from the low level of these figures - less than one-half of the preceding decade and less than even during the decade 1871-80 - that net domestic capital formation was negative, for the entire decade possibly by as much as £100 million.

² Clark, *loc. cit.*

about 1.0 per cent a year. Such rates are not out of line with the indicated rates of growth of real national income per head of 1.8 per cent.¹

(d) For the period 1929–47 our main problem is a statistical one, to build a bridge between the estimates of 1929, the last of the Coghlan–Knibbs–Wickens series, which is essentially of the synthetic Census type, and that of 1947, the start of our own effort following for reproducible assets the much more flexible and controllable perpetual-inventory method.

As a starting-point we have the 1929 estimate, in current prices, of about £A4,350 million for total wealth and of about £A3,300 million for reproducible assets. These estimates are equivalent to £A690 and £A520 per head for total and reproducible wealth compared to values of £A930 and £A720 respectively, again in current prices, for 1947. The increase is about 35 per cent for both definitions. In the interval wholesale prices rose nearly 40 per cent (building materials alone over 90 per cent); retail prices about 15 per cent; Clark's national-income deflator about 50 per cent; and a combined index of construction costs and durable goods prices about 80 per cent. There would thus seem to be little doubt that the current values of average wealth per head rose considerably less than the relevant price indices, but the diversity of the indices gives some idea of the difficulties and risks of deflation. If we use the probably most appropriate index, that of capital-goods prices, the decline in real reproducible wealth per head is of the order of not less than 25 per cent. Even the substantially lower national-income deflator would yield a decline by about 10 per cent.

Another approach to linking the 1929 and 1947 figures for reproducible wealth is to start from Dyne and May's 1929 estimate because it specifically includes public reproducible wealth and excludes land, both of which have to be roughly allowed for in starting from Wickens' estimates used in Table X; and because it is much closer to a perpetual-inventory estimate than Wickens'. This estimate is just under £A3,000 million in current prices.² On the assumption that the 1929 price level for capital goods was about 7 per cent lower than that of 1936/39 – an assumption based on the available data on building costs and durable goods prices – this estimate yields an average per head

¹ Clark, *loc. cit.*

² *Economic News*, Vol. 24, 11/12 (November/December 1955), p. 8.

TABLE X
The Growth of Australia's National Wealth

Year	Current Values			Constant (1936/39) Prices
	Total National Wealth (1)	Domestic Wealth (2)	Reproducible Tangible Wealth (3)	Reproducible Tangible Wealth (4)
I. <i>Aggregates (£A million)</i>				
1903 . . .	1,309	964	900	1,800
1915 . . .	2,137	1,730	1,550	2,300
1921 . . .	2,823	2,326		
1929 . . .	4,350		3,300	3,400
1947 . . .	7,018	6,432	5,458	2,981
1956 . . .	21,763	20,709	18,128	4,504
II. <i>Per Head Values (£A)</i>				
1903 . . .	330	245	230	460
1915 . . .	430	350	315	470
1921 . . .	520	425		
1929 . . .	690		520	530
1947 . . .	930	850	720	395
1956 . . .	2,310	2,198	1,920	475

Note: Figures between 1929 and 1947 are not comparable.

SECTION I

- Col. 1. 1903-21 Benham, *The Prosperity of Australia*, p. 83. Benham used Knibb's figures for private wealth and added his own estimates for public wealth (*op. cit.*, p. 58).
- 1929 Wickens' estimates of private wealth (*Year Book of the Commonwealth of Australia*, 1933, p. 492) plus rough estimate of public wealth based on Benham's ratio for 1921 and 1923.
- 1947, 1956 From Table IX.
- Col. 2. 1901-21 Benham, *op. cit.*, p. 83. Figures are derived by subtracting external indebtedness from national wealth, hence do not make allowance for foreign assets or for foreign equity investments in Australia.
- 1947, 1956 Obtained by deducting net foreign investment in Australia (Table IX) from total national wealth.
- Col. 3. 1903-29 Obtained by adding a very rough estimate for public land to the estimates of private land of Table XIV and deducting the sum from Col. 1. The resulting figures are slightly above the independent estimates of reproducible tangible assets of Dyne and May (*Economic News*, November, December 1955, p. 8) for 1915 (£A1,483 million), but considerably above this estimate for 1929 (£A2,993 million). For discussion of comparability with estimates for 1947 and 1956, see text.
- 1947, 1956 From Table IX. Figures (as those for 1903-29) include consumer durables.
- Col. 4. 1903-29 Obtained by dividing Col. 3 by a very rough index of building costs, durable goods prices and wholesale prices weighted by the approximate share of structures, producer and consumer durable goods, and inventories in reproducible tangible wealth.
- 1947, 1956 From Table I.

SECTION II

- Cols. 1-4. 1903-56 Obtained by dividing figures of Section I by year-end estimate of total population, usually derived by averaging official year-end estimates.

value in 1936/39 prices of £A450, which compares with £A395 in 1947, a decline of 12 per cent or 0.7 per cent a year. This is probably the minimum decline that can be squared with the material now available. Our judgment, however, is that this figure still somewhat overstates the decline, if any, in real reproducible wealth per head between 1929 and 1947 that would be found to have occurred in that period if consistent, comprehensive, and trustworthy figures were available.

This judgment takes into account the circumstances of the period we are considering. The period covers the Great Depression, and World War II, with all the waste and interruption to accumulation which they entailed. The thirties was a period of relatively low capital formation, of low capital imports and of high unemployment. Income and savings recovered after 1940, but much of the wealth which the savings represented was blown off through the cannon's mouth. Any judgment about the growth of wealth over the period must give considerable weight to these factors.

We thus end up with the following rough picture of the trend of real reproducible wealth per head:

- (a) 1890-1903: A substantial decline, possibly by as much as 1 per cent per year
- (b) 1903-15: No substantial change
- (c) 1915-29: Some increase, possibly about 1 per cent per year
- (d) 1929-47: A small decline - say $\frac{1}{2}$ per cent a year - with a possibility of no significant change
- (e) 1947-56: A sharp increase averaging 2 per cent per year
- (f) 1890-1956: An average increase of $\frac{1}{4}$ to $\frac{1}{2}$ - and possibly as much as $\frac{3}{4}$ per cent per year,¹ a figure of limited significance because of wide variations among sub-periods, and the statistical shortcomings, particularly the weak link between 1929 and 1947.

Since the proportion of national wealth represented by net foreign investment in Australia has decreased over the period as a whole, the rates of growth of domestically owned wealth

¹ This may be compared with Clark's estimate of a total increase in real national income per head of 67 per cent between 1891 and 1952/53, or 0.8 per cent a year.

would be slightly higher than indicated above for the entire period and most sub-periods.

2. *Gross v. net wealth*

For some purposes figures on the gross stock of durable assets are wanted instead of, or to supplement, net stock data, particularly for the measurement of capacity which is sometimes regarded as moving more closely with the gross than the net stock of structures and equipment. Indeed, the closer durable

TABLE XI
Distribution of Gross and Net Stock of Reproducible Tangible Wealth at Current Values

	1947		1956	
	Gross (1)	Net (2)	Gross (3)	Net (4)
1. Dwellings	24.0	24.0	21.4	20.6
2. Other structures	12.2	13.3	11.4	10.2
3. Public works	29.4	27.2	31.0	30.0
4. Producer durables	15.3	12.3	12.5	12.0
5. Commercial motor vehicles	0.9	0.5	2.1	1.6
6. Passenger cars	3.1	1.6	4.2	4.1
7. Consumer durables	6.6	5.0	8.6	6.7
8. Livestock	2.8	5.3	3.0	5.1
9. Inventories	5.7	10.8	5.8	9.7
10. Total	100.0	100.0	100.0	100.0

Sources: Cols. 1 and 3, Table XIII.
,, 2 and 4, Table I.

assets are (or are regarded to be) to the famous 'one hoss shay' in their utility emission the most appropriate is the gross stock as an indicator of capacity, provided the original expenditure figures are deflated for price changes in equipment of equal productive power. Gross stock figures in constant prices are obtained easily by summing expenditures over the number of years corresponding to the expected useful life of the asset under consideration, and figures in current prices are derived by multiplying the base price estimates by appropriate price indices. The estimates can be slightly refined by assuming that assets of a given type acquired during one year are retired in accordance with a stipulated distribution rather than in one single year. This refinement has not been applied in Tables XI and XIII.¹

¹ It can be shown that estimates using a retirement distribution will be slightly below those omitting it, but that the difference is not likely to exceed 10 per cent.

TABLE XII
Alternative Estimates of Stock of Selected Reproducible Tangible Assets at Depreciated Replacement Cost
 (1936/39 Values: £A million)

Item	June, 1947			June, 1956		
	Straight Line	Declining Balance		Straight Line	Declining Balance	
		A ¹ (2)	B ² (3)		A ¹ (5)	B ² (6)
	(1)			(4)		
Dwellings	585	500	366	744	640	504
Other private structures	323	260	205	369	310	241
Public works	868	710	509	1,320	1,130	900
Agricultural equipment	62	50	46	125	100	95
Other equipment	262	210	182	405	335	305
Total	2,100	1,730	1,308	2,963	2,515	2,045

¹ Twice straight-line rates.

² Rates (higher than A) shown in schedule on p. 329.

Source: Cols. 1 and 4. From Table I.

„ 2 and 5. Obtained by applying twice straight-line rates to annual deflated estimates of expenditure underlying Table I.

„ 3 and 6. From Table I.

TABLE XIII
Gross Stock of Reproducible Tangible Assets

	Absolute Figures (£A million)				Distribution			
	1936/39 Values		Current Values		1936/39 Values		Current Values	
	1947 (1)	1956 (2)	1947 (3)	1956 (4)	1947 (5)	1956 (6)	1947 (7)	1956 (8)
1. Dwellings	1,127	1,300	2,525	6,525	20.1	17.2	24.0	21.4
2. Other private structures	573	691	1,285	3,470	10.2	9.2	12.2	11.4
3. Public works	1,794	2,303	3,070	9,465	32.0	30.5	29.4	31.0
4. Producer durables	774	925	1,595	3,800	13.8	12.3	15.3	12.5
5. Commercial motor vehicles	53	216	90	650	0.9	2.9	0.9	2.1
6. Passenger cars	145	410	320	1,270	2.6	5.4	3.1	4.2
7. Consumer durables	521	922	690	2,630	9.3	12.2	6.6	8.6
8. Livestock ¹	228	289	288	915	4.1	3.8	2.8	3.0
9. Inventories ¹	390	489	595	1,773	7.0	6.5	5.7	5.8
10. Total	5,605	7,545	10,458	30,498	100.0	100.0	100.0	100.0

¹ Identical with net stock.

Source: Cols. 1 and 2. Lines 1-7 derived by cumulating capital expenditures in 1936-39 prices for the number of years corresponding to the assumed length of life as shown on p. 329.

Lines 8 and 9 from Table I.

Cols. 3 and 4. Lines 1-7. Values of columns 1 and 2 respectively multiplied by mid-year price indices of respective types of durable goods. The indices are the same as used to deflate current expenditures (see Section III).

Lines 8 and 9 from Table II.

The gross stock of reproducible assets is, of course, considerably higher than the net stock. Excluding inventories and livestock, for which both concepts coincide, the difference is almost 95 per cent in 1947, but less than 70 per cent in 1956.¹ The reduction in the relative excess of gross over net stock indicates a lowering of the average age of the stock which reflects the relatively high level of capital expenditures in the post-war decade. As a consequence, the increase in the gross stock of structures and equipment in 1936/39 prices is considerably lower (35 per cent) than the growth in the net stock (55 per cent).

There are also, as Table XI shows, a few differences, mostly of the expected direction and size, in the distribution of the gross and net stock of reproducible tangible wealth among the different types of assets. Thus, the share of inventories and livestock is considerably lower in the gross stock as their absolute value is the same on both bases. For the other types of assets the differences are generally small.

3. *The structure of national wealth*

The picture is reasonably clear, if we regard the estimates of 1903, 1915, and 1929 as comparable among themselves, as we are probably entitled to do; if, a much stronger if, we feel that we have an idea of the direction of the adjustments which have to be made between the estimates of 1929 and 1947; and if we are satisfied with current prices as basis of the calculations,² Table XIV, which provides the basic data for private wealth, may then be briefly summarized as follows:

- (a) The outstanding change in the structure of private tangible wealth is the decline in the share of land from almost two-fifths in 1903 to one-fifth in 1956.
- (b) The movements of the share of 'improvements', a regrettably broad category, including dwellings, stores, office buildings, and very varied types of structures, are difficult to interpret. They increased considerably between 1903 and 1915 and probably also from 1947 to 1956 if allowance is made for various public improvements. These are probably genuine changes, reflecting in part two

¹ The net stock figures used for comparison are those in Table I, i.e. those based on straight-line depreciation.

² At present no deflation is possible for components of private wealth before 1947.

periods of heavy home-building activity. The sharp percentage decline between 1929 and 1947, on the other hand, is probably to a large extent, though not entirely, due to the change in methods of estimation, viz. a relatively higher valuation in 1929 already encountered in the discussion of trends in aggregate national wealth.

TABLE XIV
*Structure of Private National Wealth of Australia
at Depreciated Replacement Cost*

	Current Prices: £A million					Percentage Distribution				
	1903 (1)	1915 (2)	1929 (3)	1947 (4)	1956 (5)	1903 (6)	1915 (7)	1929 (8)	1947 (9)	1956 (10)
1. Land	374	475	900	1,540	3,600	38.6	29.6	27.1	27.7	22.0
2. Buildings	310	631	1,351	2,034	5,587	32.0	39.4	40.7	36.5	34.0
3. Producer durables	71	106 ¹	180 ¹	570	1,962	7.3	6.6 ¹	5.4 ¹	10.2	12.0
4. Agricultural machinery		23	57	128	514		1.4	1.7	2.3	3.1
5. Livestock	97	100	194	288	915	10.0	6.2	5.8	5.2	5.6
6. Motor vehicles	31	77	147	87 ²	744 ³	3.2	4.8	4.5	1.6 ²	4.5 ²
7. Consumer durables			127	272	1,208			3.8	4.9	7.4
8. Inventories	60	148	316	595	1,773	6.2	9.3	9.6	10.7	10.1
9. Coin Bullion	26	44	48	50 ⁴	108 ⁴	2.7	2.7	1.4	0.9 ⁴	0.7 ⁴
10. Total private wealth	970	1,605	3,320	5,564	16,411	100.0	100.0	100.0	100.0	100.0
11. Public wealth	327	517	1,005	1,484 ²	5,425 ³	33.7	32.2	30.3	26.7 ²	33.0 ²

¹ Plant and equipment in manufacturing, mining, shipping, private railways and tramways.

² Passenger cars only.

³ Only public works (structures and equipment).

⁴ Includes monetary gold as well as silver and copper coin bullion.

Source:

Lines 1-10

Col. (1) Coghlan's estimates (*Official Yearbook*, 1933, p. 491, 'Personal effects' (£A12 million) omitted).

.. (2) Knibbs' estimates (*ibid.*, p. 492) except separation of land and buildings which is a very rough estimate; 'Clothing, and personal adornments' (£A15 million) omitted.

.. (3) Wickens' estimates (*Official Year*, *loc. cit.*) except separation of land and buildings which is a very rough estimate; 'Clothing and personal adornments' (£A31 million) omitted.

.. (4) (5) From Table IX (except line 9).

Line 11

Col. (1), (2) Benham, *loc. cit.*

.. (3) Rough estimate based on Benham's ratio of public to private wealth for 1921 and 1923.

.. (4), (5) From Table IX.

(c) Producer durables show the expected sharp upward trend, though this movement seems to start only after World War I and is probably somewhat exaggerated in the figures for the period between 1929 and 1947 as a result of the change from census-type to perpetual-inventory method.

(d) The share of livestock – primarily sheep – remains fairly stable at about 6 per cent from 1915.

- (e) The share of inventories shows a slight, but steady upward trend from 1915, after a sharp increase – possibly the result of poor figures in the earlier period – between 1903 and 1915.
- (f) Coin and bullion lose rapidly in importance beginning with World War I.
- (g) The share of consumer durables, including all motor vehicles, increases as expected steadily (with only a break in motor vehicles due to World War II) and substantially, from only 3 per cent in 1903 to 12 per cent in 1956.
- (h) Public wealth – for which only very rough global estimates exist before 1947 – seems to have maintained approximately the same relationship to private wealth of close to one-third throughout the period. The more pertinent comparison of public structures, accounting for most of public wealth, with private improvements discloses an even closer parallelism, now, however, at the level of about one to one.

A closer look at the changes in the structure of reproducible national wealth in the last decade is justified both because this

TABLE XV
*Distribution of Reproducible Tangible Wealth, 1947 and 1956
 at Depreciated-Replacement Cost – Current and Base
 (1936/39) Prices*
 (Per cent)

	Current Prices		1936/39 Prices	
	1947 (1)	1956 (2)	1947 (3)	1956 (4)
1. Dwellings	24.0	20.6	19.6	16.5
2. Other private structures	13.3	10.2	10.8	8.2
3. Government structures ¹	27.2	30.0	29.1	29.3
4. Non-agricultural equipment ²	10.7	11.6	9.7	12.3
5. Agricultural equipment	2.4	2.8	2.1	2.8
6. Livestock	5.3	5.1	7.7	6.4
7. Inventories	10.8	9.7	13.0	10.9
8. Passenger cars ³	1.3	3.3	1.1	4.2
9. Other consumer durables	5.0	6.7	6.9	9.4
10. Total	100.0	100.0	100.0	100.0

¹ Including equipment.
² Including one-fifth of cars and all other vehicles.
³ Estimated at four-fifths of cars.

Sources: Cols. (1) and (2) from Table II.
 Cols. (3) and (4) from Table I.

is a period of unusually rapid growth in total wealth and because for that period we have figures both in current and base (1936/39) prices. The relevant estimates, shown in Table XV, indicate the following main changes, some of them fairly marked if it is remembered that we are dealing with only one decade.

- (a) a sharp increase in the share of consumer durables, both passenger cars and other items;
- (b) some rise in the share of producer durables;
- (c) a slight decline in the share of inventories and livestock;
- (d) a decline in the shares of private structures, both dwellings and other;
- (e) a slight increase in the share of government structures.

4. *Wealth-income ratios*

The use of the plural in the title is deliberate – it is intended to draw attention to the obvious fact that there is more than one ratio of this type, though economists are as yet far from having thoroughly explored the particular problems connected with the different forms of the ratio and far from agreed about the form to use for different analytical purposes. We shall limit discussion to the two most common variants, the ratio of total national wealth and of reproducible tangible assets (including and excluding consumer durables) to gross national product. For closer analysis less aggregative ratios would be preferable, but they require figures for the value of tangible assets and of the contribution (however defined) to current income of economic sectors, figures that are not yet available except possibly for agriculture during the last decade.

The relevant figures now available have been brought together in Table XVI. They seem to permit, with all due caveats, the following conclusions:

- (a) The overall wealth – income ratio has shown a sharp fall from the turn of the century to the end of World War II, most of the decline occurring in the decade before World War I and again – one may surmise – during World War II. No trend in the ratio is observable during the last decade.
- (b) The more significant ratio of reproducible wealth to gross national product has behaved a little differently. It also de-

clined from 1903 to 1915, but considerably less than the overall ratio. It was at much the same level in 1929 as before World War I. It declined sharply, as did the overall ratio, between 1929 and 1949. In the last decade, however, it showed a slow upward trend. As a result the present ratio of approximately $3\frac{1}{2}$ is only one-fourth below that of 1903, while the overall ratio has declined by about two-fifths. (The difference, of course, is mainly the result of the reduction of the share of land in national wealth.)

TABLE XVI
Wealth-Output Ratios

Year	Wealth (£A million) at Depreciated Replacement Cost			Gross National Product (£A million)	Wealth-Output Ratios		
	Total National Wealth	Reproducible Tangible Assets			(1)/(4)	(2)/(4)	(3)/(4)
		Total	Excluding Consumer Durables				
	(1)	(2)	(3)		(4)	(5)	(6)
1903	1,309	900	870	204	6.40	4.41	4.26
1915	2,137	1,550	1,473	380	5.62	4.07	3.88
1929	4,350	3,300	3,026	844	5.15	3.91	3.59
1947	7,018	5,458	5,099	1,819	3.86	3.00	2.80
1956	21,763	18,128	16,176	5,460	4.00	3.32	3.00

Source: Cols. 1 and 2. From Table X.

Col. 3.

Col. 2 less consumer durables and motor vehicles from Table XIV.

Col. 4.

1903 to 1929 Clark's Estimates (*Conditions of Economic Progress*, 3rd ed.) raised by 11 per cent, the average ratio between Clark's and White Paper estimates in 1946-53. For 1947 and 1956 White Paper estimates. All figures are average of estimates for the two fiscal years ending 30 June of year indicated and of the following year except that for 1903 Clark's 1901-3 average is used. (Fiscal year 1956/57 rough preliminary estimate.)

- (c) The elimination of consumer durables from the numerator does not alter the movements of the ratio substantially, though it does somewhat accentuate the decline before 1947 and reduces the recovery during the last decade. Both effects follow from the increasing share of consumer durables in national wealth and reproducible assets.

But we do not wish to put too much weight on these estimates. The conclusions we are offering are intended to be tentative, and (we hope) the basis of future discussion and investigation. If we seem to have been somewhat arbitrary and adventurous in our methods, we must plead that we have been painting in the modern manner, with broad strokes, and stark colours, and that the objective we set ourselves was sometimes more impressionistic than photographic.

APPENDIX

REPRODUCIBLE TANGIBLE ASSETS

Notes on the Estimation of the Expenditure Series and the Price Indexes

Expenditure estimates

Consumer durables. The nearest approach to a series for expenditure on consumer durables in the primary sources was the sub-group 'Hardware, electrical goods, furniture etc.', of the personal consumption estimates in the official estimates of national income and expenditure. For the post-war period, 80 per cent of expenditure on this sub-group was taken; for the war period, figures for the sub-group were not available and an arbitrary division between expenditure on durables and non-durables was made of the total for personal consumption.

Building. For the period 1928/39–1938/39, the series for total expenditure on building was taken from Dr. (now Sir) Roland Wilson's ANZAAS paper for 1939. For the earlier years back to the turn of the century, total expenditure on building was estimated in two ways; on the basis of:

- (i) the relation between total building and the value of buildings completed in the area served by the Sydney Water Board, and
- (ii) the relation between dwelling and total construction,

the relations applied being in accordance with the trends shown in them over the years for which they were calculable on an independent basis.

Expenditure on dwelling construction was then estimated separately and the series for expenditure on non-dwelling construction taken as a residual. The dwellings series for the period prior to 1938/39 back to 1928/29 was mainly based on figures of the value of dwellings completed each year, supplemented by the information available from building-permit figures. These latter were also the main basis for the dwellings series for the earlier years back to the turn of the century; for this period, the series was derived by applying an average price to the numbers of new dwellings for whose construction permits were issued by Local Government bodies. The number of dwellings thus derived was adjusted to take account of information shown in census data; average values were obtained by applying the construction cost index to average values for 1936/37–1938/39, these in turn being derived by applying the number of permits issued to expenditure in those years.

Agricultural equipment. The estimates of expenditure on agricultural equipment were made on the same basis as set out in the paper by Wilson already mentioned, on 'Public and Private Investment in Australia'. Expenditure, excluding tractors, was taken as the sum of the value of domestic production and imports (plus duty and primage) less exports of selected commodities. Allowance was made for duplication in other investment series; and 30 per cent was added to cover indenting and other distribution costs. The items and the proportion of the value of their output assumed to be used on farms were:

- (i) agricultural implements – 87·4 per cent;
- (ii) saddlery, harness, and whips – 73·1 per cent;
- (iii) small tools – 50 per cent;
- (iv) wire, including nails – 35·3 per cent.

The unit values of tractor imports (by types) applied to the increase in the numbers (by types) of tractors on rural holdings (as shown in the Commonwealth Statistician's annual bulletins) formed the basis of the estimates of expenditure on tractors; an allowance for import duties was included.

To some extent, this series is deficient in its coverage. It takes no account, for instance, of costs of installation where those should be included; a case in point is fencing, where account is taken of material costs, but not of erection. The series also leaves out of account such items as well-sinking and dam building, which involve only labour.

Livestock. Livestock numbers were readily available, but it was difficult to obtain an adequate pricing basis. The prices used were for average values of livestock slaughtered as published by the Commonwealth Statistician up to 1953/54, brought up to date for 1954/55 and 1955/56 with information obtained from the Australian Meat Board. This probably constitutes an under-valuation.

Farm inventories. For wool, the prices and quantities used were those quoted by the National Council of Wool-Selling Brokers. All wheat stocks were assumed to be held by the Australian Wheat Board, whose stocks were valued at the export price in the last month of the financial year, except for recent years, when they were valued at a price estimated to approximate that finally realized.

Barley stocks were estimated from crop figures, less exports and estimated consumption; the estimate was checked against export figures for the first months of the financial year up to the time of harvesting a new crop. They were valued at the prices realized for exports in the first months of the succeeding financial year.

No allowance was made for other farm inventories because of the

absence of relevant statistics, and this constitutes a deficiency in the coverage for this item.

Non-farm inventories. Figures for non-farm inventories were derived by adding to an estimate for 1948/49 the annual change in book values shown in the official estimates of national income and expenditure. The estimate for 1948/49 was derived by adding an allowance for the uncovered field to an estimate made by the Commonwealth Statistician. The Statistician's estimate related to stocks held by private business subject to pay-roll tax, derived from a sample survey and published in the Statistician's *Quarterly Business Surveys*. The allowance added was 25 per cent of the Statistician's estimate, which was believed to cover 80 per cent of private non-farm business. No allowance was made for stocks held by Governments, this constituting another inadequacy of coverage in the estimates.

Public works. For the period from 1919/20 back to the early years of the century, rough estimates were made from the information shown in the Commonwealth Statistician's *Finance Bulletins*. For the Commonwealth and Local Governments, the available figures related to gross works expenditure; for the States, they related to net loan expenditure. In the first case, the figures would be over-estimated and in the second, probably under-estimated.

Price Indexes

The price indexes used were:

For consumer durables. The Commonwealth Statistician's 'C' series index of retail prices.

For dwellings and other structures. A 'construction cost' index linking three series – for the period from 1925 to 1956, an index constructed by the Rural Bank of New South Wales; for the period 1901–24, one constructed by the State Statistician in New South Wales; and for the years prior to the turn of the century, an index of the costs shown in Bullen's monograph mentioned previously. The indexes for the period 1901–56 relate to costs in the Sydney Metropolitan area.

For motor vehicles. Average unit values derived from applying registration figures to expenditure.

For equipment (both agricultural and non-agricultural). A section of the import-price index constructed by the Commonwealth Bank of Australia. The index relates to the f.o.b. price of goods leaving the country of origin in the periods for which it is shown; the section used covers the commodity groups 'metal manufactures', 'electrical machinery and equipment', and 'other machines and machinery'.

For non-farm inventories. The mean of the official indexes of wholesale prices and average weekly earnings, the latter linked to the index of nominal average male wage-rates for the war and earlier years.

For public works. The mean of the building-materials component of the official wholesale price index and the index of average weekly earnings, the latter again linked to the nominal average male wage-rate index for the war period and earlier years.

Price indexes were not required either for livestock or farm inventories.