



IMPACT PROJECT



A Commonwealth Government inter-agency project in co-operation with the University of Melbourne, to facilitate the analysis of the impact of economic demographic and social changes on the structure of the Australian economy

ESTIMATION OF AN AUSTRALIAN CAPITAL
STOCK MATRIX FOR THE IMPACT PROJECT

by

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IMPACT Research Centre

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*The views expressed in this paper do
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1. INTRODUCTION

Various economic studies require estimates of the capital stock employed in production. Among such studies are those concerned with the role of investment and capital in the process of economic growth (Solow [1970], Jorgenson and Griliches [1970]), the functional distribution of income (Clark [1976]), the relationship between capital and labour inputs and output (Salter [1962], Carter [1970]), the productivity of capital (Kendrick [1961]), the determinants of investment behaviour (Norton [1971]), and the construction of disaggregated economy-wide models (Evans [1972], Johansen [1974], Gossling [1975], Dixon, Harrower and Powell [1976], Dixon, Parmenter, Ryland and Sutton [1977]). This study is of particular relevance to the last of these uses of capital stock estimates.

* I am grateful to Richard Douglas, Alan Powell, Brian Parmenter, Tony Lawson and David Vincent for extensive assistance, comments and suggestions; to Alexandra Strzelecki, Alan Mikkelson, Bruce Coe and Rod Curtin for computing assistance; and to Estelle Bogaars, Georgina Harisiou, Marthese Temming and Shirley Simmons for typing this paper.

Given the allocation of total investment among investing industries, data on the composition of capital stocks allow a model to determine the pattern of demand for investment goods at a disaggregated level and thus to trace the effects of changing patterns of investment demand on supplying industries. The study by Evans [1972] of the effects of protection in Australia is one of the many models which have used industry specific data on the composition of the capital stock in order to generate the demand for investment goods. The data base used to support Evans' treatment of the demands faced by industries supplying investment goods was, however, scant.

Although many countries collect and publish official estimates of capital stocks,¹ no such estimates are available for Australia. Official estimates of national wealth were made by the Commonwealth Statistician until 1929.² Neither these nor the available unofficial estimates³ were suited to our needs. Problems with these data include insufficient disaggregation of industries and asset categories, the omission of certain sectors and inappropriate dates of estimation.

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1. For example, Sweden (Tengblad and Westerlund [1975]), Germany (Lutzel [1977]) and the United Kingdom (Hibbert, Griffin and Walker [1977]).
 2. A history of official estimates of national wealth in Australia is outlined in Garland and Goldsmith [1959], pp.323-364.
 3. These include studies by Garland and Goldsmith [1959], Clark [1970] and Helliwell and Boxall [1978]. Ward [1976] discusses the estimation procedures used in these studies.

The present paper, which describes the methods and data used to construct an Australian capital stock matrix for use in the ORANI and SNAPSHOT models of the IMPACT framework,¹ represents an attempt to mobilize, to the fullest extent possible, existing Australian data on the composition of capital stocks.

1.1 The Capital Stock Matrix Defined

A capital stock matrix describes the composition of the capital stock in existence at a point in time. A typical element, K_{ij} , of the capital stock matrix, K , shows the value of capital of type i embodied in the capital stock of industry j . The total capital stock employed in each industry is shown in the column totals of the matrix. Inputs of capital goods can be classified either according to their industry of supply, or by commodity group. Both SNAPSHOT and early versions of ORANI are industry x industry based models, so that the former classification is appropriate. The format of the results presented in this paper, however, is designed for use with later versions of ORANI in which a commodity x industry data base is employed.² The row totals of a commodity x industry capital stock matrix indicate the surviving cumulated value of each commodity in the economy's capital stock.

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1. For an overview of the IMPACT project, refer to Powell [1977]. Versions of the ORANI model are outlined in greater detail in Dixon, Parmenter, Ryland and Sutton [1977], Dixon [1979], and Dixon, Parmenter, Powell and Vincent [1979]. SNAPSHOT is described in Dixon, Harrower and Powell [1976], Dixon, Harrower and Vincent [1978], and Dixon and Vincent [1979].
 2. It should be noted that for the main capital supplying industries the difference between the two bases of classification is notional only. That is, each of the major types of commodities used in capital formation is produced only in one (single product) industry.

The purpose of this study is to construct such a capital stock matrix for Australian industries for the year 1971/72, based on the industry classification used by the Australian Bureau of Statistics (ABS)¹ for the 1968/69 Input-Output (I-O) tables² and on a commodity classification designed to cope with the multi-product nature of much of Australian agriculture.³ Using the methods and data described below in Sections 2 and 3, the opening year current replacement value of capital in 1971/72 prices is estimated for each industry.

1.2 How the Capital Stock Matrix is Used in ORANI : Derivation of an Investment Matrix

The ORANI model requires an investment matrix, $\tilde{\beta}_t$, the i_j^{th} element ($\tilde{\beta}_{ijt}$) of which shows the value of commodity i used for capital formation in industry j in the ORANI base year, t .⁴ Gross fixed capital expenditure (GFCE) is disaggregated in the ABS I-O tables by input type but not by industry of use.⁵ The GFCE vector from the I-O tables is converted to the

-
1. This classification is based on the Australian Standard Industrial Classification (ASIC) (Commonwealth Bureau of Census and Statistics, Australian Standard Industrial Classification (Preliminary Edition), Government Printing Office, Canberra, 1969).
 2. The industry classification used in this study is identical with that used in the I-O tables (Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Catalogue No. 5209.0 (Ref. No. 7.11), Canberra, 1978) for the manufacturing and service sectors, although there are some differences for agricultural and mining industries. The classification used in this study and its correspondence with the I-O classification is shown in Appendix Table 1.1.
 3. For all sectors other than agriculture, there is a 1:1 correspondence between the commodity and industry classifications. Details of the agricultural commodity and industry classifications are given in Dixon, Parmenter, Powell and Vincent [1979].
 4. The base year for the current version of ORANI is 1968/69.
 5. The values of investment goods supplied by each ORANI commodity grouping are shown in Appendix Table 1.2.

required investment flows matrix via the investment sales shares of each commodity derived from the capital stock matrix.¹ The typical element of the investment matrix is estimated from the capital stock matrix by

$$(1) \quad \bar{\beta}_{ijt} = \frac{I_{it} \cdot K_{ij}}{\sum_{\ell} K_{i\ell}}, \quad \begin{array}{l} i = 1, \dots, 114 \text{ (commodities)} \\ j, \ell = 1, \dots, 112 \text{ (industries)} \end{array}$$

where I_{it} is the aggregate sales of good i for investment purposes in year t and K_{ij} is the ij^{th} element of the capital stock matrix. Equation (1) is based on the assumption that, for all i and j ,

$$(2) \quad \frac{I_{ijt}}{\sum_{\ell} I_{i\ell t}} = \frac{K_{ij}}{\sum_{\ell} K_{i\ell}}$$

The left-hand side of (2) is the share of purchases (I_{ijt}) by industry j in total sales of i for investment purposes in year t . The right-hand side is the share in the economy's total stock of capital goods of type i which is accounted for by goods of type i embodied in the capital stock of industry j . This latter share is estimated from the capital stock matrix.

1. A more ambitious approach to the empirical characterization of the role of capital in economy-wide models would involve the direct estimation of a time series of investment commodity matrices. The typical column of one such matrix would show the composition of a unit of new capital formation for a particular industry in a particular year.

The investment matrix as so derived has two basic roles in ORANI. Shares along the i^{th} row, $(\tilde{\beta}_{ijt} / \sum_{i \neq j} \tilde{\beta}_{i \&t})$, allow us to translate a given percentage change in investment demand by industry j for commodity i into the equivalent percentage change in the aggregate demand for investment goods of type i . The shares $(\tilde{\beta}_{ijt} / \sum_{m=1}^{114} \tilde{\beta}_{mjt})$ in a column of the investment matrix are the shares of goods i in the cost of creating a unit of new capital in industry j . These are the weights required for computing the percentage change in the cost of a unit of new capital in industry j from percentage changes in the prices of investment goods.¹

1.3 The Use of a Capital Stock Matrix in SNAPSHOT

SNAPSHOT uses an industry by industry capital stock matrix (K^*) in order to compute, for the base year, a square matrix of capital coefficients, C .² The typical element C_{ij} of the capital coefficients matrix shows the quantity of goods supplied by industry i required to produce one unit of capacity expansion in industry j . A unit of capacity is defined as the amount of capital required to produce one unit of output.³ The matrix of capital coefficients actually used for computation of SNAPSHOT solutions refers to a hypothetical future year, the snapshot year, for which the economy is projected in detail. In order to update the base year capital coefficients matrix to the snapshot year, explicit account is taken of projected technological change.

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1. Dixon, Parmenter, Ryland and Sutton [1977], pp.61-62.
 2. The industry classification used in SNAPSHOT is that of the 1968/69 I-O tables (109 x 109).
 3. Dixon, Harrower and Powell [1976], p.9.

The base-year capital coefficients are defined by

$$(3) \quad C_{ij} = K_{ij}^* / X_j, \quad i, j = 1, \dots, 109,$$

where X_j is output of industry j in the base year. The use of actual (as distinct from capacity) output in (3) is tantamount to assuming that the percentage levels of capacity utilization in the snapshot and base years are equal.

Investment by investing industry is endogenous in SNAPSHOT and is shown in a vector J . The capital coefficients matrix is employed via (4),

$$(4) \quad I = C J,$$

to translate this into a vector I of supplies of investment goods by industry.

The cost of a unit of capacity expansion in each investing industry is also required by SNAPSHOT. A vector of such costs, Γ , is computed using the capital matrix via

$$(5) \quad \Gamma = C' p,$$

where p is the vector of the prices of the outputs of the 109 I-0 industries.

1.4 Theoretical Problems in Constructing an Australian Capital Stock Matrix

The preceding discussion has defined the capital matrix and its applications in the IMPACT models. The extensive literature concerned with the measurement of capital¹ discusses various theoretical issues logically prior to empirical application. Here, we shall briefly discuss just two basic issues.

The first issue is the definition of capital. As this study is concerned with capital viewed as a produced physical input to the production process, it is important at the outset to define clearly which inputs are to be regarded as capital. While buildings and machinery employed in production are obviously capital items, it is not so clear whether items such as livestock and forests, employed in the agricultural and forestry industries respectively, constitute capital. For the purposes of this paper capital is defined as non-human, man-made, tangible, reproducible inputs to production which are durable over time in the sense that they are not fully used up in the production process

1. Studies concerned with the measurement of capital include Grosse [1953], Garland and Goldsmith [1959], Salter [1962], Waddell, Ritz, Norton and Wood [1966], Khan and MacEwan [1967], Rea [1967], Kendrick [1969], Kee [1970], Clark [1970], Fisher and Chiltern [1972], Ward [1976], Lal [1977], Lutzel [1977], Campbell [1977], Hibbert, Griffin and Walker [1977], Pomfret [1977], Helliwell and Boxall [1978] and Haig [forthcoming].

within one year.¹ Excluded from capital are human resources, intangible assets such as goodwill, and natural and/or non-reproducible resources such as land, mineral deposits, forests and fishery resources. Also excluded from our estimates is working capital. Working capital consists of stocks of raw materials, semi-finished and finished products which, though tangible and reproducible, are turned over fairly rapidly.

The second issue is that of valuation. Ideally, what is required is the discounted value of estimated future services of the capital stock. Due to the difficulty of measuring the future flow of capital services, this approach is infeasible. We must decide which of the alternative feasible valuation methods will best serve as a proxy for the ideal.

Estimates of the value of capital based on conventional accounting data are inadequate because capital is generally measured at original purchase price less depreciation. Given well functioning capital markets, the price of capital goods at the time of their purchase will approximate closely the present value of the future services expected to flow from them. Book values of real assets, when reckoned as historic purchase price less cumulated depreciation at conventional rates, may diverge widely from the present value of the expected flow of residual services embodied in the capital item. For example, the accounting depreciation rates used may not truly represent the attrition in the stock of real services embodied in the asset. Alternatively, the expectations underlying the original assessed present value of the new asset may, in the

1. This definition is consistent with ORANI and SNAPSHOT requirements. Other studies which have used this definition of capital include Grosse [1953], Khan and MacEwan [1967], Kee [1970], Lutzel [1977] and Haig [forthcoming].

information did not permit such reclassification. The magnitudes involved were, for the most part, relatively small.

1.5.2 Asset Leasing

The final problem in ensuring consistency between the capital stock matrix and I-O conventions concerns leased assets. If the capital stock matrix is to be interpreted as reflecting the technology of the economy we would want each column of the matrix to include the value of capital employed in each industry, irrespective of whether it is owned or leased.¹ This would involve adding the estimated value of leased assets to the capital stocks of the leasing industries and deducting this value from the capital stocks of the lessors. The ABS was unable to obtain sufficient information to follow this approach. As a consequence, the I-O table accounts for asset leasing as an intermediate sale of the services of the industry owning the assets to the industries employing them.² For this reason a column of our capital stock matrix shows the value of capital owned by the corresponding industry, not necessarily the value of capital used by that industry.

1. For example see Ward [1976], p.41.

2. This process was effected using a rent matrix, the ij^{th} element of which showed the value of rent received by industry i and paid by industry j . The elements along the main diagonal of this matrix were mostly non-zero, although relatively small. For most industries a relatively large portion of total rent payments were paid to the Investment, real estate, etc. industry.

The growing importance of leasing as a method of financing the acquisition of capital items (and the distortions introduced by using capital stock estimates based on industry of ownership rather than use) is shown by the growth in rent and leasing payments and the growing share of investment by the finance and business services sector in total private sector investment. For example, the mining and manufacturing sectors paid out, respectively, \$10.9m and \$119.7m in rent and leasing payments in 1968/69. These had risen to \$33.4m and \$418.2m, respectively, in 1976/77.¹ The share of total private sector investment undertaken by the finance and business services sector (expected to be the major lessor industry) was 5 per cent in 1963/64, 11 per cent in 1971/72, and 35 per cent in 1977/78.²

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1. Australian Bureau of Statistics, Mining Establishments, Details of Operations, Catalogue No. 8402.0 (Ref. No. 10.60); and Manufacturing Establishments, Details of Operations by Industry Class, Australia, Catalogue No. 8203.0 (Ref. No. 12.29).
 2. Shares to 1972/73 were estimated from Australian Bureau of Statistics, Australian National Accounts, National Income and Expenditure, Catalogue No. 5204.0 (Ref. No. 7.1); while the estimate for 1977/78 was estimated from New Fixed Capital Expenditure by Private Enterprises in Selected Industries, Catalogue No. 5626.0 (Ref. No. 5.8).

2. OUTLINE OF ESTIMATING PROCEDURES

As explained in Section 1, for reasons of data availability the aim of the study was to estimate the current replacement value of the stock of capital in 1971/72 cross-classified by input commodity and by using industry. This section outlines the procedures adopted to achieve this objective.

2.1 Estimation of Industry Specific Capital Stocks Disaggregated by Broad Asset Category

In most industries, information on assets employed was not available at the level of disaggregation required. Our initial estimates were therefore of broad asset categories (buildings, motor vehicles and plant and machinery) classified by using industries. These were later mapped into the ORANI commodity classification. Details of this mapping procedure are given below in Section 2.2.

Three main approaches were adopted in this study to estimate the current replacement value of capital at the broad asset level of disaggregation. In order of preference, these were:

- (i) published current replacement values,
 - (ii) perpetual inventory method (PIM) estimates,
- and
- (iii) special valuations by relevant authorities.

The industries for which each of these methods were used are shown in Table 1.

TABLE 1 : METHOD EMPLOYED TO ESTIMATE CAPITAL STOCKS IN EACH INDUSTRY

Method	Industry ^a
1. Published valuations by periodic surveys	Agricultural industries (1-8) Forestry and logging (10) (part) Fishing (11)
2. Perpetual inventory method	Government infrastructure to agriculture Mining industries (12-16) Manufacturing industries (18-83) Electricity (84) Gas (85) Water, sewerage and drainage (86) Residential building (87) Building n.e.c. and construction (88) Trade industries (89-92) Transport industries (93-96) Communication (97) Finance industries (98-102) Ownership of dwellings (103) Public administration (104) Education (107) Welfare services (108) Entertainment (109) Restaurants and hotels (110) Personal services (111)
3. Special valuations by relevant authorities	Forestry and logging (10) (part) Health (106) Services to mining (17)

a For key to industry identification numbers, see Appendix Table 1.1. The Services to agriculture industry was not estimated via any of these methods (see Section 3.5).

2.1.1 Published Values from Surveys

For reasons discussed earlier, published book values are unlikely to be accurate representations of replacement values. However, surveys of the current replacement value of capital items employed by industries are sometimes undertaken. Where these were available from published sources they were assumed to represent the most reliable estimates. Unfortunately the complexities and cost involved in collecting sample data for particular sectors limit the availability of information of this nature. In Australia published survey data are available for a relatively small number of industries and these are confined to the primary industry sector.

2.1.2 The Perpetual Inventory Method (PIM)

The PIM, used extensively in this study, values the stock of capital existing at a point in time as the cumulation of past investment flows. Capital stocks are estimated by summing the depreciated value, at constant prices, of past investment.

Suppose that we wish to estimate the capital stocks in year T , and that the time series record on investment starts in year S . Further suppose that an estimate of the value of the capital stock in year S is available.

Then, using the PIM, the current replacement value of the stock of the i^{th} capital good in the j^{th} industry at the beginning of year T , K_{ij}^T , has been estimated as:

$$(6) \quad K_{ij}^T = \frac{K_{ij}^S}{P_{ij}^S} \text{Max} \left\{ 0, \left(1 - \frac{T-S}{L_{ij}} \right) \right\} \\ + \sum_{t=\text{Max}\{S, (T-L)\}}^{T-1} \frac{I_{ij}^t}{P_{ij}^t} \left\{ 1 - \frac{T-(t+1)}{L_{ij}} \right\},$$

for $i = 1, \dots, n_j$ broad asset categories and
 $j = 1, \dots, 112$ industries,

where

K_{ij}^S is the initial value of capital stock of type i employed in the
 j^{th} industry, at the beginning of year S ;

P_{ij}^t is the value in year t of a price index of capital items of type
 i employed in industry j ;

I_{ij}^t is net investment in the i^{th} capital good undertaken by the
 j^{th} industry during the year t , valued in current prices;

and

L_{ij} is the assumed life of the i^{th} capital good in the j^{th}
 industry.

There are several points which need to be made about equation (6).
 To begin with, measurement of the capital stock is taking place at the beginning
 of each financial year (for example at the beginning of 1971/72). Secondly,

investment undertaken during the year t is assumed to become part of the effective capital stock for the start of the year $(t + 1)$.

Further, equation (6) implies that capital is being depreciated on a straight line basis. This method adopts only one of several survival functions which might have been employed. The most common of these functions, shown in Figure 1, are the one-horse-shay (or rectangular), the normal, the declining balance, the sum-of-the-years' digits and the straight line functions. The rectangular function (A) assumes capital remains fully productive over its expected life time, at the end of which it is fully depreciated. The other methods all assume that capital declines in value in some regular manner over its expected life. Under the straight line method (C), a constant depreciation rate (a reciprocal of the expected life) is applied in each year to the original value of capital, while under the declining balance method (E), a constant depreciation rate (usually one and a half times that of the straight line rate) is applied to the value of capital remaining in production in each year. The depreciation rates applied to the original cost of capital under the

sum-of-the-years' digits method (D) are $n / \sum_{i=1}^n i$, $(n-1) / \sum_{i=1}^n i, \dots, 1 / \sum_{i=1}^n i$,

where n is the expected life of capital. The "normal" method (B) assumes the capital is depreciated at a rate which follows the normal curve. The rate of depreciation thus reaches a maximum when the age of the asset is equal to half the expected life.

As there is very little empirical evidence which favours one method over the other,¹ the straight line method was chosen due to the ease with

1. Ward [1976], pp.37-39.

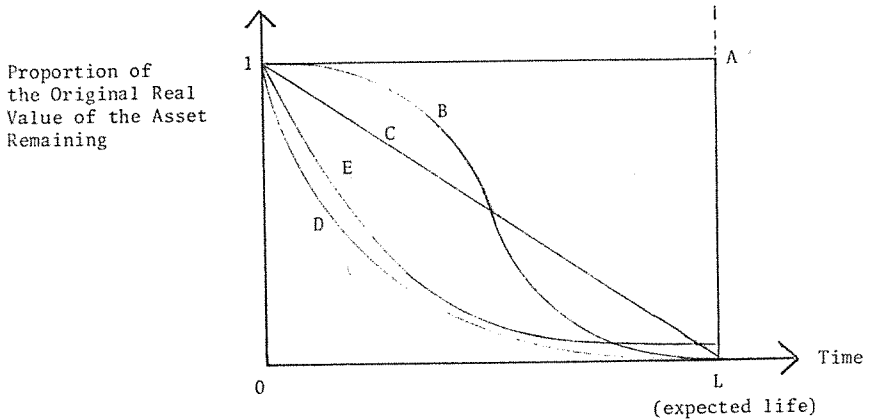


FIGURE 1 : COMPARISON OF SURVIVAL FUNCTIONS

which it could be applied. For similar reasons it was also assumed that the scrap value at the end of an asset's life was zero.

An indication of the difference in the estimated value of capital stocks resulting from the use of alternative depreciation assumptions is provided by Haig [forthcoming], who has constructed alternative series of the value of capital stocks employed in manufacturing industries for the years 1919/20 to 1976/77. Each was based on one of the following assumptions:

- (i) One-horse-shay method,
- (ii) Straight line depreciation,
- (iii) Declining balance depreciation,

and

- (iv) Depreciation calculated from the sum-of-the-years' digits.

Since this study adopts straight line depreciation, we are interested in the relative level of Haig's capital stock estimated using this method, to

his capital stock estimates which are based on the alternative depreciation methods. This comparison, for the period 1968/69 to 1973/74 (Table 2), shows that with the exception of the one-horse-shay method, fairly similar results are given by the application of each of the alternative methods. In general, the assumption made in the one-horse-shay method that assets remain fully productive until they reach their expected life appears less reasonable than an assumption that some pattern of depreciation occurs during the asset's lifetime.

TABLE 2 : COMPARISON OF HAIG'S CAPITAL STOCK ESTIMATES FOR THE PERIOD 1968/69 TO 1973/74 UNDER ALTERNATIVE DEPRECIATION METHODS

Depreciation method	Ratio of estimate of capital stock to estimate based on straight line depreciation
One-horse-shay	1.44
Sum-of-the-years' digits	1.17
Straight line	1.00
Reducing balance	0.80

Source : Haig [forthcoming].

It may be noted that the initial value of capital is only required in equation (6) where the number of years for which we have investment data, $(T-S)$, is less than L , the expected life. Where $(T-S) \geq L$, the initial capital stock has been completely depreciated by the year T . By applying the same depreciation factor to the total value of the initial capital stock, we are treating all the initial year capital stock as "new" in year S . However, since the book value consists of more than the previous x years of investment (where x equals $L+S-T$) this will tend to result in an overestimation of the initial capital stock assumed still used in production in year T . The extent

of this overestimation will vary between industries depending on the age structure of the capital stock in year S , but is not likely to affect seriously the estimate of the value of capital in year T . The greater the growth in investment in the period from year S to year T , the lower the share of the total value of the capital stock in year T which is accounted for by the depreciated initial book value of capital. The point is illustrated for some of our manufacturing data in Table 3.

TABLE 3 : GROWTH RATE IN BUILDING INVESTMENT AND VINTAGE COMPOSITION OF THE STOCK OF BUILDINGS

Industry	Level of real net investment in 1971/72 as a multiple of 1936/37 level	1936/37 initial value as a percentage of 1971/72 current replacement value
Flour and Cereal Products	Investment static over period	87.4
Bread, Cakes and Biscuits	2	65.9
Basic Iron and Steel	17	11.9
Electricity	90	5.7

Source : The initial values used are described in Section 3.3.1.2 and the investment series in Section 3.3.2.3.

The data requirements for the operation of the PIM as given by equation (6) are the initial value of capital, time series of fixed capital expenditure in current prices, price indices relating to the types of capital assets for which investment statistics are available and estimates of the expected service lives of assets.

Ideally each series would carry double subscripts, i and j , where i indicates the asset category, while j indicates the industry of use. Also, data ideally would be based on a census of all establishments in an industry rather than on survey techniques, since the former are likely to provide more reliable information.¹ Further, we would prefer series of sufficient length to avoid altogether the use of book values of opening levels of the capital stock. Failing this, that is when investment data are not available over the entire assumed length of asset life L_{ij} , the data on the opening value of capital should represent an accurate valuation at current replacement cost. We would prefer, in addition, that the investment series be defined as total annual expenditure on new and secondhand fixed tangible assets, excluding land (refer to Section 1.4) and net of disposed assets. The exclusion of disposals ensures that assets disposed of by one industry and purchased by another sector are not double counted. Finally, allowance for quality and composition changes in capital goods produced would ideally be made in the capital goods price indices.

Since the available data generally do not satisfy these ideal properties, wherever feasible, adjustments were made to bring the properties of the data employed in estimation closer to the ideal. The sources of data and the adjustments made prior to the estimation of capital stocks are described in Section 3.

1. Where the "establishment", rather than the "enterprise", is the unit for which data are collected, industry groupings will be more meaningful. The establishment is defined as all the operations carried on under the ownership of one enterprise at a single physical location. The enterprise, on the other hand, is defined as the unit covering all operations of a single legal entity and hence is likely to cover more diverse industry operations than the establishment.

2.1.3 Special Valuations by Relevant Authorities

In some cases where published survey data or data for the implementation of the perpetual inventory method were not available it was feasible to approach industry organisations for the required information. In these cases either the market structure of the industry was concentrated or else there existed one or a few central bodies with access to data from which detailed industry estimates could be made.¹ The resulting estimates, of course, may be inconsistent with the valuation procedures used in the survey approach and the perpetual inventory method. Lack of data precluded our establishing the signs and magnitudes of any systematic deviations between the methods.

2.2 Mapping from Broad Asset Categories to ORANI Commodity Classification

As explained above, the methods outlined in Section 2.1 were used to obtain estimates of industry-specific capital stocks disaggregated into broad asset categories. For most industries, three basic asset categories were used, viz., building and construction, motor vehicles, and plant and machinery. The mapping between these categories and the relevant parts of the ORANI commodity classification is shown in Table 4, Part A. For a few industries a finer asset categorization was available at the initial stage. The mapping between these categories and the ORANI commodity classification is shown in Part B of Table 4.

1. Guidelines were offered on the industry classification and the definition and valuation of capital being used. These issues have been discussed in Section 1.

As can be observed from Table 4, the mapping from all asset categories except plant and machinery and building and construction is quite straightforward. In the case of the plant and machinery category, the weights used in the mapping should vary to reflect the different structures of plant and machinery employed in the different using industries. Since published data were not available the required information was obtained either from industry related organisations or directly from firms in the industry concerned. The Bureau of Mineral Resources (BMR) provided the mapping for industries in the mining sector. The mappings for about half the industries in the manufacturing sector were supplied by the Industries Assistance Commission (IAC) and the Department of Industry and Commerce; for the remaining industries direct approaches to firms were made. For the service industries the sources of information were the Department of Transport and firms operating in the sector.

Our initial estimates of inputs of the building and construction category included the value of commissions paid to the Investment, real estate, etc. and Other business services industries, whereas in the I-O tables the value of these commissions are shown separately. Estimates of the total value of commissions included in the stock of building and construction were obtained by multiplying by the ratio of the total value of commissions supplied in 1968/69 to the total value of commissions and residential and other building and construction in 1968/69.¹ The commissions extracted in this way were shown as inputs of Investment, real estate, etc. or of Other business services.

1. These shares were obtained from the ABS 1968/69 I-O Tables.

TABLE 4 : CORRESPONDENCE BETWEEN ASSET CATEGORIES AND ORANI COMMODITIES

Asset category	Commodity	
	No.	Title
PART A : MAPPING FOR BASIC ASSET CATEGORIES		
Motor vehicles	70	Motor vehicles
Plant and machinery	44	Joinery and wood products
	45	Furniture
	67	Structural metal products
	68	Sheet metal products
	69	Metal products n.e.c.
	71	Ship and boat building
	72	Locomotives and rolling stock
	73	Aircraft building
	74	Scientific equipment
	75	Electronic equipment
	76	Household appliances n.e.c.
	77	Electrical machinery n.e.c.
	78	Agricultural machinery
	79	Construction etc., equipment
	80	Other machinery and equipment
83	Plastic products	
84	Signs, writing equipment etc.	
85	Other manufacturing	
Building and construction ^a	90	Building n.e.c. and construction
	103	Investment, real estate, etc.
	104	Other business services

continued

Table 4 continued

Asset category	Commodity	
	No.	Title
PART B : MAPPING FOR ADDITIONAL ASSET CATEGORIES ^b		
Mine development (Iron, Other metallic minerals, Coal, Crude oil and Non-Metallic n.e.c.)	14	Iron
	15	Other metallic minerals
	16	Coal
	17	Crude oil
	18	Non-Metallic n.e.c.
	90	Building n.e.c. and construction
	103	Investment, real estate, etc.
	104	Other business services
Tram cars (Road transport)	72	Locomotives and rolling stock
Rolling stock (Rail transport)	72	Locomotives and rolling stock
Ships (Water transport)	71	Ship and boat building
Marine and airways facilities (Water transport and Air transport)	74	Scientific equipment
	75	Electronic equipment
	77	Electrical machinery n.e.c.
Aircraft (Air transport)	73	Aircraft building
Subscribers, trunk, telegraph and A.D.P. equipment (Communication)	75	Electronic equipment
	77	Electrical machinery n.e.c.
Engineering and workshop plant (Communication)	74	Scientific equipment
	79	Construction etc., equipment
	80	Other machinery and equipment

- a This mapping holds for all industries except Ownership of dwellings (which is treated as undertaking all the economy's investment in residential buildings). For this industry the value of buildings is mapped into industries 87 (Residential buildings), 101 (Investment, real estate, etc.) and 102 (Other business services).
- b Industry descriptors appearing in parentheses indicate the investing industries for which these asset categories were available.

2.3 Mapping from Purchasers' Prices to Basic Values

The raw data discussed above were valued in purchasers' prices. To obtain estimates in basic values it is necessary to separate out the components which relate to mark-ups and taxes and to allocate these to the appropriate ORANI commodity categories. Ratios of basic values to purchasers' prices can be obtained from the ORANI input-output data base.

These ratios R_{iL} , are defined as,

$$(7) \quad R_{iL} = \left(\frac{IBV_{iL}}{IPP_{iL}} \right), \quad \begin{matrix} (i = 1, \dots, 114; \\ L = 1, 2, 3), \end{matrix}$$

where

IBV_{iL} is the input, at basic values, of commodity type i for investment purposes in sector L ;
and

IPP_{iL} is the input of commodity type i for investment purposes in sector L at purchasers' prices.¹

The sectors distinguished for this purpose, were the private ($L=1$), general government ($L=2$) and public enterprise ($L=3$) sectors. The relevant ratios are shown in Appendix Table 1.3.

Capital stock estimates (KBV_{ij}) at basic values for capital input type i employed in each using industry j were estimated on the assumption that the ratio, R_{iL} is constant across all industries of a particular sector.

1. These are obtained from Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Table B (reconciliation of flows at basic values and at purchasers' prices in 1968-69).

That is,

$$(8) \quad KBV_{ij} = (KPP_{ij} \cdot R_{iL}) ,$$

where

L is the sector within which j is contained;

and

KPP_{ij} is the value of the i^{th} input embodied in the capital stock of the j^{th} industry at purchasers' prices.

Underlying this method is the assumption that the ratios obtained for the year 1968/69 are applicable also to 1971/72.

The shares $P_{\ell i}$ of each component (ℓ) in the total value of mark-ups associated with deliveries of commodity i for investment purposes were calculated from data supplied by the ABS.¹ It was assumed that these shares were constant across all investing industries. The value of the ℓ^{th} mark-up component associated with the delivery of investment goods to industry j was then calculated as

$$(9) \quad M_{\ell j} = \sum_{i=1}^{114} P_{\ell i} (KPP_{ij} - KBV_{ij}) , \quad (\ell = 1, \dots, 9) .$$

1. These proportions are shown in Appendix Table 1.4.

3. DATA SOURCES AND HANDLING

In this section details of our approach to, and problems encountered in, data handling are discussed. There are two major topics: (i) price indices, all of which were handled in a broadly similar way (Section 3.1); and (ii) construction of capital stock estimates, which varied according to data availability (Sections 3.2 through 3.5).

3.1 Price Indices for Broad Asset Categories

Price indices for residential building, non-residential building and construction, plant and machinery and motor vehicles were constructed. The base year for all indices was 1971/72. Except for motor vehicles employed in the Road transport industry (Section 3.1.4) data availability did not permit the estimation of indices specific to industries of use.

Each asset category is composed of heterogeneous elements whose prices change at different rates. To the extent that the group of, say, plant and machinery items purchased by a particular industry, exhibits different price movements to those of the aggregate plant and machinery price index, under- or over-valuations of that industry's plant and machinery capital stock will occur.

Alternative sources of information were available for the compilation of the building and construction index and the plant and machinery index, but where Australian National Accounts (ANA)¹ data were available this source was preferred as it was expected to provide the most reliable economy-wide deflators for specific asset categories.

3.1.1 The Non-Residential Building and Construction Price Index

A price index for non-dwelling building and construction estimated for the period 1906/07 to 1971/72 (1971/72 = 100) (column 5, Appendix Table 1.5) and shown in Figure 2 was compiled from two main sources. For 1949/50 and succeeding years the ANA implicit price deflator for non-dwelling private fixed capital expenditure (column 4, Appendix Table 1.5) was employed. For earlier years (1906/07 to 1948/49) the ANA deflator was not available and the price index was estimated in the following way. First, an index was constructed for the period 1906/07 to 1971/72 as the weighted sum of nominal wage rate data (column 1, Appendix Table 1.5) and a building materials price index (column 2, Appendix Table 1.5).² Second, it was necessary to link the ANA deflator and the wages-materials composite index.

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1. Australian Bureau of Statistics, Australian National Accounts, National Income and Expenditure, Catalogue No. 5204.0 (Ref. No. 7.1), Canberra.
 2. The approach adopted by Haig [forthcoming] for the period 1938/39 to 1948/49 was used.

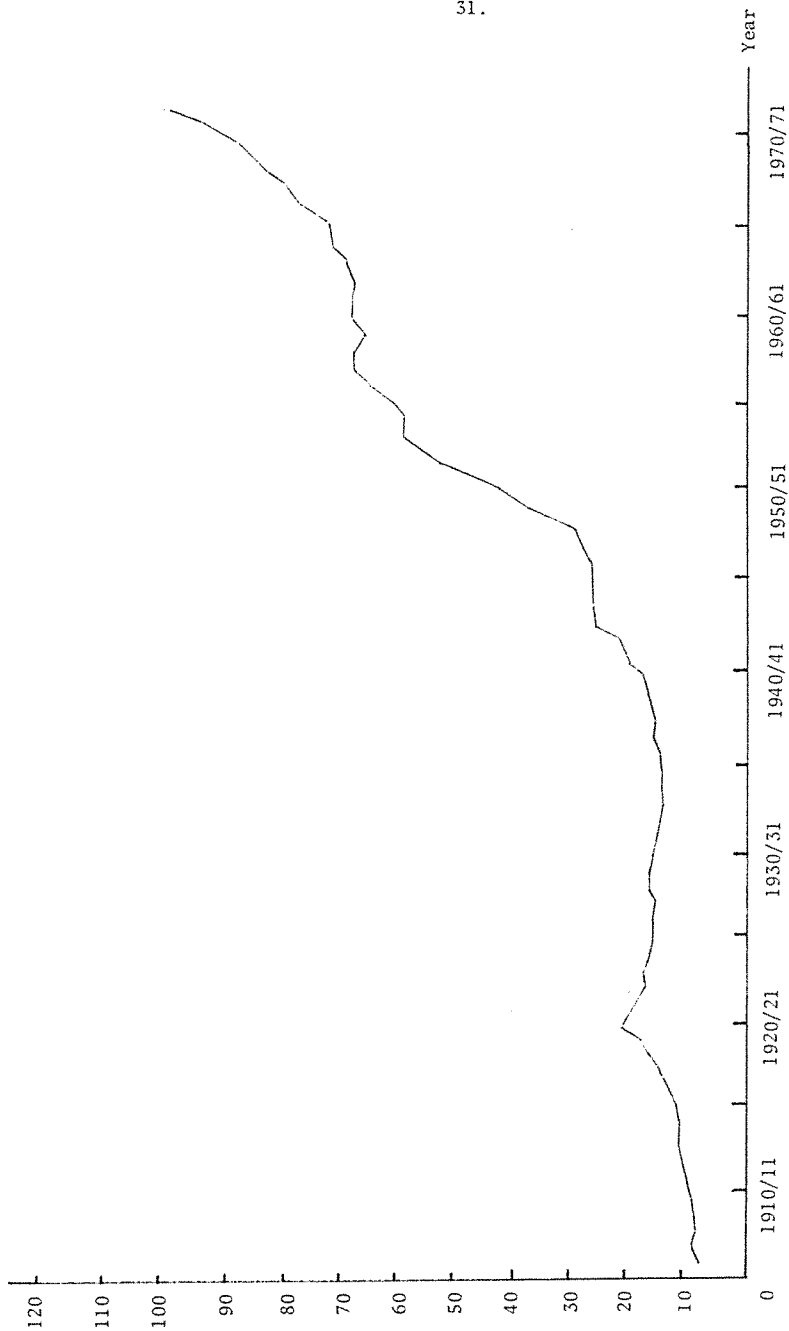


FIGURE 2 : NON-RESIDENTIAL BUILDING AND CONSTRUCTION PRICE INDEX, 1906/07 TO 1971/72

3.1.1.1 The Wages-Materials Composite Price Index

Nominal wage rates for the building sector were available annually from 1906/07 in the Labour Report.¹ The wage rate index (column 1, Appendix Table 1.5) was constructed from this series.

The building materials price index (column 2, Appendix Table 1.5) was estimated from the following sources:

(i) for the period 1906/07 to 1927/28, the building materials component of the Melbourne Wholesale price index,

and

(ii) for the period 1928/29 to 1971/72, the building materials component of the Basic Materials and Foodstuffs Wholesale price index.

Both (i) and (ii) were reported in the ABS Labour Report. The two indices were linked at the year of changeover (1928/29) and converted to base year 1971/72.

The weights used to combine the buildings wage rate index and the materials price index (Table 5) were chosen with the assistance of an officer of the Department of Housing and Construction to reflect the changing technology in building construction.

1. Australian Bureau of Statistics, Labour Report, Reference No. 6.7, Canberra, Nos. 1-57.

TABLE 5 : WEIGHTS USED IN PRICE INDEX FOR
OTHER BUILDING AND CONSTRUCTION

Period	Weight		Total
	Wage rate index	Materials price index	
1906/07 to 1937/38	0.6	0.4	1.00
1938/39 to 1955/56	0.5	0.5	1.00
1956/57 to 1971/72	0.4	0.6	1.00

3.1.1.2 The ANA Implicit Price Deflator

The ANA implicit price deflator was employed for the years 1949/50 to 1971/72. For the sub-period 1949/50 to 1958/59 this deflator shows the price movements of all private non-dwelling fixed capital expenditure. From 1959/60 this was split into two components: building and construction, and other. The former component was used for 1959/60 and later years.

3.1.1.3 Linking the ANA Deflator and the Wages-Materials Composite Price Index

The ANA deflator, A , is only available from 1949/50 and it is estimated for earlier years using

$$(10) \quad \hat{A} = f(B),$$

where

B is the wages-materials composite index for the period
1906/07 to 1948/49.

This relationship is estimated by supposing

$$(11) \quad A = \beta B + u ,$$

where

A is the ANA deflator for the period 1949/50 to 1971/72,

B is the wages-materials composite index for the same period,

β is a constant,

and

u is an error term, assumed to have zero mean.

The OLS estimate of β , $\hat{\beta}$ is given by

$$(12) \quad \hat{\beta} = \frac{\left(\sum_{i=1}^n a_i b_i \right)}{\left(\sum_{i=1}^n b_i^2 \right)} = 0.97006 .$$

Finally, each value of the constructed index for the period 1906/07 to 1948/49 was multiplied by 0.97006, the value of $\hat{\beta}$ to give the series \hat{A} .

3.1.2 The Residential Building Price Index

Two sources were used to construct the residential building price index (column 6, Appendix Table 1.5). For years prior to 1948/49 the other building and construction index (column 3, Appendix Table 1.5) as described in Section 3.1.1 was used, while for 1948/49 and later years the ANA implicit price deflator for capital expenditure on dwellings (column 6, Appendix Table 1.5) was employed.

To link the indices an estimate of the ANA series was made for the earlier period from the other building and construction index using the method described by equations (10), (11) and (12) in Section 3.1.1.3. As the value of $\hat{\beta}$ was found to be 0.99861, this linking adjustment produced no significant change in the original figures.

3.1.3 The Plant and Machinery Price Index

The expected life of plant and machinery is considerably shorter than that of buildings (Section 3.3.3). Thus a price index for plant and machinery was not required for years prior to 1949/50. The ANA implicit price deflator for private non-dwelling fixed capital expenditure was used for the period 1949/50 to 1958/59. In 1959/60 this index was split into two components, building and other. For the period 1959/60 to 1971/72 the latter component was used to deflate the investment series for plant and machinery (Appendix Table 1.6). Unfortunately price changes in motor vehicles are included in this deflator. However, our capital stock values for plant and machinery are based in most cases on investment series which commence in 1955/56. It is to be hoped that, for the period since then, the inclusion of motor vehicle prices in the deflator does not constitute a serious distortion.

3.1.4 The Motor Vehicle Price Index

The IAC and its predecessor, the Tariff Board, have constructed separate price indices for small, medium and luxury passenger motor vehicles and for light and heavy commercial vehicles for the period 1950/51 to 1971/72.¹

An overall motor vehicle price index can be formed as a weighted average of these indices. The obvious weights are the shares of each type of vehicle in total investment sales of vehicles in each year. However, this information is not directly available. Several assumptions were therefore made.

First, it was assumed that the three types of vehicles purchased predominantly for investment purposes were medium sized passenger vehicles and light and heavy commercial vehicles. Only the indices for these three categories therefore were used in forming the required average. Next, IAC information on the average price and number of vehicles sold was used to estimate the value of sales of each of light and heavy commercial vehicles for each year since 1950/51. It was assumed that all sales of vehicles in these two categories were for investment purposes. In order to construct an analogous series of investment sales for medium sized passenger vehicles it was necessary to make an assumption about the proportion of the value of total sales of these

1. Tariff Board, The Demand for Commercial Vehicles, Industry Economics Branch Study, Canberra, 1973 (mimeo); and Industries Assistance Commission, The Australian Market for Passenger Motor Vehicles, Australian Government Publishing Service, Canberra, 1974.

vehicles which fulfilled investment needs. An estimate of the value of the relevant investment sales in 1968/69 was obtained by subtracting the value of sales of light and heavy commercial vehicles (previously estimated) from the total value of vehicles sold for investment purposes (shown in the I-0 tables). The ratio of investment sales to total sales of medium sized passenger vehicles (the latter being available from the IAC study) for 1968/69 was used in each year to estimate the value of these vehicles sold for investment purposes. The three investment sales series so constructed were finally used as the basis of the weights used to combine the IAC medium sized passenger vehicle, light commercial and heavy commercial vehicle indices to form an overall motor vehicle price index. This index is shown in Appendix Table 1.7, column 8. It was used for all industries except Road transport, where the heavy commercial vehicle price index (Appendix Table 1.7, column 3) was used.

3.2 Published Survey Data

Published survey data on capital stocks were available for the agricultural sector (excluding the Services to agriculture industry), the Logging industry and the Fishing industry.

3.2.1 Agricultural Sector¹

Survey data on the current replacement values of farm capital collected by the Bureau of Agricultural Economics (BAE) formed the basis of our

1. Separate estimates were made for Government infrastructure provided for agricultural industries (Section 3.3.2.1) and the Services to agriculture industry (Section 3.5).

capital stock estimates for this sector.¹ The data generally show the value of assets on an average per property basis, disaggregated into the following categories: water, fencing, buildings, plant and machinery, livestock and land.² The value of on-farm capital creation (e.g. the construction of fences, water supply and buildings) is included in the value of capital stocks. The value of livestock and land were excluded from our estimates as they do not constitute capital stock items according to our definition (see Section 1.4).³

Unlike the commodity-based I-O classification,⁴ the industry classification used by the BAE takes explicit account of the multi-product nature of Australian farms and of geographical differences in production technology. The first version of ORANI used the I-O classification. It is on

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1. There are no alternative estimates of capital stocks in the agricultural sector, disaggregated by industry. Investment data, from which PIM estimates of capital stocks might have been attempted, are not disaggregated by investing industry or by asset type.
 2. To supplement these data and to aid in the disaggregation of these asset categories, the BAE also supplied IMPACT with the Australia-wide value of agricultural capital disaggregated into a much finer asset classification.
 3. One problem with the use of the BAE data was that the total value of agricultural capital in Australia may be overstated because of the bias inherent in the way in which the data are collected. Properties are randomly selected, but it is likely to be the better managed farms (for example, in terms of records) who provide information for the survey. As the weights employed in the aggregation of survey details to population statistics do not recognise this bias, population estimates may be inflated.
 4. The I-O industry classification recognises six agricultural industries: Sheep, Cereal grains, Meat cattle, Milk cattle and pigs, Poultry, and Other farming.

the later versions of ORANI,¹ however, that the present work is focussed. In these the agricultural industry definitions employed are based on the BAE classification. Eight agricultural industries are distinguished. They are the first eight industries listed in Appendix Table 1.1. These industries produce combinations of ten agricultural commodities: wool, sheep, wheat, barley, other cereal grains, meat cattle, milk cattle and pigs, other farming export, other farming import competing and poultry.²

Some brief details of data sources and manipulation methods for each of the agricultural industries will now be given.

3.2.1.1 Pastoral Zone, Wheat-Sheep Zone and High Rainfall Zone

Our estimates of capital stocks employed in the Pastoral zone, Wheat-Sheep zone and High rainfall zone were based on detailed asset information collected by the BAE for the Australian Sheep Industry Survey.³ Australia-wide estimates of capital stocks for over 200 asset categories were provided by the BAE and mapped into the ORANI commodity classification.

1. See Dixon, Parmenter, Powell and Vincent [1979].

2. Ibid., Table 3.1.

3. BAE [1976].

3.2.1.2 Northern Beef

This industry consists of specialist beef producers in the Northern Territory, the Kimberley Region of Western Australia and the Peninsular Gulf and Coastal Central Regions of Queensland.¹ For each region the BAE supplied the average property value of capital in 1971/72 classified by several asset types. These were multiplied by the average number of relevant properties over the three year survey period and summed over regions to give the total value of capital in 1971/72. The values were mapped into ORANI commodities using information supplied by the BAE on the detailed asset structure of beef specialist farms surveyed for the beef cattle industry report.²

3.2.1.3 Milk Cattle and Pigs

For the milk cattle sector of this industry, the BAE provided Australia-wide values of dairy industry capital stocks for about 200 asset

1. Data for these zones were collected by the BAE for the following beef industry studies:

(i) Bureau of Agricultural Economics, The Northern Territory and Kimberley Region Beef Cattle Industry, 1968/69 to 1970/71, Beef Research Report No. 13, Canberra, 1974; and

(ii) Bureau of Agricultural Economics, The Queensland Beef Cattle Industry, 1968/69 to 1970/71, Beef Research Report No. 14, Canberra, 1974.

2. Bureau of Agricultural Economics, The Australian Beef Cattle Industry, 1968/69 to 1971/72, Australian Government Publishing Service, Canberra, 1974.

categories from its dairy industry survey.¹ These were then mapped into the ORANI commodity classification.

The estimates for the pig sector were based on data from the BAE pig raising survey.² Only data collected for the pig specialist stratum were used to avoid double counting the capital stocks of mixed pig farms covered by other industries. The average values per farm over the survey period of each of four asset categories were shown separately for small and for large specialist pig farms. An estimate of the capital-output ratio of specialist pig farms was then made as a weighted average of the capital-output ratios of small and large farms over this survey period. This was multiplied by the average annual output of specialist pig farms for the period 1969/70 to 1971/72³ to give the total value of capital for 1971/72.⁴ Next, this total was split into major asset categories using asset shares from the survey data. Finally, the mapping from major asset categories to ORANI commodities was made using data from the BAE dairy industry survey.

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1. Bureau of Agricultural Economics, The Australian Dairyfarming Industry, Report on an Economic Survey - 1971/72 to 1973/74, Australian Government Publishing Service, Canberra, 1975.
 2. Bureau of Agricultural Economics, Pig Raising in Australia, An Economic Survey, 1967/68 to 1969/70, Australian Government Publishing Service, Canberra, 1972.
 3. A three year average of output was used to abstract from seasonal variations in output. The average value of pigs slaughtered over the period (\$104m) is published by the BAE, (Bureau of Agricultural Economics, Trends in Australian Rural Production, Exports, Income and Prices, 1952/53 to 1972/73, Australian Government Publishing Service, Canberra, 1974). Since this refers to total pig production, whereas we require production by pig specialists, only the share which refers to specialist pig enterprises, (0.239) calculated from survey data, was used.
 4. This method assumes that the average capital-output ratio for the survey period is applicable to all specialist pig farms in 1971/72. Also, the proportion of total production which refers to specialist pig farms is extrapolated from survey data and used for Australian production in 1970/71.

3.2.1.4 Other Farming Export and Import Competing

The Other farming export industry includes sugar cane and fruit growing. Other farming import competing consists of tobacco, cotton, peanut, vegetable and oilseed production. Estimates of the current replacement value of capital stocks in the sugar sector as at 1 July 1971 and disaggregated into detailed asset categories were provided by the Queensland Cane Growers' Council. For the remaining sectors of both of the Other farming industries capital stock estimates were based on BAE survey data (for details, see Appendix Table 1.8). Capital-output ratios for each industry were estimated from the survey data and multiplied by the respective average annual values of output over the period 1969/70 to 1971/72. This yielded an estimate of the total value of capital in 1971/72 for each sector which was disaggregated into the major asset categories published in the survey according to the share of each category in total capital stocks reported in the survey. Finally, each category was mapped into ORANI commodity classes. Where survey data were not available for a particular activity, its capital-output ratio and the composition of its assets were assumed to be the same as those of a related activity (see Appendix Table 1.8).

3.2.1.5 Poultry

Production activities in this sector fall naturally into two categories: egg production and broiler production. These are treated separately below.

The current replacement value of capital items employed in the egg producing sector as at 30 June 1970 is available from BAE survey data.¹ This

1. Bureau of Agricultural Economics, The Australian Commercial Egg Producing Industry, An Economic Survey, 1968/69 to 1970/71, Australian Government Publishing Service, Canberra, 1974.

was used to compute a capital-output ratio for the survey period which was applied to the average value of eggs produced between 1969/70 and 1971/72¹ to give an estimate of the required value of capital as at 1 July 1971. By assuming that the capital structure in 1970/71 was maintained in 1971/72, the estimated value of capital in the egg sector in 1971/72 was mapped into the ORANI commodity classification using data provided by the BAE on the detailed asset structure of poultry farms.

The only data on capital stocks in the broiler sector are contained in a survey of NSW producers conducted by the NSW Department of Agriculture for the year 1967/68.² This information was used first to compute the total capital stock in 1971/72, and second, with BAE egg survey data, to estimate the share of the total capital stock supplied from each ORANI commodity group. The total value of capital in the broiler sector in 1971/72 was estimated by multiplying the average value of output of the broiler industry for the period 1969/70 to 1971/72³ and the weighted average capital-output ratio in 1967/68 estimated from NSW survey data. The implicit assumptions are that the capital-output ratio estimated for NSW is representative of the overall Australian ratio, and that the ratio in 1971/72 was the same as in 1967/68. The value of capital was

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1. The source of the production data is Bureau of Agricultural Economics, Trends in Australian Rural Production, Exports, Income and Prices, 1952/53 to 1972/73, Australian Government Publishing Service, Canberra, 1974.
 2. C. Rowe, Financial Results of a Survey of the Broiler Growing Industry of New South Wales, New South Wales Department of Agriculture, Division of Marketing and Agricultural Economics, Miscellaneous Bulletin No. 8, Sydney, 1969.
 3. \$81.3m. See Bureau of Agricultural Economics, Trends in Australian Rural Production, Exports, Income and Prices, 1952/53 to 1972/73, Australian Government Publishing Service, Canberra, 1974.

disaggregated into two categories (building and construction, and vehicles, plant and machinery) using the share of each category from the NSW survey. As no further details on the composition of capital stocks in the broiler sector were available, these two categories were mapped into ORANI commodities using detailed egg survey data provided by the BAE.

3.2.2 Logging¹

Replacement cost estimates of capital employed in the Logging industry in Australia for November 1970, have been developed by the Australian Forestry Council² on the basis of a census conducted by the Forestry and Timber Bureau.³ There are four major problems with the use of these data for our purposes. First, capital used by contractors who belong to the Road transport industry is included.⁴ The main asset items employed by logging contractors

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1. Logging is part of the Forestry and logging industry. See Section 3.4.1 for details relating to the Forestry sector.
 2. Australian Forestry Council, Forestry and Wood-Based Industries Development Conference (Forwood), Report of Panel 4, Harvesting, Australian Government Publishing Service, Canberra, 1974.
 3. Forestry and Timber Bureau, Census of Machinery and Logging Personnel Working in Australian Forests, November 1970, Canberra, 1971. The census covered about 80 per cent of the industry. An allowance was made for the remaining 20 per cent.
 4. Logging activities (ASIC 0301) are defined as the felling of trees or the rough shaping of timber into posts, mine timbers, etc. Establishments mainly engaged in transporting logs to sawmills are included in the Road transport industry.

are trucks. It was assumed that 90 per cent of cartage was undertaken by contractors, therefore only 10 per cent of the value of trucks was allocated to the Forestry and logging industry. Second, the figures do not include the small amount of government logging equipment. No adjustment was made to the data due to lack of information. The date of estimation is the third problem. Since valuation occurred at November 1970, the required values at July 1 1971 were approximated by multiplying each value by a factor which reflects the change in prices over this period. This factor was estimated as half the increase in prices which occurred during 1970/71. Finally, to derive current replacement estimates it was necessary to take account of the depreciation of assets. As no data on the expected lifetime of assets were available,¹ it was assumed that all assets had served half their useful lives and that depreciation occurred on a straight line basis.

3.2.3 Fishing, Hunting and Trapping

Estimates of the values of capital stocks in major parts of the Fishing industry were compiled from survey data gathered by the Department of Primary Industry (DPI).² These data were preferred to alternative ABS sources because the definitions and valuation methods employed by the DPI are more compatible with our own. The survey data contained details of average values of capital invested per fisherman for particular regions in various years between

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1. The actual age distribution (at a broad level) for major asset categories is reported in the Forestry and Timber Bureau census.
 2. See Appendix Table 1.9.

1969/70 and 1974/75. These values were converted to 1971/72 prices on the assumption that market values of the assets involved (mainly boats) moved in line with the non-residential building and construction index (see Section 3.1.1). The deflated average values were multiplied by total numbers of fishermen to give an estimate of the total value of the capital stock. A commodity breakdown of this was provided by the DPI.

The only other sector of the Fishing, hunting, trapping industry for which sufficient data were available to allow an estimate to be made of the value of capital employed is oyster growing. For this sector estimates were based on ABS data.¹ Our estimates of the value of capital in the Fishing, hunting, trapping industry therefore exclude some minor fishing activities (trochus- and pearl-shelling and whaling) and the whole of trapping and hunting. Due to their small size the exclusion of these activities is not expected to result in significant errors.²

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1. Australian Bureau of Statistics, Fisheries, Catalogue No. 7603.0 (Ref. No. 10.8), Canberra.
 2. Of total persons employed on fishing boats in 1971/72, less than 1.5 per cent were employed in the pearl- and trochus-shell and whaling sectors. In the same year, about 2 per cent of the total value of fish production was produced by these sectors.

3.3 Data for the Perpetual Inventory Method

The perpetual inventory method, used extensively in this study (Table 1), was described in Section 2.1.2. The four data requirements necessary to apply this method are initial values of capital, investment series, depreciation assumptions and price indices. Section 3.1 described the construction of four asset-specific price indices used in this study. The sources of the data for the remaining statistical requirements and the adjustments necessary before using them are now described.

3.3.1 Initial Values of Capital

In cases where investment data are not available over the entire assumed length of asset life, the perpetual inventory method requires current replacement values of capital stocks at the beginning of the first year for which investment data are available. In our case, the opening values of buildings and mine development in the mining industries and of the opening values of buildings in the manufacturing, electricity and gas industries were needed.

3.3.1.1 Mining¹

Investment data for buildings and mine development are available from 1953/54. To approximate the current replacement value of buildings and mine development at July 1 1953, an average was calculated of the published book

1. The capital stock estimates for the Services to mining industry were estimated separately (see Section 3.4.2).

values for December 1952 and December 1953.¹ The estimate of current replacement value in 1971/72 prices was obtained by dividing this average by the value of the building price index in 1953/54. Finally, these values for buildings and mine development were mapped from the industrial classification reported in the Mining and Quarrying statistical bulletin into the commodity classification used in this study (Appendix Table 1.1). The details of this mapping are set out in Appendix 2.

3.3.1.2 Manufacturing, Electricity and Gas

The book values of land and buildings in the manufacturing, electricity and gas industries were available for the required date of valuation, which is 1 July 1936. Two adjustments to these published values were necessary. First, the estimated value of land was excluded, since there was evidence to suggest that it was not insignificant. Following Butlin [1962] it was assumed that buildings constituted 70 per cent of the value of land and buildings in the manufacturing sector. Second, the adjusted, 1936 book values (which were assumed equal to the current replacement values), were converted to 1971/72 prices by dividing by the value of the building price index in 1936/37.

3.3.2 The Investment Series

For each industry estimated using the PIM, details of the investment series used in estimation and, where alternative series were available, the

1. Commonwealth Bureau of Census and Statistics, Mining and Quarrying, Statistical Bulletin, Bulletin Nos. 1-2, Canberra. Note that data from this source include the value of land. Officers of the ABS and the BMR, however, have indicated that this component is likely to be insignificant.

reasons for preferring these series, are presented. Finally, the adjustments made to the preferred series in order that they conform to our requirements are described.

3.3.2.1 Government Infrastructure for Agriculture

Since investment by the government in irrigation, drainage and flood mitigation facilities for the agricultural industries is not covered by the BAE survey data described in Section 3.2.1, separate estimates of the value of these items were necessary.

For the years 1948/49 to 1970/71 total government investment in soil and water resources infrastructure was reported in the ANA. For the period 1931/32 to 1947/48 the required investment series was generated by making an assumption about the proportion of total government investment which related to this infrastructure.¹ The average share of total government investment allocated to this infrastructure was 5 per cent between 1948/49 and 1957/58, but this declined to 2 per cent between 1966/67 and 1970/71. The share assumed over the period 1931/32 to 1947/48 was 2 per cent during the depression and war years; in other years a value of 5 per cent was used. It was further assumed that in all years investment was composed solely of the asset category building and construction.

1. Total public sector investment estimates (excluding defence) for the years 1931/32 to 1937/38 are contained in Butlin [1962], pp.16-17. Official estimates are available between 1938/39 and 1947/48 and are reported in Butlin [1962], p.469.

Using the data described in the previous paragraph, an estimate was made of the total capital stock of these resources in 1971/72. This was assumed to be composed entirely of commodities supplied by the Building n.e.c. and construction industry. It was then allocated subjectively to using industries. The largest share was allocated to the Milk cattle industry, smaller shares to the Wheat-Sheep zone, High rainfall zone, Northern beef and Other farming industries, and none to the Pastoral zone or to the Poultry industry.

3.3.2.2 Mining

Data on investment undertaken by mining industries are available from a number of ABS publications.¹ The capital stock estimates presented here were derived from investment statistics shown in the Mining Establishments bulletin.² This source was chosen because it best fitted our investment

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1. These are: (a) Australian National Accounts, National Income and Expenditure, Catalogue No. 5204.0 (Ref. No. 7.1), (b) Mining Establishments, Details of Operations, Catalogue No. 8402.0 (Ref. No. 10.60), and (c) New Fixed Capital Expenditure by Private Enterprises in Selected Industries, Catalogue No. 5626.0 (Ref. No. 5.8).
 2. Australian Bureau of Statistics, Mining Establishments, Details of Operations, Catalogue No. 8402.0 (Ref. No. 10.60). This publication commenced in 1968/69 and replaced the Mining and Quarrying statistical bulletin. The Mining Establishments bulletin is one of a number of economic censuses which have been collected on an integrated basis since 1968/69. The integration of these censuses was designed to increase the comparability of data collected through the establishment of common definitions of data and systems of reporting units, as well as the adoption of the ASIC.

series criteria (described in Section 2.1.2).¹ Mining investment statistics in the bulletin are disaggregated by mining industry and by broad asset category.²

Although the investment series reported in the Mining Establishments bulletin was preferred to the series available from alternative publications it did not meet all our requirements. The following adjustments to this series were necessary prior to the estimation of capital stocks:

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1. In particular, the bulletin presents census (rather than survey) data on an establishment (rather than enterprise) basis. Investment reported for mining enterprises in the ANA exceeded that shown in the Mining Establishments bulletin by \$767m for the period 1965/66 to 1970/71. A substantial share of this discrepancy is due to the inclusion of infrastructural investment (such as dwellings, and rail and port facilities) in the ANA series, which are excluded from investment collected for mining establishments. To avoid the understatement of capital in these other industries where the ANA investment series was used (because of the lack of establishment-based data), it was necessary to estimate the value of capital involved using the PIM, and add this to the PIM estimates (which are described later in this section). The estimated value of infrastructural capital was allocated to Water, sewerage and drainage, Rail transport, Water transport, Air Transport, Communication, Ownership of dwellings, and Entertainment, using information contained in Australian Mining Industry Council, "High Cost of Mining Infrastructure", Press Statement, March 12th, 1971.
 2. The Mining and Quarrying statistical bulletin reported gross investment undertaken by four mining industries for the following asset categories: (1) land and buildings, (2) mine development and (3) vehicles, plant and machinery. From 1968/69, the Mining Establishments bulletin shows more detailed investment statistics. Specifically, for each ASIC class, shown are expenditure on: (a) new buildings, mine development, vehicles and plant and machinery, (b) land and secondhand assets, (c) disposals of assets, and (d) new assets less disposals for land and buildings, mine development, vehicles and plant and machinery.

(i) Conversion of the investment series to the ORANI industry classification. Prior to 1968/69, investment disaggregated by asset category was published in the Mining and Quarrying statistical bulletin for four industries - Metal mining, Fuel mining, Non-metal mining and Construction-materials quarrying. From 1968/69 these data have been reported for ASIC-based industries which map easily into ORANI industries (except for the Coal and Crude oil industries). Details of the conversion of the investment series into the required industry classification are given in Appendix 2.

(ii) Conversion of the investment series from calendar to financial years. Investment data were reported for calendar years for the period 1953 to 1968 but for financial years since 1968/69. Conversion from calendar years to financial years was made as follows:

$$(13) \quad I_t^F = \frac{1}{2} (I_t^C + I_{t-1}^C)$$

for $t = 1954$ to 1968, where I^F is investment expressed in financial years and I^C is investment reported in calendar years.

iii) Reconciliation of the investment series prior to and after 1968. Changes introduced in the basis of collection of data in 1968/69 (see footnote 2, p.50) require the conversion of the investment figures prior to 1968/69 to a basis compatible with that of the more recent data. The method adopted was to project the value of investment reported in the Mining and Quarrying statistical bulletin for 1967/68 (obtained via (i)) one year ahead using an assumed growth rate to

obtain a value for 1968/69.¹ The ratio of investment reported in 1968/69 in the Mining Establishments bulletin to the projected value was 1.29. Thus since the Mining Establishments bulletin was used as the standard in estimation, to ensure comparability between the two series, each component of the investment series for years prior to 1968/69 was multiplied by 1.29.

- (iv) Exclusion of disposals. For the gross investment series prior to 1968/69, an estimate of the proportion of disposals was deducted to derive the required net investment series.² The only separate information available on disposals is contained in the Mining Establishments bulletin for the years 1968/69 to 1974/75. This enabled the calculation of the average share of disposals to the total outlay on new assets, land and secondhand assets in each industry for the period 1968/69 to 1974/75.³ As within this period no trend was evident for these industries, these shares were used to estimate the value of disposals to be deducted from gross investment for years prior to 1968/69.

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1. The growth rate in the ANA total mining investment series over that year was used.
 2. Net investment is defined as total investment (gross investment), less the value of existing assets disposed of.
 3. Consistent with the approach taken in (i) above, the average share estimated from data on black coal was used to represent the Coal industry and the average share estimated from combined brown coal and crude oil statistics was used to represent the Crude oil industry.

- (v) Separation of expenditure on motor vehicles. Motor vehicles investment is available separately from plant and machinery investment only for the years 1968/69 to 1972/73. The average share of motor vehicles in net investment on motor vehicles and plant and machinery for each mining industry was used to derive the motor vehicle component in years where combined investment only was available. No discernible trend in these percentages was evident over the period.

3.3.2.3 Manufacturing, Electricity and Gas

In these sectors the investment series used were taken from ABS Manufacturing Establishments and Electricity and Gas Establishments bulletins.¹ These series, which are net of disposals, contain the greatest available disaggregation of investment purchases by asset category and investing industry.²

Prior to the estimation of capital stocks, the following adjustments to the investment series were made:

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1. Australian Bureau of Statistics, Manufacturing Establishments, Details of Operations, Catalogue No. 8203.0 (Ref. No. 12.29), and Australian Bureau of Statistics, Electricity and Gas Establishments, Details of Operations, Catalogue No. 8208.0 (Ref. No. 12.30). In 1968/69 these publications replaced the publication titled Manufacturing Industry. This latter publication, published between 1963/64 and 1967/68, reported investment undertaken by the manufacturing, gas and electricity industries. For the years 1961/62 and 1962/63 the relevant publication was titled Secondary Industries, Part 1 - Factory and Building Operations. Prior to 1961/62, the relevant bulletin was titled Australian Production Statistics, Part 1. Between 1936/37 and 1967/68, additions and replacements, depreciation allowed and depreciated book value were available by factory class for two asset categories - land and buildings, and plant, machinery and vehicles. Depreciated book value only, was available for years prior to 1936/37.
 2. In addition, census data by establishments are reported.

- (i) Conversion to the ORANI industry classification.¹ For 1968/69 and later years, investment is reported for ASIC industries, which can readily be assigned to the industry grouping being used. Prior to this, investment was published for 159 "factory classes" (Appendix Table 1.10). To link the two series, a classification of factory classes to ORANI industries was used (Appendix Table 1.11).²
- (ii) Separation of expenditure on motor vehicles. Expenditure on motor vehicles is available separately from expenditure on plant and machinery from 1968/69 onwards. The average share of motor vehicles in the total of these categories over the four year period 1968/69 to 1972/73 was used to split the combined series for each investing industry in earlier years.
- (iii) Exclusion of expenditure on land. In both the investment series used, expenditure on land is included with expenditure on buildings. To exclude land, the method used by the Monash Project was followed.³ Basically this involved the application of a net to gross capital stock conversion factor to the share of buildings in the depreciated stock of land and buildings.⁴

1. For manufacturing, electricity and gas industries the industry classification used in the I-O tables and in ORANI are identical.

2. Adjustments were made to the Meat products industry for years prior to 1968/69 to compensate for the exclusion of abattoirs from any factory class in those years.

3. Horgan [1973].

4. Data on these shares were available in Butlin [1962], p.334, and Edwards and Drane [1963], p.277.

(iv) Exclusion of disposals. Investment net of disposals is only available from 1968/69 onwards. For this later period the total value of disposals is also reported. The average share of disposals in total investment over the four year period 1968/69 to 1972/73 for each industry was assumed to be representative of the share in earlier years. These shares were deducted from the earlier investment data to give values of net investment. No details on the asset composition of total disposals were available, and the average share calculated above for each industry was used to exclude disposals of each asset category in each year.

(v) Interpolation for 1970/71. No census of manufacturing, electricity and gas establishments was conducted for the year 1970/71. To obtain an estimate of the 1970/71 values for manufacturing it was assumed that the total value of net investment in that year was equal to the average of the values for the neighbouring years 1969/70 and 1971/72. This total was then disaggregated into eleven industry groupings and two asset categories using shares obtained from the New Capital Expenditure survey for 1970/71.¹ Further disaggregation into ORANI industries was then carried out using the asset-specific average shares of those industries observed in the eleven industry groups in 1969/70 and 1971/72. Finally, using the procedures outlined previously, expenditure on land was deducted from expenditure on land and buildings, and expenditure on motor vehicles investment was separated from that of combined machinery and vehicles investment.

Australian Bureau of Statistics, New Fixed Capital Expenditure by Private Enterprises in Selected Industries, Catalogue No. 5626.0 (Ref. No. 5.8).

Investment undertaken by the Electricity and Gas industries in 1970/71 was estimated as the average of investment, by asset type, reported in the Electricity and Gas Establishments bulletin in 1969/70 and 1971/72.¹

3.3.2.4 Water, Sewerage and Drainage

Due to the long length of life assumed for assets in this industry an investment series commencing in 1931/32 was required. For the period 1931/32 to 1938/39, Butlin's estimate of gross public capital formation in this sector was used.² These estimates exclude local authority expenditure which was estimated using the average proportion of local authority investment to total investment for years prior to 1900. For the period 1939/40 to 1947/48 no statistics are available on the level of investment in this sector. Total government investment on civil works for the years 1938/39 to 1949/50 were published by the Commonwealth of Australia in the National Income and Expenditure bulletins presented to Parliament on the occasion of the budget.³ The share of investment in Water, sewerage and drainage of total government investment on civil works in 1938/39 estimated by Butlin was 9.8 per cent. This is similar to the average share (10.2 per cent) of government investment expenditure on Water, sewerage and drainage in total government investment from

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1. The New Capital Expenditure survey does not provide sufficient detail of electricity and gas activities to allow the intermediate level of disaggregation which was undertaken for manufacturing.
 2. Butlin [1962], pp.25 and 372.
 3. Commonwealth of Australia, National Income and Expenditure, Presented for the Information of Honorable Members on the Occasion of the Budget, 1946/47, 1947/48, 1948/49 and 1949/50, Commonwealth Government Printer, Canberra.

1948/49 to 1953/54. Estimates of investment for 1939/40 to 1947/48 were thus obtained by assuming that this share was maintained at 10 per cent between 1939/40 and 1947/48. For the years 1948/49 to 1970/71 total government investment in this sector is published in the ANA.¹

Prior to the estimation of capital stocks, total investment was disaggregated by asset type. The Melbourne Metropolitan Board of Works (MMBW) provided estimates of their total investment in a recent year disaggregated into ORANI commodities. In the absence of other information, these proportions were used to disaggregate total investment in all years.²

3.3.2.5 Building and Construction

The estimated level of investment by this sector in the asset category building and construction was provided on a confidential basis by the ABS for the years 1941/42 to 1947/48. This was split into the Building and the Construction industries using shares from ABS survey data. Total investment undertaken by this sector is available from 1948/49 in the ANA.³ This was

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1. Note that private investment in this sector is assumed to be insignificant except for infrastructure in mining industries (footnote 1, p.51).
 2. The share of water supply investment by the MMBW to total public water supply investment in 1971/72 was 13 per cent. For sewerage investment the share was 31 per cent.
 3. While we would prefer an establishment based series (p.22) we have no choice but to use the enterprise based ANA series since this is the only source available. The industry coverage of this series may be inconsistent with the series used for the mining, manufacturing, electricity and gas industries.

disaggregated into two industries (Building and Construction) and two asset categories (building and construction, and other) using survey data provided by the ABS.¹

Several adjustments to the series were made prior to the estimation of capital stocks:

- (i) Since the Construction sector was excluded from the ABS survey data prior to 1955/56, the share of Construction investment in total investment had to be estimated for earlier years. This was done by assuming that the ratio of Building investment to Construction investment in the earlier years was the same as the average ratio for the years 1956/57 to 1960/61.
- (ii) Total investment in the Construction sector estimated in (i) above was disaggregated by asset type for years prior to 1956/57. The average share of building and construction investment in total investment by the Construction industry between 1956/57 and 1960/61 was used to make this split.

1. Collected for New Fixed Capital Expenditure by Private Enterprises in Selected Industries, Catalogue No. 5626.0 (Ref. No. 5.8), Canberra.

(iii) For consistency with the ORANI industry classification, investment reported for the Building industry was split into two components, Residential building and Building n.e.c. and construction. It was assumed that each industry was equally capital intensive in each asset category and investment by asset type was allocated to each sector according to the share of each type of building in the total value of new buildings completed in each year.¹

(iv) Investment in motor vehicles was separated from combined vehicle and machinery investment. In Residential building and Building n.e.c. it was assumed that 10 per cent of vehicles and machinery investment was vehicle investment and in Construction the share assumed was 5 per cent.²

3.3.2.6 Trade and Repairs

The treatment of these industries was similar to the treatment of the building and construction industries. The estimated value of investment in buildings by the sector was provided by the ABS for the years 1931/32 to 1947/48. This was disaggregated into separate series for the Wholesale and Retail trade industries (including their associated repair activities) using average shares from ABS survey data between 1946/47 and 1950/51. The total ANA

1. The value of new buildings completed, by type of building is available from 1945/46 in ABS, Building Statistics, Catalogue No. 8705.0 (Ref. No. 3.6). This was originally titled Building and Construction.

2. Based on information provided by E.A. Watts Pty. Ltd.

figures for the period 1948/49 to 1970/71 were disaggregated into two industries (Wholesale and Retail) and two asset categories (building and construction, and other) using proportions obtained from ABS survey data. Investment in motor vehicles was separated out for both the Wholesale and the Retail trade (including repairs) by assuming that its share in combined investment in vehicles and machinery remained constant from year to year. These shares were obtained from the ABS wholesale and retail censuses conducted in 1968/69.¹

Finally, the estimated value of capital in the Motor vehicle repairs industry and the Other repairs industry was separated from the Wholesale and Retail trade industry estimates. It was assumed that the capital stock employed in each trade and repairs industry was proportional to the value of total investment undertaken by each industry in 1968/69.

3.3.2.7 Transport

Estimates of investment were required for the Road, Water, and Air transport industries from 1946/47 and for the Rail transport industry from 1921/22. Investment data collected by the ABS on a survey basis for the New Capital Expenditure bulletin formed the basis of investment series for the private sector components of these industries. The survey data were available from 1946/47 for three industry groups (road, shipping, and air²) and two

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1. Commonwealth Bureau of Census and Statistics, Economic Censuses : 1968/69, Wholesale Establishments, Details of Operations, 1968/69, Catalogue No. 8631.0 (Ref. No. 11.61), and Retail Establishments and Selected Service Establishments, Part 1 - Details of Operations by Industry Class, 1968/69, Catalogue No. 8614.0 (Ref. No. 11.19). This was the only year for which such estimates were available.
 2. The actual industry classification combined rail and air, but it was assumed that private rail investment was negligible. An estimate of investment in the Rail transport industry by the mining sector has been made separately. See footnote 1, p.51.

asset categories. The series for shipping (private sector only) and air (private sector and public enterprise¹) were used to estimate capital stocks in these sectors. It is likely that the ABS survey data collected for the Road transport industry were understated.² A check on total private investment in the sector is available from the ANA.³ The extent of the understatement was taken to be the difference between the total level of ANA and survey investment (excluding public enterprise air transport).

The government component of transport investment was also obtained from the ANA⁴ which gives general government and public enterprise investment disaggregated by industry (Road, Rail, Water, and Air). For the years to 1938/39, estimates by Butlin of investment by public authorities in the Rail industry were used.⁵ Between 1939/40 and 1947/48, total government investment on civil works is available in the National Income and Expenditure bulletins.⁶ The average share of public rail investment in total public sector investment between 1948/49 and 1953/54 (10 per cent) was used for the 1939/40 to 1947/48 period to estimate total rail transport investment.

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1. Public enterprises aim to recover their expenses through sales of goods and services. These are excluded from the general government sector.
 2. Only enterprises subject to payroll tax are eligible for inclusion in the survey.
 3. It was assumed that private sector investment in the Communication industry (combined with private transport investment) was insignificant.
 4. Except for public enterprise air investment which is included with private sector survey investment.
 5. Butlin [1962].
 6. Commonwealth of Australia, National Income and Expenditure, Presented for the Information of Honorable Members on the Occasion of the Budget, 1946/47, 1947/48, 1948/49 and 1949/50, Commonwealth Government Printer, Canberra.

The two asset categories of the private transport investment series were building and construction, and all other. The second of these, which was assumed to consist of vehicles and machinery, was disaggregated further for each industry (Table 6) using data from industry sources. Total public investment in transport industries was disaggregated into major asset categories in each year using the proportions shown in Table 7. However, the proportions shown for the Water and Air transport industries only relate to public enterprises. The Department of Transport provided annual investment by general government in the Air industry, disaggregated by asset category. In the absence of other data, this disaggregation was also used for general government investment in the Water transport industry except that the proportion for the asset category "aircraft" in the Air transport industry was assumed to apply to "ships" in the Water transport industry.

TABLE 6 : DISAGGREGATION OF PRIVATE VEHICLE AND MACHINERY INVESTMENT INTO MAJOR ASSET CATEGORIES : TRANSPORT

Asset category	Industry		
	Road	Water	Air
Motor vehicles	0.950	0.010	0.080
Ships	-	0.870	-
Aircraft	-	-	0.650
Office furniture and equipment	0.005	0.010	0.060
Other plant and machinery	0.045	0.110	0.210
TOTAL	1.000	1.000	1.000

Source: Annual reports of companies in the transport sector.

TABLE 7 : DISAGGREGATION OF PUBLIC INVESTMENT INTO
MAJOR ASSET CATEGORIES : TRANSPORT

Asset category	Industry			
	Road	Rail	Water ^a	Air ^a
Buildings and structures	0.150	0.435	0.070	0.155
Motor vehicles	0.740	0.010	0.005	0.068
Tram cars	0.070	-	-	-
Plant and equipment	0.035	0.068	0.100	0.177
Rolling stock	-	0.465	-	-
Electrification of new lines	-	0.020	-	-
Aircraft	-	-	-	0.549
Furniture, fittings and office equipment	0.005	0.002	0.010	0.051
Ships	-	-	0.815	-
TOTAL	1.000	1.000	1.000	1.000

a Public enterprises only. Proportions for general government (e.g., Department of Transport) were estimated separately. See Section 3.3.2.7.

Source: Australian Bureau of Statistics, Transport and Communication, Catalogue No. 9101.0 (Ref. No. 14.11), and annual reports of the Victorian and New South Wales government railway authorities, Australian National Line, TAA and Qantas.

3.3.2.8 Communication

Investment data disaggregated into detailed asset categories are reported in the Annual Reports of the Postmaster-General's Department for the years required, 1931/32 to 1970/71. From 1948/49 total government investment in the Communication industry is available in the ANA. To ensure consistency with the other investment series which are based on ANA data (for example, the construction, trade, and finance sectors) the PMG investment series in each year was multiplied by the value of the ratio of the ANA series to the PMG series in that year.¹ Finally, a mapping was made from the asset categories into the ORANI commodities using information from the Australian Telecommunications Commission.

1. In each year between 1948/49 and 1958/59 this ratio was less than 1.0, and the average value was 0.7686. The value of the ratio in 1948/49 (0.7782) was used for each year prior to 1948/49.

3.3.2.9 Finance

Aggregate investment data for the finance industries were assembled separately for the private and public sectors. For 1948/49 and later years, total private sector investment is reported in the ANA. This was disaggregated into two asset categories (building and construction, and other) using shares estimated from ABS survey data. Thirty per cent of investment in the other asset category was assumed to be vehicle investment in each year. Due to the expected life assumed for buildings, investment data for this asset category were needed from 1921/22. Estimates of investment by the private sector in buildings were provided on a confidential basis by the ABS for the years 1921/22 to 1947/48.

Public sector investment for the finance industries was not reported separately in the ANA until 1959/60. For the period 1948/49 to 1958/59, the required series for public sector investment was generated by assuming that the average share of total public sector investment to total private investment over the period 1959/60 to 1968/69 (0.108), was applicable also to the earlier period. The entire series (i.e. 1948/49 to 1970/71) was disaggregated into buildings (40 per cent), plant and equipment (55 per cent), and motor vehicles (5 per cent). Investment in buildings by the public sector of the finance industries for the period 1921/22 to 1947/48 was estimated by assuming that the ratio of public to private investment on buildings for the sector, over the period 1921/22 to 1947/48, was equal to the average ratio of total public sector finance investment to total private sector finance investment for the years 1959/60 to 1968/69 (0.108).

Finally, investment for the private and public sectors was disaggregated into the five finance industries of the industry classification using, in the absence of other data, taxation statistics.¹

3.3.2.10 Ownership of Dwellings

Since the expected life assumed for dwellings is 60 years, series of private and public investment on dwellings from 1911/12 were required. These were compiled (Appendix Table 1.12) from the following sources:

- (i) For the period 1911/12 to 1937/38 estimates by Butlin were used for both private and public sectors.²

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1. Parliament of the Commonwealth of Australia, Taxation Statistics, Supplement to the Report to the Parliament of the Commission of Taxation, Parliamentary Paper, Australian Government Publishing Service, Canberra, 1969/70 to 1972/73. The shares used for the private sector were 9.7 per cent for Banking; 49.3 per cent for Finance and life insurance; 2.2 per cent for Other insurance; 30.5 per cent for Investment, real estate, etc.; and 8.3 per cent for Other business services. It was assumed that public sector investment occurred in the same proportions as did private investment, in three finance industries. These were Banking, 47.7 per cent; Other insurance, 10.7 per cent; and Other business services, 41.6 per cent.
 2. Butlin [1962], pp.205 and 391.

- (ii) For the period 1938/39 to 1947/48 private sector estimates were obtained from Butlin.¹ Since no separate data on public investment in dwellings were available for this period, an assumption was made concerning the share of total public investment which was allocated to dwellings. For the period 1933/34 to 1938/39 the average share was 0.9 per cent (Butlin [1962]) and for the years 1948/49 to 1953/54 it was 11.3 per cent (ANA). The following shares were assumed: 0.8 per cent from 1939/40 to 1944/45; and 6, 7 and 10 per cent in 1945/46, 1946/47 and 1947/48, respectively.
- (iii) Since 1948/49 gross fixed capital expenditure on dwellings by each sector has been reported in the ANA. This source was used for the period 1948/49 to 1970/71.

3.3.2.11 Public Administration

An investment series showing government investment in the areas of administration (excluding defence), judiciary and law and order for the years 1921/22 to 1970/71 was compiled from the following sources:

1. Ibid., p.468. These estimates were obtained directly from Commonwealth Bureau of Census and Statistics (CBCS) data.

- (i) For the period 1921/22 to 1947/48 estimates of total public sector investment (excluding defence) are shown in Butlin.¹ For the latter part of this period, i.e., the years 1938/39 to 1947/48, Butlin reports official estimates. To separate out the public administration component, it was assumed that the share in each year was the same as the average share of public administration to total government investment for the period 1948/49 to 1957/58 (0.0414).²
- (ii) For the period 1948/49 to 1970/71 public administration investment as shown in the ANA was used. Since 1962/63 investment has been reported on a basis consistent with our industry classification, while for earlier years investment was derived by adding the expenditure shown under the headings of law and order, legislature, general administration, foreign affairs and other.

In general, governments do not keep central records of investment expenditure by asset category. Of the total investment reported, it was assumed that building and construction comprised 70 per cent, machinery and equipment 25 per cent and motor vehicles 5 per cent of total expenditure. These proportions were based on the asset composition of investment in similar industries.

1. Ibid., pp.17 and 469.

2. The average share remained relatively unchanged over the period 1948/49 to 1974/75 (0.0428).

3.3.2.12 Education

Most of the investment data available for Education relate to the public sector. The public sector series was compiled from three sources:

- (i) For 1911/12 to 1937/38 estimates of gross public capital formation on education were obtained from Butlin.¹
- (ii) For 1938/39 to 1947/48 CBCS estimates for expenditure on schools and hospitals reported in Butlin were used.² To separate the schools component, the average share of schools investment in schools and hospitals investment between 1948/49 and 1953/54 was used.
- (iii) For 1948/49 to 1970/71 ANA data on gross fixed capital expenditure by all government authorities were used.

Total public investment for each year was then disaggregated into three asset categories - buildings (70 per cent), plant and equipment (28 per cent), and motor vehicles (2 per cent). The proportion for buildings was based first, on the share of the value of work done on new public education buildings

1. Ibid., p.391.

2. Ibid., p.469.

to total government investment between 1969/70 and 1974/75 and second, on the share of the value of new public education buildings completed in total government investment for years since 1955/56. The plant and machinery proportion was estimated as a residual after allowing for a small level of motor vehicles investment.

The private sector investment series was estimated as follows:

- (i) For 1911/12 to 1963/64 it was assumed that total private investment was 16 per cent of total government investment in each year. This was the average share of private education investment to public sector investment over the period 1964/65 to 1974/75.¹
- (ii) For 1964/65 to 1970/71 investment by the private sector is available from ABS data.²

To disaggregate total private investment in each year into asset categories, the following shares were assumed - buildings (80 per cent), plant and equipment (19 per cent), and motor vehicles (1 per cent). The share for buildings was based on the value of private education buildings completed to total private education investment between 1969/70 and 1975/76. The other asset categories were estimated in the same way as for the public sector.

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- 1. The use of the same proportion in each year is supported by considering the share of total pupils who attend private and public schools. The shares have not varied greatly over the period.
 - 2. Australian Bureau of Statistics, Expenditure on Education, Catalogue No. 5510.0 (Ref. No. 5.44).

3.3.2.13 Welfare Services

Very little information is available on investment undertaken by the Welfare services industry. The approach taken to estimate capital stocks in this industry was first to estimate the value of religious buildings (using the PIM), and second to add an estimate for the rest of the industry based on the likely share of the value of religious buildings in the total value of capital in the industry.

Investment in religious buildings since 1921/22 was compiled as follows:

- (i) For 1955/56 to 1970/71 the value of new religious buildings completed, reported in CBCS, Building and Construction was used.

- (ii) During the period 1945/46 to 1954/55 the value of new religious buildings completed was combined with the value of offices, schools, hospitals, entertainment and recreation and other buildings completed. The average share of religious buildings in the total value of these buildings completed between 1955/56 and 1960/61 (4.55 per cent) was used to separate the value of investment in religious buildings from investment in these other categories.

(iii) For 1938/39 to 1944/45, CBCS estimates of private investment in all new buildings (excluding dwellings) reported in Butlin¹ were used. The average share of religious buildings in the total value of buildings completed (excluding dwellings) between 1955/56 and 1960/61 (1.1 per cent) was used to obtain separate estimates of investment in religious buildings.²

(iv) For 1921/22 to 1937/38, the average share of religious buildings (1.1 per cent) in the total value of investment by the private sector in buildings (excluding dwellings) estimated by Butlin was used to estimate investment in religious buildings.

To derive total capital stocks for the religious services sector, it was assumed that buildings accounted for 90 per cent of all assets; plant and equipment, 9 per cent; and motor vehicles, 1 per cent.

To estimate the share of religious capital stocks in the industry the only available data were the share of the output of private non-profit welfare and charity organisations in total industry output (20 per cent) reported in Appendix B of the I-O tables. It was assumed that religious establishments accounted for 75 per cent of the output reported for private non-profit welfare

1. Butlin [1962], p.465.

2. The average share remained constant at 1.1 per cent for the years 1955/56 to 1966/67.

and charity organisations. To complete our estimates for this industry, it was further assumed that the remainder of the output was only a quarter as capital intensive as the output of religious establishments.

3.3.2.14 Entertainment, Restaurants and Hotels, and Personal Services

The investment series for the private sector in these categories was compiled from two sources:

(i) For the years 1921/22 to 1947/48 investment in buildings was provided on a confidential basis by the ABS.

(ii) Total investment in the sector is available in the ANA for the years 1948/49 to 1970/71.

In addition investment in buildings and investment in other assets, which are collected for the New Capital Expenditure survey, were provided by the ABS for these industries. Investment reported in the ANA for each year was disaggregated into two asset categories (buildings and all other) using the shares in the ABS survey data. Ninety per cent of the value of investment reported for "all other" assets was assumed to consist of plant and machinery investment, and the remainder of motor vehicles expenditure.¹

1. These proportions were based on the relative levels of net plant and machinery and motor vehicles investment reported in Commonwealth Bureau of Census and Statistics, Retail Establishments and Selected Service Establishments, Part 1 - Details of Operations by Industry Class, 1968/69, Catalogue No. 8614.0 (Ref. No. 11.19).

Private capital stock estimates for the sector were allocated to industries using the share of investment estimated for each industry in total investment for the three industries in 1968/69. The investment levels were estimated using investment reported in the 1968/69 Retail and Selected Service Establishments bulletin and output shown in Appendix B of the I-O tables.

The investment series for public sector investment in the Entertainment industry was compiled in the same way as the Public administration series (Section 3.3.2.11). Between 1921/22 and 1947/48 the estimated share of government investment in the industry¹ was applied to the total level of government investment.² For 1948/49 and later years, government investment in the industry was reported in the ANA. In the absence of any data, it was assumed that buildings constituted 80 per cent of total investment in each year; plant and machinery, 15 per cent; and motor vehicles, 5 per cent.

3.3.3 The Expected Service Life Assumptions

Very little data are available on the expected service life of assets, still less on the variance of asset lives between different industries of end use. The expected lives (Table 8) were based (wherever possible) on communication with industry and related organisations. In other cases, the

1. The average share of investment in this industry to total government investment for the period 1948/49 to 1957/58 (0.0053) was used for all years except the depression and war years when a lower share was assumed.

2. Butlin [1962], pp.17 and 469.

service lives assumed were based on the lives assumed in related industries, or on the asset lives generally used in the literature (Table 9). These are usually based on the lives implied by the depreciation rates allowable for income tax purposes.

3.4 Special Valuations

No published data on capital stocks were available for the Forestry, Services to mining, and Health industries. Industry organisations were, however, able to provide special valuations of capital stock items. These sources are described below.

3.4.1 Forestry

The method used to estimate the value of capital stocks in the logging sector of the Forestry and logging industry was outlined in Section 3.2.2. The value of the capital stock in the Forestry sector was estimated using information supplied by the Victorian, Tasmanian and Queensland forestry departments. Each of these departments supplied an estimate of the value of capital employed in 1971/72, disaggregated by asset type. The value of assets employed by the other State forestry authorities and in private forestry was imputed by assuming that capital stocks were proportional to the area of forest cultivated and that the share of each asset category in the total value of capital employed was the same as in the Victorian, Tasmanian and Queensland forestry departments.

TABLE 8 : EXPECTED SERVICE LIFE ASSUMPTIONS BY INDUSTRY AND ASSET CATEGORY^a

Industry	Asset category									
	Dwellings	Other building and construction	Mine development	Marine and airways facilities	Motor vehicles	Tram cars and rolling stock	Ships and aircraft	Other plant and machinery		
Government Infrastructure to Agriculture	-	40	-	-	-	-	-	-	-	-
Mining Sector	-	30	10	-	20	-	-	-	-	12
Manufacturing, Electricity and Gas	-	40	-	-	15	-	-	-	-	12
Water, Sewerage and Drainage	-	40	-	-	15	-	-	-	-	12
Building and Construction	-	30	-	-	15	-	-	-	-	10
Wholesale and Retail Trade	-	40	-	-	15	-	-	-	-	10
Road Transport	-	25	-	-	20	25	-	-	-	10
Rail Transport	-	40	-	-	15	20	-	-	-	12
Water Transport	-	25	-	-	15	-	-	20	-	10
- Private	-	40	-	20	15	-	-	10	-	10
- General Government	-	25	-	-	15	-	-	20	-	10
- Public Enterprise	-	25	-	-	15	-	-	15	-	10
Air Transport	-	25	-	-	15	-	-	15	-	10
- Private	-	40	-	20	15	-	-	10	-	10
- General Government	-	25	-	-	15	-	-	15	-	10
- Public Enterprise	-	25	-	-	15	-	-	15	-	10
Communication	-	30	-	-	15	-	-	-	-	15
Finance	-	50	-	-	15	-	-	-	-	10
Ownership of Dwellings	60	-	-	-	-	-	-	-	-	-
Public Administration	-	50	-	-	15	-	-	-	-	10
Education	-	60	-	-	15	-	-	-	-	10
Religion	-	50	-	-	-	-	-	-	-	-
Entertainment, Restaurants and Personal Services	-	50	-	-	15	-	-	-	-	10

a All figures in the table refer to years. A dash signifies "not applicable".

Sources: Australian Mining Industry Council; Australian Telecommunications Commission; Bureau of Mineral Resources; Bureau of Transport Economics; Department of Transport; Commonwealth Railways; Gas and Fuel Corporation of Victoria; Melbourne Metropolitan Board of Works; Trans-Australian Airlines; Mr. B. Van Maanen.

TABLE 9 : EXPECTED LIFE ASSUMPTIONS MADE
IN VARIOUS AUSTRALIAN STUDIES

Study	Expected life assumption		
	Asset category	Sector	Expected life ^a
Clark [1976]	Buildings	All sectors	50 ^b
	Plant and Machinery	All sectors	15 ^b
Evans [1972]	Buildings	Agriculture	40
		Mining, Gas Manufacturing, Building, Electricity, Trade, Finance, Transportation, Personal and Government Services	33
	Plant and Machinery	Dwellings	50
		Agriculture, Mining, Trade, Finance, Transportation	67
		Manufacturing	10
		Building	9-20
		Gas, Personal and Government Services	8
Electricity	13		
Garland and Goldsmith [1959]	Dwellings	All sectors	70
	Other Structures	All sectors	50
	Commercial Vehicles	All sectors	10
	Producer Durables	All sectors	20
	Public Works	All sectors	40
	Haig [1971]	Plant and equipment	All sectors	15
Buildings		All sectors	45-50

a In years.

b The declining balance rate of depreciation was used - three per cent for buildings and ten per cent for plant and machinery.

3.4.2. Services to Mining

This industry consists of organisations which provide services (for example, exploration, geological surveying, engineering and ore testing) to mining industries. In contrast with the mining industries (industry nos.12 to 16, Appendix Table 1.1) for which census data are collected annually on industry characteristics such as the number of establishments, turnover, value added, employment and investment, the availability of published information on the Services to mining industry is scanty. Our estimates of capital stocks in this industry were estimated by the Bureau of Mineral Resources.

3.4.3. Health

The value of capital employed in the Health industry was estimated by the Department of Health, Canberra. For each area of health care (aged people's homes, general hospitals, teaching hospitals, mental hospitals, nursing homes, general practice, physicians, pathologists, radiologists, veterinary services, dentists, physiotherapists, chiropractors, opticians, ambulance services, cars for domiciliary services, airborne medical services, private health organisations and State and Local government facilities) an estimate was made of the physical volume of capital (for example, the number of beds, number of practices or number of vehicles) and valued at the estimated replacement value in 1971/72. As the monetary value applied did not allow for the age of assets it was assumed that all assets had served half their useful life. The estimated value of equipment was allocated to the ORANI commodity classification on the basis of information provided by the Hospitals and Charities Commission of Victoria.

3.5 Services to Agriculture

It was not possible to estimate the value of capital for Services to agriculture by any of the previous methods. In the absence of direct information about capital or investment, an ad hoc estimate of the value of capital for the industry was made using data on gross operating surplus and the rate of return. The latter can be defined as:

$$(14) \quad \frac{GOS_j}{K_j} = R_j ,$$

where for industry j ,

GOS_j is the gross operating surplus which relates
to fixed capital,

K_j is the total value of capital stocks,

and

R_j is the rate of return to fixed capital.

The estimated value of GOS_j for 1971/72¹ is \$28.7m. The corresponding value for R_j is 11.2 per cent.² The implied value of the capital stock of the Services to agriculture industry is thus \$256.2m.

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1. The estimated value of payments to imputed labour and payments to working capital were deducted from the gross operating surplus obtained from Woodward [1976].
 2. IMPACT data base.

4. RESULTS

The results of the capital stock estimation project are presented in three tables. Appendix Table 4.1 contains the raw estimates. It shows the estimated values, at 1971/72 purchasers' prices, of the capital stocks of 111 Australian industries as at 1 July 1971. These estimates are disaggregated into three broad asset categories; building and construction, plant and machinery, and motor vehicles.¹ Appendix Table 4.2 differs from Appendix Table 4.1 in two respects. Firstly, the asset categories from the latter table have been further disaggregated into the ORANI commodity classification and secondly, valuation is at 1971/72 basic values rather than at purchasers' prices. The typical ij^{th} element of the matrix presented in Appendix Table 4.2 therefore shows the estimated value, in 1971/72 basic values, of the capital goods of category i embodied in the capital stock of industry j as at 1 July 1971. Some features of this matrix are discussed in Section 4.1. Appendix Table 4.3 contains a version of the matrix presented in Appendix Table 4.2 but calibrated to ensure consistency with estimated investment behaviour in 1971/72. Details of the calibration and a comparison between the calibrated and uncalibrated matrices are given in Sections 4.2 and 4.3. In an appendix to this section (Appendix 7), some comparisons are made between our own estimates and some other Australian and overseas capital stock data.

1. Note that for a few industries, a finer degree of disaggregation is available at this first stage. See Section 2.2.

4.1 The Uncalibrated Capital Stock Matrix

The capital stock matrix presented in Appendix Table 4.2 gives a picture of the capital structure of Australian industries as at 1 July 1971. On the basis of this some general comments are made in this section concerning the aggregate value of capital, the intensity with which capital is used across sectors of the economy and the commodity composition of capital both at the aggregate level and within individual capital-using industries.

4.1.1 The Capital Intensity of Australian Industry

The estimate given in Appendix Table 4.2 of the replacement value of the Australian capital stock as at 1 July 1971 is \$74 811m. This implies an average capital-output ratio for the economy as a whole of 1.13.¹ Capital intensity, however, varies considerably across sectors of the economy. The sectors which require the largest inputs of capital per unit of output are Ownership of dwellings (7.8); Electricity, Gas and Water (3.6); Health, Education and Welfare services (2.1); Transport and Communication (1.8); and Agriculture (1.5). Capital-output ratios for Mining (1.07), Forestry and Fishing (0.94), Entertainment, Recreation and Personal services (0.93), and Finance (0.91), are all close to unity. The sectors which are least capital intensive are Construction (0.16), Manufacturing (0.34), Public administration (0.55) and Wholesale and Retail trade and Repairs (0.60).

There is also substantial variability in capital intensity within sectors. For example, in the manufacturing sector the Meat products industry (0.09) is the least capital intensive and the Cement industry (1.05) is the most capital intensive.

1. The output figures used are from Brooks and Lawson [1979]. For several industries there was evidence that output in 1971/72 was atypical and appropriate adjustments were made.

4.1.2 The Commodity-Composition of the Capital Stock

The shares of different commodities in the aggregate capital stock are as follows:

Building n.e.c. and construction, 38 per cent, residential building, 29 per cent, other machinery and equipment, 5 per cent, and motor vehicles, 4 per cent. Thus four commodities comprise 75 per cent of the capital stock, while no other commodity accounts for more than 4 per cent of the total capital.

There are significant differences in the asset compositions of the capital stocks of different sectors of the economy. Capital used by agricultural industries (industry numbers 1 to 9 in Appendix Table 4.2), is characterised by relatively large shares of building n.e.c. and construction and motor vehicles and by relatively low shares of plant and machinery.¹ The stock of building n.e.c. and construction is composed of fencing, stock yards, water supply facilities, and storage sheds and silos. In the Pastoral zone and Northern beef industries, the main components are fencing and water supply facilities, while in the Wheat-Sheep zone, storage sheds for hay, grain and implements dominate. Agricultural machinery and equipment is the largest single item of plant and machinery used in each industry; although Construction, earthmoving and materials handling machinery, and Other machinery and equipment are also important. The Milk cattle and pigs industry differs from the others in using a large amount of refrigeration equipment (supplied by the Household appliances n.e.c. industry).

1. The shares for the overall economy (Appendix Table 4.1) are building and construction, 74 per cent; plant and machinery, 21 per cent; and motor vehicles, five per cent. When the Ownership of dwellings industry is excluded the shares are building n.e.c. and construction, 61 per cent; plant and machinery, 32 per cent; and motor vehicles, seven per cent.

The main types of capital used in the Forestry industry are construction, earthmoving and materials handling machinery and building n.e.c. and construction. Ships and boats constitute about 75 per cent of the capital stock of the Fishing industry.

The mining sector (industry numbers 12 to 16) uses relatively more plant and machinery (48 per cent) and relatively less building n.e.c. and construction (45 per cent). The Crude oil industry is atypical in having a relatively higher share of buildings and structures (79 per cent) and a relatively low share of plant and machinery (14 per cent). This reflects the importance of drilling rigs and pipelines in the industry's capital structure. The Iron ore industry has a higher share of plant and machinery and a lower share of mine development, than each of the other mining industries.

In the manufacturing sector (industry numbers 18 to 83), 60 per cent of capital consists of plant and machinery, 36 per cent of building n.e.c. and construction, and four per cent of motor vehicles. However, these figures are by no means uniform throughout the sector. In some industries (Joinery and wood products; Paints, varnishes and lacquers; Cosmetic and toilet preparations; and Locomotives, rolling stock and repair), the share of plant and machinery is only about 30 per cent. However, in the Chemical fertilisers, Petroleum and coal products, Basic iron and steel, and Other basic metal products industries over 75 per cent of capital is plant and machinery. A few industries have more than three times the average proportion of motor vehicles in their capital stock (Milk products; Bread, cakes and biscuits; Sawmill products; and Ready-Mixed concrete).

The service sector (industry numbers 84 to 111) uses a relatively large share of buildings (80 per cent), and a relatively small share of plant and machinery (15 per cent). A few particular exceptions may be noted. In the Building n.e.c. and construction industry these shares are almost reversed. The Air and Water transport industries are similar. In the Road transport industry over 80 per cent of total capital consists of motor vehicles.

4.2 Calibration¹

Appendix Table 4.2 represents the author's best estimate of the value of the capital stock in Australia for 1971. It must be recognised, however, that much of the data on which this estimate is based are of untested reliability and that the methods employed to process the data entailed the use of numerous subjective judgements. For these reasons it was thought appropriate to attempt some validation test on the matrix and to produce a "calibrated" version which includes adjustments to the original matrix suggested by the validation exercise.

As previously explained, the main use of the capital stock data in the IMPACT project, is in the projection of investment matrices by the ORANI and SNAPSHOT models. The validation test therefore chosen for the capital matrix was to use it as the basis for the estimation of an investment matrix for the year 1971/72 and to compare this with actual data for that year on investment by investing industry and by commodity input (i.e., row- and column-total checks on the estimated investment matrix). Following this the RAS technique was used

1 For technically precise details of the calibration procedure in terms of standard SNAPSHOT notation, see Appendix 5.

to force the estimated investment matrix into agreement with the actual row and column totals. Finally, a "calibrated" version of the capital stock matrix (Appendix Table 4.3) was produced by working backwards from the RAS-adjusted investment matrix.

4.2.1 Estimation of an Investment Matrix for 1971/72 on the Basis of the Uncalibrated Capital Stock Matrix

Separate estimates of replacement investment and investment required to maintain growth of the capital stock were first made, for each investing industry, at the broad-asset-category level of input disaggregation. Replacement investment was estimated, for industries for which PIM data were available,¹ by applying to the capital stock data of Appendix Table 4.2, the same asset-specific depreciation assumptions as were made in compiling the table. For other industries a rule of thumb was used whereby the rate of depreciation was assumed to be $1.5d$, where d is the straight line depreciation rate for each type of capital. All the depreciation rates used are shown in Table 10.

New investment was assumed to take place at a level necessary to maintain a rate of growth of each industry's capital stock equal to the average annual rate of growth of the industry's output projected for the period 1962/63 to 1971/72 in the SNAPSHOT validation exercise.² These growth rates are included in Table 10.

1. See Section 2.1.

2. See Dixon, Harrower and Vincent [1978], pp. 56-58. Because the SNAPSHOT data base uses the I-O industry classification, adjustments had to be made to convert outputs for the agricultural and the Coal and crude oil industries to the ORANI industry classification used here. This was done by assuming (in the absence of any other information) that in both 1962/63 and 1971/72 the mapping between the two industry classifications was as shown in Table 11.

TABLE 10 : ASSET SPECIFIC DEPRECIATION RATES AND GROWTH RATE IN OUTPUT FOR EACH INDUSTRY USED IN THE CALIBRATION

Industry ^a	Depreciation rates					Growth rate in output
	Building and construction	Mine development	Motor vehicles	Plant and machinery	Margins and taxes	
1	.0500	0.0000	.1500	.1250	.0701	.0485
2	.0500	0.0000	.1500	.1250	.0840	.0450
3	.0500	0.0000	.1500	.1250	.0752	.0459
4	.0500	0.0000	.1500	.1250	.0683	.0374
5	.0500	0.0000	.1500	.1250	.0656	.0291
6	.0500	0.0000	.1500	.1250	.0766	.0769
7	.0500	0.0000	.1500	.1250	.0879	.0615
8	.0500	0.0000	.1500	.1250	.0819	.0614
9	.0500	0.0000	.1500	.1250	.1075	-.0173
10	.0500	0.0000	.1500	.1250	.1093	-.0230
11	.0500	0.0000	.1500	.0750	.0767	.0383
12	.0363	.1318	.0583	.0999	.0832	.1621
13	.0423	.1498	.0726	.1179	.0962	.1580
14	.0423	.1477	.0746	.1314	.1133	.1488
15	.0355	.1363	.0609	.1088	.0622	.1488
16	.0416	.1361	.0768	.1316	.1045	.0583
17	.0500	0.0000	.1000	.1250	.0975	.1087
18	.0411	0.0000	.0942	.1303	.0868	.0790
19	.0448	0.0000	.1078	.1400	.0974	.0499
20	.0422	0.0000	.1047	.1366	.0923	.0360
21	.0477	0.0000	.1254	.1503	.1074	.1017
22	.0549	0.0000	.1040	.1304	.0966	.0356
23	.0484	0.0000	.1136	.1469	.0972	.0220
24	.0482	0.0000	.1113	.1419	.0997	.0411
25	.0505	0.0000	.1094	.1478	.1061	.0478
26	.0393	0.0000	.0936	.1241	.0881	.1158
27	.0417	0.0000	.1063	.1279	.0881	.0842
28	.0524	0.0000	.1118	.1510	.1159	.1285
29	.0457	0.0000	.1310	.1542	.1094	.0401
30	.0567	0.0000	.1168	.1547	.1113	-.0100
31	.0318	0.0000	.0926	.1141	.0922	.0035
32	.0493	0.0000	.1180	.1384	.1021	.0128
33	.0545	0.0000	.1229	.1488	.1117	.0072
34	.0352	0.0000	.1077	.1320	.0933	.1383
35	.0335	0.0000	.1051	.1375	.0912	.0606
36	.0544	0.0000	.1018	.1315	.0945	.0296
37	.0559	0.0000	.1137	.1451	.1177	.0422

continued

Table 10 continued

Industry ^a	Depreciation rates					Growth rate in output
	Building and construction	Mine development	Motor vehicles	Plant and machinery	Margins and taxes	
38	.0696	0.0000	.1029	.1308	.0968	.0366
39	.0565	0.0000	.0856	.1097	.0950	.0188
40	.0477	0.0000	.1133	.1438	.0973	.0268
41	.0380	0.0000	.1088	.1577	.1169	.0639
42	.0436	0.0000	.0995	.1326	.0776	.0592
43	.0473	0.0000	.0981	.1251	.0804	.0721
44	.0386	0.0000	.0970	.1349	.1106	.0866
45	.0338	0.0000	.0999	.1357	.0936	.0589
46	.0320	0.0000	.1068	.1344	.0874	.0605
47	.0461	0.0000	.1036	.1340	.0951	.0904
48	.0485	0.0000	.1090	.1446	.1059	.0160
49	.0417	0.0000	.0987	.1187	.1006	.1057
50	.0363	0.0000	.1049	.1453	.1172	.1402
51	.0444	0.0000	.1175	.1474	.0868	.0684
52	.0344	0.0000	.1065	.1496	.0844	.1360
53	.0480	0.0000	.0945	.1324	.0999	.0853
54	.0343	0.0000	.1142	.1660	.0837	.1325
55	.0589	0.0000	.1021	.1176	.0837	.1097
56	.0375	0.0000	.1172	.1530	.1283	.0510
57	.0393	0.0000	.1052	.1386	.0956	.0964
58	.0405	0.0000	.0955	.1321	.1004	.0525
59	.0361	0.0000	.1070	.1453	.1207	.0837
60	.0368	0.0000	.0932	.1314	.1006	.1221
61	.0350	0.0000	.1073	.1375	.0996	.0987
62	.0393	0.0000	.1298	.1983	.1198	.0913
63	.0358	0.0000	.1231	.1481	.1208	.0861
64	.0319	0.0000	.0905	.1213	.0996	.0922
65	.0382	0.0000	.1026	.1507	.1050	.0551
66	.0342	0.0000	.0935	.1174	.0858	.0563
67	.0443	0.0000	.1130	.1382	.0881	.0661
68	.0356	0.0000	.0986	.1407	.0980	.1350
69	.0490	0.0000	.1064	.1389	.0875	.1215
70	.0801	0.0000	.1343	.1687	.1067	.0278
71	.0338	0.0000	.0910	.1178	.0681	.0659
72	.0363	0.0000	.1080	.1393	.0914	.1032
73	.0361	0.0000	.0989	.1232	.0901	.0968
74	.0379	0.0000	.1065	.1337	.0901	.0898
75	.0372	0.0000	.1242	.1570	.0954	.0717
76	.0452	0.0000	.1083	.1426	.0920	.0018
77	.0394	0.0000	.1193	.1538	.0910	.0495

continued

Table 10 continued

Industry ^a	Depreciation rates					Growth rate in output
	Building and construction	Mine development	Motor vehicles	Plant and machinery	Margins and taxes	
78	.0382	0.0000	.1023	.1326	.0878	.0653
79	.0768	0.0000	.1071	.1340	.1034	-.0477
80	.0439	0.0000	.1048	.1411	.1129	-.0511
81	.0347	0.0000	.0951	.1234	.0995	.2142
82	.0287	0.0000	.0746	.0941	.0804	.1228
83	.0422	0.0000	.1008	.1333	.0919	.0782
84	.0312	0.0000	.1068	.1302	.0738	.0888
85	.0336	0.0000	.1370	.1303	.0780	.1072
86	.0369	0.0000	.1106	.1397	.0627	.1306
87	.0517	0.0000	.1052	.1636	.1271	.0615
88	.0517	0.0000	.1052	.1636	.1271	.0407
89	.0342	0.0000	.1105	.1695	.0751	.1195
90	.0342	0.0000	.1105	.1695	.0751	.0541
91	.0342	0.0000	.1105	.1695	.0751	.0247
92	.0342	0.0000	.1105	.1695	.0751	.0249
93	.0641	0.0000	.0785	.1507	.0785	.0683
94	.0583	0.0000	.1127	.1171	.0774	.0257
95	.0352	0.0000	.1059	.1651	.1116	.0988
96	.0361	0.0000	.1010	.1027	.0760	.1075
97	.0312	0.0000	.1067	.0837	.0607	.0909
98	.0223	0.0000	.1004	.1557	.0391	.0982
99	.0223	0.0000	.1004	.1557	.0391	.1496
100	.0223	0.0000	.1004	.1557	.0391	.0396
101	.0223	0.0000	.1004	.1557	.0391	.1340
102	.0223	0.0000	.1004	.1557	.0391	.1044
103	.0241	0.0000	0.0000	0.0000	.0241	.0550
104	.0299	0.0000	.1055	.1676	.0484	.0268
105	0.0000	0.0000	0.0000	0.0000	0.0000	.0306
106	.0250	0.0000	.1000	.1500	.0460	.0788
107	.0219	0.0000	.1030	.1647	.0420	.0599
108	.0300	0.0000	.1000	.1500	.0617	.1089
109	.0262	0.0000	.1043	.1692	.0463	.1279
110	.0278	0.0000	.1091	.1684	.0563	.0502
111	.0279	0.0000	.1094	.1690	.0565	.0293

a For key to industry numbers see Appendix Table 1.1.

TABLE 11 : CLASSIFICATION OF INPUT-OUTPUT INDUSTRY OUTPUT
TO GRANT INDUSTRIES, SELECTED INDUSTRIES

I-0 Industry	O R A N I Industry										
	Pastoral zone	Wheat- Sheep zone	High rainfall zone	Northern beef	Milk cattle	Poultry	Other farming export	Other farming import	Coal	Crude oil	TOTAL
Sheep	0.2019	0.4429	0.3552	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.000
Cereal Grains	0.0370	0.9098	0.0532	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.000
Meat Cattle	0.0682	0.2111	0.2518	0.2400	0.2289	0.0	0.0	0.0	0.0	0.0	1.000
Milk Cattle	0.0	0.0803	0.0689	0.0	0.8508	0.0	0.0	0.0	0.0	0.0	1.000
Poultry	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.000
Other Farming	0.0073	0.0419	0.0514	0.0	0.0	0.0	0.4927	0.4067	0.0	0.0	1.000
Coal and Crude Petroleum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8500	0.1500	1.000

Source : For the agricultural industries Dixon, Parmenter, Powell and Vincent [1979].

For the Coal and crude petroleum industry, Appendix B of the 1968/69 I-0 tables.

The rows of the investment matrix (broad-asset-category by investing industry) compiled on the basis of the procedures described above, were assigned to the ORANI commodity classification using the proportions employed in compiling the original capital stock matrix (see Section 2.2).

4.2.2 Sources for Data on Aggregate Investment by Commodity Input and by Investing Industry

Data on investment by commodity input for 1971/72 (i.e. actual row totals for the calibration) were derived from an updated version of the ABS, 1968/69 I-O tables.¹ Our own estimates of investment by using industry (the column sums) were made. For industries for which the PIM had been used to calculate capital stocks, the estimate of investment in 1971/72 was made from the same sources as investment data for previous years. For other industries data from the ANA were used. The methodology of the SNAPSHOT model and its use for the calibration of a capital matrix make it necessary that the estimates of investment (both by investing industries and in terms of ORANI commodities) relate to investment activity levels that are typical of what could be expected in the snapshot year. Thus these investment levels should abstract from deviations from trend in so far as the latter are caused by climatic conditions and/or other specific short run factors.² This precluded any adjustments to the actual levels for industries where there was a lack of detailed investment data. Most of the service sector industries are in this category. Details of the judgemental adjustments made in other cases are contained in Appendix 3.

1. Caddy and Lawson [1977] and Brooks and Lawson [1979].
2. See Dixon, Harrower and Vincent [1978], pp.40-43.

4.2.3 The RAS of the Investment Matrix and Recovery of the Capital Stock Matrix

The final steps of the calibration exercise were to adjust the investment matrix which had been estimated from the uncalibrated capital stock matrix (see Section 4.2.1) to ensure its consistency with the independent estimates of row and column totals (see Section 4.2.2) and to derive from the adjusted investment matrix the implied ("calibrated") capital stock matrix. The first of these tasks was completed using the RAS method of bi-proportional adjustment.¹ Retrieval of the calibrated capital stock matrix from the adjusted investment matrix was achieved by dividing the investment estimates by the same growth and depreciation factors as were used in deriving the original investment matrix from the original capital stock matrix.²

4.3 The Calibrated Matrix

4.3.1 Comparisons of the Investment Estimates

The differences between the original and calibrated capital stock matrices derive from the differences between the projected and the independently estimated information on investment by using industries and by commodity input. In this section these differences are first discussed (Section 4.3.1). The main features of the calibrated matrix are then described (Section 4.3.2).

There are two classes of reasons which may account for differences in the two sets of investment data. The first class comprises errors in the original capital matrix. Many of the deficiencies have been outlined earlier, but in summary the major ones are:

1. The RAS technique is outlined in Bacharach [1970].
2. In terms of the notation of Appendix 5 we solve for $K_t = (\hat{h} + \hat{n})^{-1} J$.

- (a) uncertainty concerning asset lifetimes,
- (b) inconsistencies in the investment series used (for example, the problem of reconciling the investment series reported for factory classes for years to 1967/68 with the ASIC-based series available from 1968/69),
- (c) lack of data with which to disaggregate broad asset categories to the ORANI commodity classification,
- (d) the extreme paucity of data for some industries (such as Welfare services and Services to agriculture) which made some estimates little more than guesswork,

and

- (e) the difficulty in obtaining accurate price indices with which to derive constant price investment series.

The second class of reasons relates to the calibration process itself and in particular to the derivation of projections of new and replacement investment. Some of the possible sources of error are that the:

- (a) rate of growth in output may not represent the growth rate of capital stocks,
- (b) average rate of growth over the period 1962/63 to 1971/72 may not be the same as the rate at the end of the period,

(c) use of book values may result in errors in the depreciation rates used (for manufacturing, rates for buildings are likely to be over-estimated; for mining, underestimated),

(d) independent estimates of investment for some industries (for example, Forestry and logging) were estimated using arbitrary assumptions, and in many cases there were insufficient data to permit adjustments for atypical levels in 1971/72,

and

(e) the adjustments made to convert actual levels to "typical" levels may not be correct.

The two sets of estimates of investment are presented in Table 12.

Bearing in mind the shortcomings outlined above which would cause differences, possible reasons for the more significant discrepancies (at least \$25m or 20 per cent) between the two sets of investment are presented in Tables 13 and 14. In addition to these, there are some industries for which the differences are significant in percentage terms and for which the availability of reliable investment data over a number of years permits us to comment on the differences observed.

In the Alcoholic beverages n.e.c., Cement, and Construction etc., equipment industries the growth rate in output over the period 1962/63 to 1971/72 is strongly positive while the level of real investment is erratic but appears to be declining. Although these industries may not be using capital inputs less intensively it may reflect the tendency to lease assets rather than purchase them. For example, the rent and leasing expenses of the Alcoholic

TABLE 12 : INDEPENDENT ESTIMATES OF INVESTMENT CONTRASTED WITH INVESTMENT IMPLIED BY THE CAPITAL STOCK MATRIX FOR INVESTING INDUSTRIES, 1971/72 (\$m)

Industry number ^a	Investment by industry		Commodity number ^a	Investment by commodity input	
	Capital stock estimate	Independent estimate		Capital stock estimate	Independent estimate
1	43.3	39.9			
2	217.0	206.7			
3	109.9	96.5			
4	18.8	28.0			
5	122.6	132.9			
6	11.0	8.0			
7	63.7	46.8			
8	42.0	38.7			
9	22.1	28.6			
10	12.5	24.6			
11	9.8	13.8			
12	80.1	80.0	14	0.4	0.9
13	173.3	176.9	15	13.0	17.9
14	144.2	120.5	16	11.1	13.7
15	53.1	30.0	17	5.2	2.5
16	23.2	34.0	18	0.3	0.7
17	8.2	7.5			
18	28.2	38.6			
19	24.4	21.5			
20	11.3	9.4			
21	5.7	5.1			
22	9.0	6.7			
23	15.5	13.8			
24	5.1	3.2			
25	36.7	26.2			
26	13.0	11.3			
27	24.4	23.0			
28	16.7	6.0			
29	5.9	6.6			
30	2.8	1.1			
31	5.0	8.7			
32	6.0	7.3			
33	5.0	2.9			
34	4.3	2.4			
35	4.2	3.4			
36	1.6	2.6			
37	11.1	7.6			

continued

Table 12 continued

Industry number ^a	Investment by industry		Commodity number ^a	Investment by commodity input	
	Capital stock estimate	Independent estimate		Capital stock estimate	Independent estimate
38	9.2	7.8			
39	5.5	2.9			
40	10.9	15.0			
41	7.3	6.5			
42	6.6	15.5	44	36.5	26.3
43	7.5	6.9	45	98.6	48.5
44	42.9	23.7			
45	12.6	10.8			
46	6.4	5.8			
47	22.4	18.0			
48	19.6	21.0			
49	26.2	12.0			
50	96.6	57.9			
51	4.8	2.6			
52	15.3	10.9			
53	4.4	4.4			
54	5.9	1.3			
55	10.7	6.3			
56	48.1	18.3			
57	16.7	10.0			
58	21.2	15.9			
59	21.1	10.5			
60	7.2	5.2			
61	15.2	11.4			
62	14.9	6.6			
63	168.1	200.0			
64	147.3	150.0			
65	25.6	14.0	67	195.6	148.6
66	17.2	23.8	68	175.6	162.1
67	39.5	23.1	69	19.6	33.9
68	122.1	79.5	70	499.5	564.2
69	9.4	7.0	71	145.8	68.1
70	5.5	3.1	72	109.4	65.6
71	13.9	35.4	73	60.6	47.5
72	9.3	5.0	74	115.4	59.2
73	12.8	22.7	75	235.5	87.0
74	14.6	8.8	76	78.8	82.0
75	33.6	20.5	77	219.8	205.3
76	3.3	3.4	78	118.4	113.0
77	11.1	3.0	79	332.2	176.5

continued

Table 12 continued

Industry number ^a	Investment by industry		Commodity number ^a	Investment by commodity input	
	Capital stock estimate	Independent estimate		Capital stock estimate	Independent estimate
78	31.4	27.4	80	788.6	736.5
79	0.8	0.8			
80	5.9	9.0			
81	41.8	27.0	83	9.0	4.7
82	2.6	5.6	84	5.9	10.9
83	5.2	1.7	85	2.2	0.6
84	385.6	411.0			
85	23.2	36.7			
86	583.7	397.5			
87	34.1	32.0	89	1 722.4	1 823.6
88	124.3	96.9	90	3 307.1	3 013.0
89	620.7	372.0	91	435.9	446.1
90	172.0	155.7	92	80.6	135.1
91	9.9	12.0			
92	15.9	19.3			
93	278.7	305.7	95	110.0	121.4
94	226.7	310.9	96	39.2	33.0
95	180.6	224.8	97	18.9	22.9
96	179.0	149.4	98	4.3	3.8
97	451.6	438.6	99	190.8	221.4
98	67.7	90.2			
99	333.6	332.4			
100	9.0	20.4	102	0.5	0.6
101	187.8	249.5	103	192.1	138.9
102	60.5	78.5	104	221.1	196.2
103	1 876.4	1 930.3			
104	107.6	178.0			
105	0.0	0.0			
106	439.6	178.8			
107	293.9	327.0			
108	131.4	25.6			
109	133.3	98.7			
110	126.7	124.9			
111	12.8	16.4			
Taxes and Subsidies	0.0	0.0		37.3	79.8
TOTAL	9 637.1	8 912.0		9 637.1	8 912.0

a For key to industry and commodity numbers refer to Appendix Table 1.1.

TABLE 13 : REASONS FOR SIGNIFICANT^a DIFFERENCES BETWEEN
INVESTMENT BY USING INDUSTRY, 1971/72

Industry	Difference		Reason(s) for difference
	\$m	%	
50 Industrial Chemicals N.e.c.	38.7	67	(3)
56 Petroleum and Coal Products	29.9	163	(3)
68 Motor Vehicles	42.6	54	(1)
86 Water, Sewerage and Drainage	186.2	47	(1)
88 Building N.e.c. and Construction	27.4	28	(1) (3) (4)
89 Wholesale Trade	248.7	67	(1)
94 Rail Transport	-84.2	-27	(2) (3) (4)
95 Water Transport	-44.2	-20	(2) (3) (4)
96 Air Transport	29.6	20	(1) (3) (4)
101 Investment and Real Estate	-61.7	-25	(2) (3) (4)
104 Public Administration	-70.4	-40	(2)
106 Health	260.8	146	(4)
108 Welfare Services	105.8	413	(1) (3) (4)
109 Entertainment	34.6	35	(1) (3) (4)

a The difference between investment implied by the capital stock matrix and the independent estimate is at least \$25m and the percentage difference (the difference divided by the independent estimate) is at least 20 per cent.

- (1) The growth rate in output exceeds the growth in real investment over the period.
- (2) The growth rate in output is less than the growth in real investment over the period.
- (3) The independent estimate of investment may not represent the typical level in 1971/72.
- (4) Assumptions made in deriving capital stock estimates may not be valid.

TABLE 14 : REASONS FOR SIGNIFICANT^a DIFFERENCES BETWEEN
INVESTMENT BY COMMODITY INPUT, 1971/72

Commodity	Difference		Reason(s) for difference
	\$m	%	
43 Furniture	50.1	103	(1) (2) (3)
65 Structural Metal Products	47.0	32	(1) (3)
69 Ship and Boat Building	77.7	114	(1) (3)
70 Locomotives, Rolling Stock	43.8	67	(1) (3)
72 Scientific Equipment	56.2	95	(1) (2)
73 Electronic Equipment	148.5	171	(1) (2) (3)
77 Construction Etc. Equipment	155.7	88	(1) (2) (3)
90 Retail Trade	-54.5	-40	(1) (4)
101 Investment and Real Estate	53.2	38	(1) (4)

a The difference between investment implied by the capital stock matrix and the independent estimate is at least \$25m and the percentage difference (the difference divided by the independent estimate) is at least 20 per cent.

- (1) The independent estimate of investment may not represent the typical level in 1971/72.
- (2) Over 50 per cent of the capital stock of a particular commodity is allocated to a small number of industries whose total capital stock may be overestimated.
- (3) The shares used to allocate the capital stock in using industries to the particular commodity input may be too high.
- (4) The assumptions made to derive capital stock estimates at basic values from those at purchasers' prices may not be valid.

beverages n.e.c. industry rose from \$0.2m in 1968/69 to \$0.5m in 1971/72.

The difference for several other industries is probably due to atypical investment behaviour in 1971/72 relative to investment levels in preceding years. However, because of the "lumpy" nature of investment there are problems in determining the typical level of investment. There was a substantial jump in investment in the Joinery and Wood products industry in 1971/72 which was maintained in later years. The real investment series for the Aircraft building and Signs, writing equipment etc. industries increased substantially in 1968/69 and later years relative to the earlier period due to the inclusion of activities in the new industry classification (in the former case, repair activities, and in the latter case, signs and advertising display activities) which were excluded from the factory class collection. In the Pulp, paper and paperboard, Chemical fertilisers, Cosmetic, toilet preparations, Non-Metallic mineral products, Structural metal products, Metal products n.e.c., and Other manufacturing industries, investment in 1971/72 may have been too low. Although we attempted to adjust the actual level of investment in the Chemical fertilisers industry in 1971/72 upwards to its typical level we are still under projecting investment.

4.3.2 The Main Features of the Calibrated Capital Stock Matrix

The total stock of capital in the calibrated matrix is 3 per cent lower than the original estimates (\$72 737m). The proportion of capital accounted for by the major investment inputs (building n.e.c. and construction, residential building, other machinery and equipment and motor vehicles) remained virtually unchanged although significant differences occurred in the less important categories.

Broadly speaking, the asset composition of using industries in the calibrated matrix when compared with the original matrix, shows increases in the value of Metal products n.e.c., Motor vehicles and parts, Household appliances n.e.c., and Retail trade, and reductions in the value of Furniture, Structural metal products, Sheet metal products, Ship and boat building, Locomotives and rolling stock, Aircraft building, Scientific equipment etc., Electronic equipment, Construction etc., equipment, Building n.e.c. and construction, and Investment, real estate, etc. Most of these changes tended to take place in a small number of industries, rather than a general reallocation across all industries.

The calibration exercise was useful in forcing a re-examination of the methods used to estimate capital stocks. Where there was evidence to suggest that alternative assumptions should be adopted these were used. For example, the capital stocks of motor vehicles were re-estimated assuming longer lives, and an examination of investment data in the ANA indicated that additional capital stock estimates be made (Government infrastructure in agriculture and the difference between enterprise and establishment statistics for the mining sector). Also, the omission of abattoirs from the factory class collection for manufacturing industries led to the estimation of investment levels for this sector for years prior to 1968/69.

However, a lack of data precluded adjustments in many areas which were viewed with concern. These included the expected lives used, the lack of a satisfactory link between the factory class and the ASIC-based industry classification, the lack of detailed industry-specific investment series for most industries in the services sector, and insufficient data on the nature and

incidence of leasing. To ensure greater reliability and usefulness of capital stock estimates it is vital that information on the economic life of assets employed in Australian industries be collected.¹ The present lack of such data leaves the expected life assumptions made in this study (Table 8) open to question.² The assumption, for example, of constant lifetimes of assets of a particular type across all manufacturing industries is dubious.

-
1. This might consist of a sample survey of establishments who would be asked the age of the assets (owned and leased) which are being retired. Over a number of years such a survey would indicate the expected life distribution of assets of type i in use in industry j .
 2. The sensitivity of capital stock estimates to asset life assumptions is analysed in Appendix 6.

5. CONCLUDING REMARKS AND RESEARCH PERSPECTIVES

This paper outlines the methods and data used to construct a capital stock matrix for Australian industries in 1971/72. A validation exercise was then performed to calibrate this matrix with best estimates of investment levels in 1971/72. The calibration process provides a facility to compensate for the lack of data on the composition of capital used in each industry. However, as there are problems in the calibration process as well as with the original estimates, it must remain a matter of judgement as to which is used for a particular purpose.

Although the resources involved in estimating these matrices were considerable, particularly in the area of data requirements, this study was necessary because despite widespread demand, Australia has no official estimates of capital stocks by industry of use.¹

For those industries where the perpetual inventory method (PIM) was used to estimate capital stocks, the task of updating the estimates from 1971/72 to a later year is relatively easy. In addition, we would expect capital stock estimates in the final year to become more reliable as the relative importance of (1) the initial value of capital (if one was used) and (2) the estimates of investment in earlier years (which generally were less reliable), diminish.

1. The report of Working Group No.2 of the Crawford Study Group on Structural Adjustment (Mumme [1978]) commented on the lack of official capital stock estimates in Australia and concluded that estimation by the ABS could best fill this gap.

For the remaining industries, updating is possible but will be more time consuming and any increase in the reliability of the estimates (except perhaps, for Health) is uncertain. In the case of the agricultural and Fishing industries, and the logging part of the Forestry and logging industries, the derivation of up-to-date estimates is dependent upon the availability of survey data. Capital stocks in the Health industry could be estimated using the PIM as an alternative to obtaining a special valuation.

To ensure greater reliability and usefulness of capital stock estimates it is vital that information be collected on:

- (i) the expected lifetimes of assets,
 - (ii) the magnitudes, types of assets and industries involved in leasing activity,
 - (iii) the asset composition of capital in each using industry,
 - (iv) detailed industry investment flows (particularly in the service industries),
- and
- (v) the relationship between capital stocks valued at purchasers' prices and at basic values in different industries.

Benefits might also accrue from the re-examination of methods used for particular industries (such as Welfare services).

Capital stock estimates probably could be enhanced by research into the effects of (1) replacing straight line depreciation with alternative methods and of (2) replacing the assumption that all assets are retired after a working life of fixed length by a distribution which spreads the retirements of assets around their expected lifetimes. Further, the calibration process undertaken here could be repeated with the updated capital stock matrix and subsequent year's data. Such work presupposes the collection of an appropriate data base.

APPENDIX 1 : THE DATA TABLES

TABLE 1.1 : CORRESPONDENCE BETWEEN THE INDUSTRY AND COMMODITY CLASSIFICATION USED IN THIS STUDY AND THE INPUT-OUTPUT TABLE CLASSIFICATION

Industry classification used		Commodity classification used		I-O table classification	
No.	Title	No.	Title	No.	Code Title
1	Pastoral Zone	1	Wool	1	1.01 Sheep
2	Wheat-Sheep Zone	2	Sheep		
		3	Wheat	2	1.02 Cereal Grains
		4	Barley		
3	High Rainfall Zone	5	Other grains		
4	Northern Beef	6	Meat cattle	3	1.03 Meat Cattle
5	Milk Cattle and Pigs	7	Milk cattle and pigs	4	1.04 Milk Cattle and Pigs
6	Other Farming Export	8	Other farming export	6	1.06 Other Farming
7	Other Farming Import	9	Other farming import		
8	Competing		competing		
9	Poultry	10	poultry	5	1.05 Poultry
9	Services to Agriculture	11	Services to agriculture	7	2.00 Services to Agriculture
10	Forestry and Logging	12	Forestry and logging	8	3.00 Forestry and Logging
11	Fishing, Trapping, Hunting	13	Fishing, trapping, hunting	9	4.00 Fishing, Trapping, Hunting
12	Iron	14	Iron	10	11.01 Iron
13	Other Metallic Minerals	15	Other metallic minerals	11	11.02 Other Metallic Minerals
14	Coal	16	Coal	12	12.00 Coal and Crude Petroleum
15	Crude Oil	17	Crude oil		
16	Non-Metallic N.e.c.	18	Non-metallic n.e.c.	13	14.00 Non-Metallic N.e.c.
17	Services to Mining	19	Services to mining	14	16.00 Services to Mining
18	Meat Products	20	Meat products	15	21.01 Meat Products
19	Milk Products	21	Milk products	16	21.02 Milk Products
20	Fruit and Vegetable Products	22	Fruit and vegetable products	17	21.03 Fruit and Vegetable Products
21	Margarine, Oils and Fats	23	Margarine, oils and fats	18	21.04 Margarine, Oils and Fats
22	Flour and Cereal Products	24	Flour and cereal products	19	21.05 Flour and Cereal Products

continued

Table 1.1 continued

Industry classification used		Commodity classification used		I-O table classification		
No.	Title	No.	Title	No.	Code	Title
23	Bread, Cakes and Biscuits	25	Bread, cakes and biscuits	20	21.06	Bread, Cakes and Biscuits
24	Confectionery Products	26	Confectionery products	21	21.07	Confectionery Products
25	Food Products N.e.c.	27	Food products n.e.c.	22	21.08	Food Products N.e.c.
26	Soft Drinks, Cordials, Etc.	28	Soft drinks, cordials, etc.	23	21.09	Soft Drinks, Cordials, Etc.
27	Beer and Malt	29	Beer and malt	24	21.10	Beer and Malt
28	Alcoholic Beverages N.e.c.	30	Alcoholic beverages n.e.c.	25	21.11	Alcoholic Beverages N.e.c.
29	Tobacco Products	31	Tobacco products	26	22.01	Tobacco Products
30	Prepared Fibres	32	Prepared fibres	27	23.01	Prepared Fibres
31	Man-Made Fibres, Yarns, Etc.	33	Man-made fibres, yarns, etc.	28	23.02	Man-Made Fibres, Yarns, Etc.
32	Cotton, Silk, Flax Yarns, Etc.	34	Cotton, silk, flax yarns, etc.	29	23.03	Cotton, Silk, Flax Yarns, Etc.
33	Wool and Worsted Yarns N.e.c.	35	Wool and worsted yarns n.e.c.	30	23.04	Wool and Worsted Yarns N.e.c.
34	Textile Finishing	36	Textile finishing	31	23.05	Textile Finishing
35	Textile Floor Coverings	37	Textile floor coverings	32	23.06	Textile Floor Coverings
36	Textile Products N.e.c.	38	Textile products n.e.c.	33	23.07	Textile Products N.e.c.
37	Knitting Mills	39	Knitting mills	34	24.01	Knitting Mills
38	Clothing	40	Clothing	35	24.02	Clothing
39	Footwear	41	Footwear	36	24.03	Footwear
40	Sawmill Products	42	Sawmill products	37	25.01	Sawmill Products
41	Plywood, Veneers and Boards	43	Plywood, veneers and boards	38	25.02	Plywood, Veneers and Boards
42	Joinery and Wood Products	44	Joinery and wood products	39	25.03	Joinery and Wood Products
43	Furniture, Mattresses, Brooms	45	Furniture, mattresses brooms	40	25.04	Furniture, Mattresses Brooms
44	Pulp, Paper and Paper-board	46	Pulp, paper and paper-board	41	26.01	Pulp, Paper and Paper-board
45	Fibreboard, Paper Containers	47	Fibreboard, paper containers	42	26.02	Fibreboard, Paper Containers

continued

Table 1.1 continued

Industry classification used		Commodity classification used		I-O table classification		
No.	Title	No.	Title	No.	Code	Title
46	Paper Products N.e.c.	48	Paper products n.e.c.	43	26.03	Paper Products N.e.c.
47	Newspapers and Books	49	Newspapers and books	44	26.04	Newspapers and Books
48	Commercial and Job Printing	50	Commercial and job printing	45	26.05	Commercial and Job Printing
49	Chemical Fertilisers	51	Chemical fertilisers	46	27.01	Chemical Fertilisers
50	Industrial Chemicals N.e.c.	52	Industrial chemicals n.e.c.	47	27.02	Industrial Chemicals N.e.c.
51	Paints, Varnishes, Lacquers	53	Paints, varnishes lacquers	48	27.03	Paints, Varnishes Lacquers
52	Pharmaceuticals and Chemicals	54	Pharmaceuticals and chemicals	49	27.04	Pharmaceuticals and Chemicals
53	Soap and Other Detergents	55	Soap and other detergents	50	27.05	Soap and Other Detergents
54	Cosmetic, Toilet Preparations	56	Cosmetic, toilet preparations	51	27.06	Cosmetic, Toilet Preparations
55	Chemical Products N.e.c. Petroleum and Coal Products	57	Chemical products n.e.c. petroleum and coal products	52	27.07	Chemical Products N.e.c. Petroleum and Coal Products
56		58		53	27.08	
57	Glass and Glass Products	59	Glass and glass products	54	28.01	Glass and Glass Products
58	Clay Products	60	Clay products	55	28.02	Clay Products
59	Cement	61	Cement	56	28.03	Cement
60	Ready-Mixed Concrete	62	Ready-mixed concrete	57	28.04	Ready-Mixed Concrete
61	Concrete Products	63	Concrete products	58	28.05	Concrete Products
62	Non-Metallic Mineral Products	64	Non-metallic mineral products	59	28.06	Non-Metallic Mineral Products
63	Basic Iron and Steel	65	Basic iron and steel	60	29.01	Basic Iron and Steel
64	Other Basic Metal Products	66	Other basic metal products	61	29.02	Other Basic Metal Products
65	Structural Metal Products	67	Structural metal products	62	31.01	Structural Metal Products
66	Sheet Metal Products	68	Sheet metal products	63	31.02	Sheet Metal Products

Table 1.1 continued

Industry classification used		Commodity classification used		I-O table classification	
No.	Title	No.	Title	No.	Code Title
67	Metal Products N.e.c.	69	Metal products n.e.c.	64	31.03 Metal Products N.e.c.
68	Motor Vehicles and Parts	70	Motor vehicles and parts	65	32.01 Motor Vehicles and Parts
69	Ship and Boat Building	71	Ship and boat building	66	32.02 Ship and Boat Building
70	Locomotives, Rolling Stock	72	Locomotives, rolling stock	67	32.03 Locomotives, Rolling Stock
71	Aircraft Building	73	Aircraft building	68	32.04 Aircraft Building
72	Scientific Equipment Etc.	74	Scientific equipment etc.	69	33.01 Scientific Equipment Etc.
73	Electronic Equipment	75	Electronic equipment	70	33.02 Electronic Equipment
74	Household Appliances N.e.c.	76	Household appliances n.e.c.	71	33.03 Household Appliances N.e.c.
75	Electrical Machinery N.e.c.	77	Electrical machinery n.e.c.	72	33.04 Electrical Machinery N.e.c.
76	Agricultural Machinery	78	Agricultural machinery	73	33.05 Agricultural Machinery
77	Construction Etc., Equipment	79	Construction etc., equipment	74	33.06 Construction Etc., Equipment
78	Other Machinery, Equipment	80	Other machinery, equipment	75	33.07 Other Machinery, Equipment
79	Leather Products	81	Leather products	76	34.01 Leather Products
80	Rubber Products	82	Rubber products	77	34.02 Rubber Products
81	Plastic and Related Products	83	Plastic and related products	78	34.03 Plastic and Related Products
82	Signs, Writing Equipment Etc.	84	Signs, writing equipment etc.	79	34.04 Signs, Writing Equipment Etc.
83	Other Manufacturing	85	Other manufacturing	80	34.05 Other Manufacturing
84	Electricity	86	Electricity	81	36.01 Electricity
85	Gas	87	Gas	82	36.02 Gas
86	Water, Sewerage and Drainage	88	Water, sewerage and drainage	83	37.01 Water, Sewerage and Drainage
87	Residential Buildings	89	Residential buildings	84	41.01 Residential Buildings
88	Building N.e.c., Construction	90	Building n.e.c., construction	85	41.02 Building N.e.c., Construction
89	Wholesale Trade	91	Wholesale trade	86	46.01 Wholesale Trade
90	Retail Trade	92	Retail trade	87	48.01 Retail Trade
91	Motor Vehicle Repairs	93	Motor vehicle repairs	88	48.02 Motor Vehicle Repairs

continued

Table 1.1 continued

Industry classification used		Commodity classification used		I-O table classification	
No.	Title	No.	Title	No. Code	Title
92	Other Repairs	94	Other repairs	89	48.03 Other Repairs
93	Road Transport	95	Road transport	90	51.01 Road Transport
94	Rail and Other Transport	96	Rail and other transport	91	52.01 Rail and Other Transport
95	Water Transport	97	Water transport	92	53.01 Water Transport
96	Air Transport	98	Air transport	93	54.01 Air Transport
97	Communication	99	Communication	94	55.01 Communication
98	Banking	100	Banking	95	61.01 Banking
99	Finance and Life Insurance	101	Finance and life insurance	96	61.02 Finance and Life Insurance
100	Other Insurance	102	Other insurance	97	61.03 Other Insurance
101	Investment, Real Estate, Etc.	103	Investment, real estate, etc.	98	61.04 Investment, Real Estate, Etc.
102	Other Business Services	104	Other business services	99	61.05 Other Business Services
103	Ownership of Dwellings	105	Ownership of dwellings	100	61.06 Ownership of Dwellings
104	Public Administration	106	Public administration	101	71.01 Public Administration
105	Defence	107	Defence	102	72.01 Defence
106	Health	108	Health	103	81.01 Health
107	Education, Libraries, Etc.	109	Education, libraries, etc.	104	82.01 Education, Libraries, Etc.
108	Welfare Services	110	Welfare services	105	83.01 Welfare Services
109	Entertainment	111	Entertainment	106	91.01 Entertainment
110	Restaurants, Hotels, Clubs	112	Restaurants, hotels, clubs	107	92.01 Restaurants, Hotels, Clubs
111	Personal Services	113	Personal services	108	93.01 Personal Services
112	Business Expenses	114	Business expenses	109	99.01 Business Expenses
113	Non-competing Imports	115	Non-competing imports)		

TABLE 1.2 : VALUE OF INVESTMENT GOODS, BY ORANI COMMODITY CLASSIFICATION : BASIC VALUES, 1968/69

No.	ORANI commodity Description	Gross fixed capital expenditure					Total Proportion
		Private	Public enterprise	General government			
		\$m	\$m	\$m	\$m		
14	Iron	0.5	-	-	0.5	.0001	
15	Other metallic minerals	12.2	-	-	12.2	.0018	
16, 17	Coal and crude oil	11.1	-	-	11.1	.0017	
18	Non-metallic minerals n.e.c	0.5	-	-	0.5	.0001	
20	Meat products	0.4	0.4	-	0.3	.0002	
21	Milk products	0.7	0.1	0.1	0.1	.0001	
22	Fruit and vegetable products	0.1	0.1	0.1	0.3	*	
24	Flour and cereal products	0.1	0.1	0.1	0.3	*	
26	Confectionery products	0.1	*	*	0.1	*	
27	Food products n.e.c.	0.9	0.8	0.1	2.4	.0004	
29	Beer and malt	0.1	0.1	0.1	0.3	*	
31	Tobacco products	0.1	0.1	0.1	0.2	*	
34	Cotton, silk, flax yarns etc.	0.2	0.2	0.2	0.6	.0001	
35	Wool and worsted yarns etc.	0.1	*	*	0.1	*	
37	Textile floor coverings	0.1	*	*	0.1	*	
38	Textile products n.e.c	0.3	0.2	0.3	0.8	.0001	
40	Clothing	0.3	0.1	0.1	0.5	.0001	
41	Footwear	0.4	0.1	0.1	0.5	.0001	
42	Sawmill products	0.4	0.2	0.4	1.0	.0001	
43	Plywood, veneers and boards	0.2	0.1	0.1	0.4	.0001	
44	Joinery and wood products	9.3	3.1	9.4	21.8	.0033	
45	Furniture, mattresses, brooms	25.1	2.6	8.5	36.2	.0054	
46	Pulp, paper and paperboard	0.2	0.2	0.2	0.6	.0001	
49	Newspapers and books	0.2	0.1	0.1	0.4	.0001	
50	Commercial and job printing	*	*	0.1	0.1	*	
51	Chemical fertilisers	0.2	0.2	0.1	0.5	.0001	

continued

Table 1.2 continued

No.	ORANI commodity Description	Gross fixed capital expenditure				Total Proportion
		Private \$m	Public enterprise \$m	General government \$m	\$m	
53	Paints, varnishes, lacquers	0.2	*	0.1	0.3	*
57	Chemical products n.e.c.	0.3	0.3	0.2	0.8	.0001
58	Petroleum and coal products	0.1	0.1	0.1	0.3	*
59	Glass and glass products	0.3	0.2	0.3	0.8	.0001
60	Clay products	0.2	0.1	0.1	0.4	.0001
61	Cement	0.1	0.1	0.1	0.3	*
63	Concrete products	0.1	0.1	0.1	0.3	*
64	Non-metallic min. products	0.1	0.1	0.1	0.3	*
65	Basic iron and steel	3.0	1.4	1.0	5.4	.0008
66	Other basic metal products	0.6	0.1	0.2	0.9	.0001
67	Structural metal products	85.8	3.1	11.4	100.3	.0150
68	Sheet metal products	78.2	9.0	31.9	119.1	.0178
69	Metal products n.e.c.	16.9	1.5	6.5	24.9	.0037
70	Motor vehicles and parts	437.4	8.5	32.9	478.8	.0075
71	Ship and boat building	45.8	3.1	1.3	50.2	.0075
72	Locomotives, rolling stock	13.3	38.9	2.6	54.8	.0082
73	Aircraft building	2.5	3.7	0.7	6.9	.0010
74	Scientific equipment	4.7	2.0	2.5	9.2	.0014
75	Electronic equipment	26.5	11.2	7.8	45.5	.0068
76	Household appliances n.e.c.	52.8	1.7	6.2	60.7	.0081
77	Electrical machinery n.e.c.	61.6	8.1	3.9	73.6	.0121
78	Agricultural machinery	76.2	0.7	0.0	76.9	.0188
79	Construction etc. equipment	83.9	6.0	36.1	126.0	.0188
80	Other machinery, equipment	193.2	12.0	55.2	260.4	.0389
81	Leather products	0.1	0.1	0.1	0.3	*
82	Rubber products	0.3	0.2	0.2	0.7	.0001

Table 1.2 continued

No.	ORANI commodity Description	Gross fixed capital expenditure					Total Proportion
		Private	Public enterprise	General government			
		\$m	\$m	\$m	\$m		
83	Plastic and related products	2.1	0.3	0.8	3.2	.0005	
84	Signs, writing equipment etc.	3.3	1.0	3.7	8.0	.0012	
85	Other manufacturing	0.4	*	0.1	0.5	.0001	
87	Gas	1.1	1.0	0.8	2.9	.0004	
89	Residential buildings	1 295.4	68.0	-	1 363.4	.2036	
90	Building n.e.c., construction	988.2	896.3	749.9	2 634.4	.3937	
91	Wholesale trade	386.3	0.6	2.1	389.0	.0581	
92	Retail trade	109.3	-	-	109.3	.0163	
95	Road transport	77.2	2.6	13.5	93.3	.0139	
96	Rail and other transport	25.7	0.9	5.3	31.9	.0048	
97	Water transport	15.3	0.5	2.2	18.0	.0027	
98	Air transport	1.8	0.3	1.1	3.2	.0005	
99	Communication	-	171.2	-	171.2	.0256	
102	Other insurance	0.5	-	-	0.5	.0001	
103	Investment, real estate etc.	107.7	-	-	107.7	.0161	
104	Other business services	96.6	14.9	12.4	123.9	.0185	
	TOTAL	4 359.0	1 278.9	1 057.7	6 695.6	1.0000	

* Denotes a dollar value less than \$50 000 or a proportion value less than 0.0001.

Source : ORANI input-output data files derived from Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Catalogue No. 5209.0 (Ref. No. 7.11), (Table B: Industry by Industry Flow Matrix, Direct allocation of imports, net basic values) Canberra, 1978.

TABLE 1.3 : RATIO OF INVESTMENT FLOWS AT BASIC VALUES TO PURCHASERS' PRICES, 1968/69

Commodity number ^a	Private sector ^b	General government ^c	Public enterprise ^d
14	1.0000	n.a.	n.a.
15	1.0000	n.a.	n.a.
16	1.0000	n.a.	n.a.
17	1.0000	n.a.	n.a.
18	1.0000	n.a.	n.a.
44	.7642	.9794	.9688
45	.9014	.9775	1.0000
67	.9331	.9571	.9565
68	.8597	.9790	.9787
69	.8246	.9324	.9412
70	.7045	.9851	.9912
71	1.1292	1.0000	1.0000
72	.8805	.9630	1.0000
73	.7636	1.0000	1.0000
74	.7509	.9904	.9923
75	.7941	.9943	1.0000
76	.8282	.8800	.8571
77	.8438	.9853	.9910
78	.6291	.7500	.7143
79	.5990	.8217	.8152
80	.6572	.9506	.9495
83	.8400	1.0000	1.0000
84	1.0000	1.0000	1.0000
85	.6667	1.0000	1.0000
99	n.a.	n.a.	1.0000

a For key to commodity numbers see Appendix Table 1.1.

b All industries except those defined as General Government or Public Enterprise

c Industry numbers 104, 106 and 107

d Industry numbers 84, 85, 86, 94 and 97

n.a. Not applicable

Source : Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Catalogue No.5209.0 (Ref. No. 7.11) Canberra, 1978.

TABLE 1.4 : PROPORTIONS USED TO ALLOCATE THE TOTAL VALUE OF MARGINS ACROSS INDIVIDUAL MARGINS INDUSTRIES^a

Investment goods attracting margins: commodity number	Industries which supply margins										Commodity taxes and subsidies	Total
	Wholesale trade (89)	Retail trade (90)	Road transport (93)	Rail transport (94)	Water transport (95)	Air transport (96)	Other insurance (100)	Insurance	Other insurance (100)	Commodity taxes and subsidies		
44	0.805742	0.023604	0.153110	0.000638	0.005742	-	0.000319	0.010845	0.010845	1.000000		
45	0.619862	-	0.367805	-	0.011385	0.000316	0.000316	0.000316	0.000316	1.000000		
67	0.471510	0.016173	0.159866	0.023389	0.306420	0.002364	0.011694	0.008584	1.000000	1.000000		
68	0.774094	0.002370	0.102111	0.007253	0.095367	0.003946	0.002657	0.011202	0.011202	1.000000		
69	0.717650	0.049662	0.121707	0.026346	0.041735	0.002098	0.001166	0.039636	0.039636	1.000000		
70	0.267648	0.470131	0.026541	0.014115	0.007611	0.000066	0.000240	0.213648	0.213648	1.000000		
71	0.551611	0.002147	0.065731	0.004789	0.003138	0.000495	0.000165	-1.628076	0.066013	1.000000		
72	0.723569	0.001031	0.132543	0.053120	0.019598	0.003610	0.000516	0.066013	0.066013	1.000000		
73	0.960110	0.010664	0.010664	0.004739	0.001185	-	-	0.012638	0.002741	1.000000		
74	0.919947	0.000144	0.003317	0.001587	0.013703	0.058561	-	0.002741	0.002741	1.000000		
75	0.594364	0.344832	0.016721	0.011927	0.006080	0.000234	0.000234	0.025842	0.025842	1.000000		
76	0.880991	0.000155	0.058459	0.018893	0.018831	0.005552	0.000310	0.017189	0.017189	1.000000		
77	0.748062	0.001349	0.076992	0.051681	0.022929	0.000562	0.000056	0.095369	0.095369	1.000000		
78	0.517163	0.001611	0.357896	0.060159	0.088266	0.000644	0.001546	-0.027285	0.027285	1.000000		
79	0.487214	0.000908	0.312765	0.122733	0.030600	0.021279	0.000899	0.023602	0.023602	1.000000		
80	0.756338	0.000720	0.106219	0.045141	0.011946	0.001322	0.000449	0.077865	0.077865	1.000000		
83	0.725353	0.030516	0.133803	0.030516	0.009390	0.007042	-	0.063380	0.063380	1.000000		
84	0.036585	-	0.963415	-	-	-	-	-	-	1.000000		
85	0.544911	-	0.335329	0.059880	0.083832	-	-	-	-0.023952	1.000000		

a For key to commodity and industry numbers see Appendix Table 1.1.

Source : Australian Bureau of Statistics.

TABLE 1.5 : BUILDING AND CONSTRUCTION PRICE INDICES^a

Year	Building wage rate index	Building materials price index	Wages-materials composite price index	ANA implicit price deflator for non-residential building and construction	Non-residential building and construction price index used in this study	Residential building price index
	(1)	(2)	(3)	(4)	(5)	(6)
1906/07	8.6	8.9	8.8	n.a.	8.5	8.8
1907/08	8.9	9.6	9.2	n.a.	8.9	9.2
1908/09	8.9	9.2	9.0	n.a.	8.7	9.0
1909/10	9.1	9.0	9.1	n.a.	8.8	9.1
1910/11	9.3	9.8	9.5	n.a.	9.2	9.5
1911/12	9.7	9.9	9.8	n.a.	9.5	9.8
1912/13	10.0	10.4	10.2	n.a.	9.9	10.2
1913/14	10.2	11.2	10.6	n.a.	10.3	10.6
1914/15	10.3	10.7	10.5	n.a.	10.2	10.5
1915/16	10.3	12.6	11.2	n.a.	10.9	11.2
1916/17	10.9	14.7	12.4	n.a.	12.0	12.4
1917/18	11.3	18.6	14.2	n.a.	13.8	14.2
1918/19	11.6	26.5	17.5	n.a.	17.0	17.5
1919/20	12.5	28.2	18.8	n.a.	18.2	18.8
1920/21	15.0	31.9	21.8	n.a.	21.1	21.8
1921/22	16.1	27.2	20.5	n.a.	19.9	20.5
1922/23	15.8	19.8	17.4	n.a.	16.9	17.4
1923/24	16.3	20.0	17.8	n.a.	17.3	17.8
1924/25	16.6	17.9	17.1	n.a.	16.6	17.1
1925/26	17.0	16.9	17.0	n.a.	16.5	17.0
1926/27	17.4	16.4	17.0	n.a.	16.5	17.0
1927/28	17.7	16.0	17.0	n.a.	16.5	17.0
1928/29	17.6	17.2	17.4	n.a.	16.9	17.4
1929/30	17.7	16.9	17.4	n.a.	16.9	17.4

Table 1.5 continued

Year	Building Wage rate index	Building materials price index	Wages-materials composite price index	ANA implicit price deflator for non- residential building and construction	Non-residential building and construction price index used in this study	Residential building price index
	(1)	(2)	(3)	(4)	(5)	(6)
1930/31	17.2	17.2	17.2	n.a.	16.7	17.2
1931/32	15.5	17.4	16.3	n.a.	15.8	16.3
1932/33	14.7	16.9	15.6	n.a.	15.1	15.6
1933/34	14.5	17.2	15.6	n.a.	15.1	15.6
1934/35	14.7	16.9	15.6	n.a.	15.1	15.6
1935/36	14.8	16.7	15.5	n.a.	15.0	15.5
1936/37	15.0	17.0	15.8	n.a.	15.3	15.8
1937/38	16.0	18.9	17.2	n.a.	16.7	17.2
1938/39	16.4	17.9	17.1	n.a.	16.6	17.1
1939/40	16.7	18.1	17.3	n.a.	16.8	17.3
1940/41	17.2	21.9	19.5	n.a.	18.9	19.5
1941/42	18.4	23.6	21.0	n.a.	20.4	21.0
1942/43	20.0	26.5	23.2	n.a.	22.5	23.2
1943/44	20.2	31.2	25.7	n.a.	24.9	25.7
1944/45	20.3	31.5	25.9	n.a.	25.1	25.9
1945/46	20.5	31.7	26.1	n.a.	25.3	26.1
1946/47	22.2	32.2	27.2	n.a.	26.4	27.2
1947/48	24.0	33.4	28.8	n.a.	27.9	28.8
1948/49	27.0	35.1	31.0	n.a.	30.1	30.1
1949/50	28.7	36.7	32.6	n.a.	31.0	31.0
1950/51	33.9	44.5	39.0	44.3	37.3	38.4
1951/52	40.7	56.4	48.5	53.6	44.3	43.3
1952/53	46.1	74.8	60.4	57.5	53.6	51.9
1953/54	47.3	67.9	57.5	59.0	57.5	58.8
1954/55	48.3	65.5	56.8	59.0	59.0	59.4
					59.0	62.5

continued

Table 1.5 continued

Year	Building wage rate index	Building materials price index	Wages-materials composite price index	ANA implicit price deflator for non- residential building and construction	Non-residential building and construction price index used in this study	Residential building price index
	(1)	(2)	(3)	(4)	(5)	(6)
1955/56	50.7	70.8	60.7	62.2	62.2	66.3
1956/57	53.4	80.3	69.6	65.3	65.3	67.6
1957/58	54.1	83.8	71.9	67.7	67.7	68.7
1958/59	54.7	78.8	69.2	68.4	68.4	68.8
1959/60	55.4	76.7	68.2	65.9	65.9	69.8
1960/61	56.1	79.1	69.2	67.8	67.8	72.2
1961/62	57.5	79.3	70.6	68.1	68.1	72.2
1962/63	58.1	79.3	70.8	68.5	68.5	72.3
1963/64	59.7	81.5	72.8	70.0	70.0	73.8
1964/65	63.1	89.0	78.6	73.3	73.3	75.9
1965/66	65.0	91.5	80.9	74.6	74.6	78.2
1966/67	69.8	91.9	83.1	77.8	77.8	80.6
1967/68	72.5	92.4	84.4	80.0	80.0	83.0
1968/69	79.4	94.5	88.5	83.7	83.7	85.4
1969/70	83.4	99.5	93.1	87.5	87.5	88.7
1970/71	89.0	99.5	95.3	93.2	93.2	93.0
1971/72	100.0	100.0	100.0	100.0	100.0	100.0

a 1971/72 = 100

Source : Constructed by author. For details, see Section 3.1.

TABLE 1.6 : PLANT AND MACHINERY PRICE INDEX

Year	Plant and machinery price index (1971/72 = 100)
1949/50	38.3
1950/51	45.5
1951/52	55.1
1952/53	59.1
1953/54	60.7
1954/55	60.7
1955/56	63.8
1956/57	67.0
1957/58	69.4
1958/59	70.2
1959/60	72.9
1960/61	73.4
1961/62	73.9
1962/63	74.2
1963/64	74.9
1964/65	76.2
1965/66	78.2
1966/67	79.8
1967/68	81.5
1968/69	84.2
1969/70	87.5
1970/71	93.7
1971/72	100.0
1972/73	103.3
1973/74	110.1

Source : Australian Bureau of Statistics, Australian National Accounts, National Income and Expenditure, Catalogue No. 5204.0 (Ref. No.7.1), Canberra.

TABLE 1.7 : CONSTRUCTION OF THE COMBINED MOTOR VEHICLE PRICE INDEX

Year	Price indices for specific vehicle categories (1971/72 = 100)			Weights used to combine the three price indices			Total weight (7)	Combined motor vehicle price index (8)
	Medium vehicle (1)	Light commercial (2)	Heavy commercial (3)	Medium vehicle (4)	Light commercial (5)	Heavy commercial (6)		
1950/51	58.4	85.1	39.0	.104	.495	.401	1.000	63.8
1951/52	67.9	83.6	39.0	.119	.506	.375	1.000	65.0
1952/53	74.3	82.7	39.4	.158	.544	.298	1.000	68.5
1953/54	72.7	80.6	40.2	.190	.551	.259	1.000	68.6
1954/55	70.5	77.8	41.5	.197	.533	.270	1.000	66.6
1955/56	73.1	82.9	43.5	.194	.536	.270	1.000	70.4
1956/57	77.7	88.0	45.9	.203	.550	.247	1.000	75.5
1957/58	78.8	88.2	48.0	.205	.583	.212	1.000	77.8
1958/59	77.8	87.4	49.1	.192	.621	.187	1.000	78.4
1959/60	76.7	86.5	50.9	.187	.621	.192	1.000	77.8
1960/61	75.4	84.5	53.5	.196	.603	.201	1.000	76.5
1961/62	73.0	81.1	55.1	.212	.595	.193	1.000	74.4
1962/63	71.7	79.3	57.4	.216	.584	.200	1.000	73.3
1963/64	71.8	78.8	60.5	.200	.570	.230	1.000	73.2
1964/65	74.8	80.0	61.7	.198	.555	.247	1.000	74.5
1965/66	77.7	81.2	62.5	.213	.537	.250	1.000	75.8
1966/67	80.1	81.9	66.0	.223	.518	.259	1.000	77.4
1967/68	83.7	84.3	68.6	.228	.501	.271	1.000	79.9
1968/69	88.3	87.3	73.7	.232	.475	.293	1.000	83.6
1969/70	93.5	89.1	80.3	.236	.451	.313	1.000	87.4
1970/71	96.4	93.1	88.0	.231	.455	.314	1.000	92.3
1971/72	100.0	100.0	100.0	.231	.455	.314	1.000	100.0

Source : For details, see Section 3.1.

TABLE 1.8 : ACTIVITY COMPOSITION OF THE OTHER FARMING INDUSTRIES AND THE BAE SURVEYS USED IN ESTIMATION

Activity	BAE survey used
<u>OTHER FARMING EXPORT</u>	
Dried vine fruit	Dried vine fruit industry (a)
Apple	Apple and pear growing (b)
Pear	Apple and pear growing (b)
Wine and table grape	Wine grape industry (c)
Citrus fruit	Apple and pear growing (b)
Banana growing	Apple and pear growing (b)
Peach	Deciduous canning fruit growing (d)
Pineapple	Apple and pear growing (b)
Apricot	Deciduous canning fruit growing (d)
<u>OTHER FARMING NON-TRADED AND IMPORT COMPETING</u>	
Tobacco	Tobacco growing industry (e)
Cotton	Cotton growing industry (f)
Peanut	Peanut growing industry (g)
Tomato	Processing tomato growing industry (h)
Potato	Processing tomato growing industry (h)
Other vegetables	Processing tomato growing industry (h)
Linseed	Processing tomato growing industry (h)
Other oilseeds	Processing tomato growing industry (h)

- (a) The Australian Dried Vine Fruit Industry, An Economic Survey, 1965/66 to 1967/68, Australian Government Publishing Service, Canberra, 1971.
- (b) Apple and Pear Growing in Tasmania, Victoria and Western Australia, An Economic Survey, 1965/66 to 1968/69, Australian Government Publishing Service, Canberra, 1972.
- (c) The Australian Wine Grape Industry, An Economic Survey, 1965/66 to 1967/68, Australian Government Publishing Service, Canberra, 1973.
- (d) The Australian Deciduous Canning Fruit Growing Industry, An Economic Survey, 1965/66 to 1968/69, Australian Government Publishing Service, Canberra, 1971.
- (e) The Australian Tobacco Growing Industry, Preliminary Report on An Economic Survey, 1970/71 to 1972/73, Australian Government Publishing Service, Canberra, 1973.
- (f) The Australian Cotton Growing Industry, An Economic Survey, 1964/65 to 1966/67, Australian Government Publishing Service, Canberra, 1970.
- (g) The Australian Peanut Growing Industry, An Economic Survey, 1964/65 to 1967/68, Australian Government Publishing Service, Canberra, 1971.
- (h) The Processing Tomato Growing Industry, A Continuous Farm Study, 1966/67 to 1968/69, Australian Government Publishing Service, Canberra, 1971.

TABLE 1.9 : DEPARTMENT OF PRIMARY INDUSTRY SURVEYS USED TO ESTIMATE FISHING CAPITAL STOCKS

Australian	Department of Agriculture, Fisheries Division, <u>Economic Survey of the Southern Bluefin Tuna Fishery</u> , Fisheries Report No. 9, Australian Government Publishing Service, Canberra, 1974.
Australian	Department of Agriculture, Fisheries Division, <u>Economic Survey of the W.A. Rock Lobster Fishery</u> , Fisheries Report No. 10, Australian Government Publishing Service, Canberra, 1974.
Australian	Department of Agriculture, Fisheries Division, <u>Western Australian Prawn Fisheries, An Economic Survey</u> , Fisheries Report No. 13, Australian Government Publishing Service, Canberra, 1975.
Australian	Department of Agriculture, Fisheries Division, <u>Preliminary Report : Economic Survey of the Tasmanian Rock Lobster Fishery, 1970/71 to 1972/73</u> , (mimeo).
Australian	Department of Agriculture, Fisheries Division, <u>Preliminary Report : Economic Survey of the South Australian Rock Lobster Fishery, 1970/71 to 1972/73</u> , (mimeo).
Australian	Department of Agriculture, Fisheries Division, <u>Preliminary Report on the Economic Survey of the Tasmanian Abalone Fishery, 1970/71 to 1972/73</u> , (mimeo).
Australian	Department of Agriculture, Fisheries Division, <u>Preliminary Report on the Economics of Abalone Fishing, Victoria Zone 1, 1970/71 to 1972/73</u> , (mimeo).
Department	of Primary Industry, Fisheries Division, <u>Costs and Earnings of Trawlers, An Economic Investigation of the Northern Prawn Fishery</u> , Fisheries Report No. 8, Australian Government Publishing Service, Canberra, 1973.
Department	of Primary Industry, Fisheries Division, <u>Economic Survey of the South Australian Prawn Fishery</u> , Fisheries Report No. 12, Australian Government Publishing Service, Canberra, 1974.
Department	of Primary Industry, Fisheries Division, <u>The Economics of the Victorian Wet Fish Fishery, 1970/71 to 1973/74</u> , A Preliminary Report, 1976 (mimeo).
Department	of Primary Industry, Fisheries Division, <u>Preliminary Report : Economic Survey of Victorian Abalone Fishery, Central and Western Zones, 1970/71 to 1973/74</u> , (mimeo).
Department	of Primary Industry, Fisheries Division, <u>Preliminary Report : Economic Survey of South Australian Abalone Fishery, 1970/71 to 1973/74</u> , (mimeo).
Department	of Primary Industry, Fisheries Division, <u>The Economics of the Western Australian Rock Lobster Fishery, 1972/73 to 1974/75</u> , A Preliminary Report, 1976 (mimeo).
Department	of Primary Industry, Fisheries Division, <u>Preliminary Report : Economic Survey of the Victorian Rock Lobster Fishery, 1970/71 to 1973/74</u> , (mimeo).

TABLE 1.10 : FACTORY CLASS CLASSIFICATION FOR MANUFACTURING, ELECTRICITY AND GAS INDUSTRIES

Factory class		
No.	Code	Title
CLASS 1 : Treatment of Non-Metalliferous Mine and Quarry Products		
1	1.01	Coke works
2	1.04	Lime, plaster of paris, asphalt
3	1.05	Fibrous plaster and products
4	1.06	Marble, slate, etc.
5	1.07	Cement, portland
6	1.08	Asbestos cement sheets and mouldings
7	1.09	Other cement goods
8	1.10	Other (including 1.02, Briquetting and 1.03, Carbide)
CLASS 2 : Bricks, Pottery, Glass, etc.		
9	2.01	Bricks and tiles
10	2.02	Earthenware, china, porcelain, terra cotta
11	2.03	Glass (other than bottles)
12	2.04	Glass bottles
13	2.05	Other
CLASS 3 : Chemicals, Dyes, Explosives, Paints, Oils, Grease		
14	3.01	Industrial and heavy chemicals and acids
15	3.02	Pharmaceutical and toilet preparations
16	3.03	Explosives (including fireworks)
17	3.04	White lead, paints and varnish
18	3.05	Oils, vegetable
19	3.06	Oils, mineral
20	3.07	Oils, animal
21	3.08	Boiling down, tallow refining
22	3.09	Soap and candles
23	3.10	Chemical fertilisers
24	3.11	Inks, polishes, etc.
25	3.12	Matches
26	3.13	Other
CLASS 4 : Industrial Metals, Machines, Conveyances		
27	4.01	Smelting, converting, refining, rolling of iron and steel
28	4.02	Foundries (ferrous)
29	4.03	Plant, equipment and machinery, including machine tools
30	4.04	Other engineering
31	4.05	Extracting and refining of other materials; alloys
32	4.06	Electrical, machinery, cables and apparatus
33	4.07	Tramcars and railway rolling stock - government and municipal
34	4.08	Tramcars and railway rolling stock - other
35	4.09	Motor vehicles - construction and assembly
36	4.10	Motor vehicle repairs

continued

Table 1.10 continued

Factory class		
No.	Code	Title
37	4.11	Motor bodies
38	4.12	Horse drawn vehicles
39	4.13	Motor accessories
40	4.14	Aircraft
41	4.15	Cycles and accessories
42	4.17	Ship and boat building, etc. - government
43	4.18	Ship and boat building, etc. - other and municipal
44	4.19	Cutlery and small hand tools
45	4.20	Agricultural machines and implements
46	4.21	Non-ferrous - rolling and extrusion
47	4.22	Non-ferrous - founding, casting, etc.
48	4.24	Non-ferrous - sheet metal working, pressing and stamping
49	4.25	Pipes, tubes and fittings - ferrous
50	4.26	Wire and wire working (including nails)
51	4.27	Stoves, ovens and ranges
52	4.28	Gas fittings and meters
53	4.29	Lead mills
54	4.30	Sewing machines
55	4.31	Arms, ammunition (excluding explosives)
56	4.32	Wireless and amplifying apparatus
57	4.33	Other metal works
CLASS 5 : Precious Metals, Jewellery, Plate		
58	5.01)	Jewellery
	5.02)	Watches and clocks (including repairs)
59	5.03	Electroplating (gold, silver, chromium, etc.)
CLASS 6 : Textiles and Textile Goods (Not Dress)		
60	6.01	Cotton ginning
61	6.02	Cotton spinning and weaving
62	6.03	Wool carding, spinning and weaving
63	6.04	Hosiery and other knitted goods
64	6.06	Rayon, acrylics and other synthetic fibres
65	6.07	Flax mills
66	6.08	Rope and cordage
67	6.09	Canvas goods, tents, tarpaulins, etc.
68	6.10	Bags and sacks
69	6.11	Textile dyeing, printing, finishing
70	6.12	Other (including 6.05, Silk - natural)
CLASS 7 : Skins and Leather (Not Clothing or Footwear)		
71	7.01	Furriers and fur dressing
72	7.02	Woolscouring and fellmongery
73	7.03	Tanning, currying and leather-dressing
74	7.04	Saddlery, harness and whips

continued

Table 1.10 continued

Factory class		
No.	Code	Title
75	7.05	Machine belting for leather and leather substitutes
76	7.06	Bags, trunks and other goods of leather and leather substitutes
CLASS 8 : Clothing (Except Knitted)		
77	8.01	Tailoring and ready-made clothing
78	8.02	Waterproof and oilskin clothing
79	8.03	Dressmaking, hemstitching
80	8.04	Millinery
81	8.05	Shirts, collars, underclothing
82	8.06	Foundation garments
83	8.07	Handkerchiefs, ties and scarves
84	8.08	Hats and caps
85	8.09	Gloves
86	8.10	Boots and shoes (not rubber)
87	8.12	Boot and shoe accessories
88	8.13	Umbrellas and walking sticks
89	8.14	Dyeworks and cleaning (including renovating and repairing)
90	8.15	Other
CLASS 9 : Food, Drink and Tobacco		
91	9.01	Flour-milling
92	9.02	Cereal foods and starch
93	9.03	Animal and bird foods
94	9.04	Chaffcutting and corncrushing
95	9.05	Bakeries (including cakes and pastry)
96	9.06	Biscuits
97	9.07)	Sugar mills
	9.08)	Sugar refining
	9.25)	Cider and Perry
	9.33)	Other
98	9.09	Confectionery (including chocolate and icing sugar)
99	9.10	Jam, fruit and vegetable canning
100	9.11	Pickles, sauces, vinegar
101	9.12	Bacon curing
102	9.13)	Butter factories
	9.14)	Cheese factories
	9.15)	Condensed and dried milk factories
103	9.16	Margarine
104	9.17	Meat and fish preserving
105	9.18	Condiments, coffee and spices
106	9.19	Ice and refrigerating
107	9.20	Salt
108	9.21	Aerated waters, cordials, etc.
109	9.22	Breweries

continued

Table 1.10 continued

Factory class		
No.	Code	Title
110	9.23)	Distilleries
	9.24)	Winemaking
111	9.26	Malting
112	9.28	Tobacco, cigars, cigarettes, snuff
113	9.29	Dehydrated fruit and vegetables
114	9.30	Ice cream
115	9.31	Sausage casings
116	9.32	Arrowroot
CLASS 10 : Sawmills, Joinery, Boxes, Etc., Wood Turning and Carving		
117	10.01	Sawmills
118	10.02	Plywood mills (including veneers)
119	10.03	Bark mills
120	10.04	Joinery
121	10.05	Cooperage
122	10.06	Boxes and cases
123	10.07	Woodturning, woodcarving, etc.
124	10.08	Basketware, wickerware and bamboo
125	10.09	Perambulators (including pushers and strollers)
126	10.10	Wall and ceiling boards (not plaster or cement)
127	10.11	Other
CLASS 11 : Furniture of Wood, Bedding, Etc.		
128	11.01	Cabinet, furniture making and upholstery
129	11.02)	Bedding and mattresses (not wire)
	11.03)	Furnishing drapes
130	11.04	Picture frames
131	11.05	Blinds
CLASS 12 : Paper, Stationery, Printing, Bookbinding, Etc.		
132	12.01	Newspapers and periodicals
133	12.02	Printing - government
134	12.03	Printing - general
135	12.04	Stationery
136	12.05	Stereotyping, electroplating
137	12.06	Process and photoengraving
138	12.07	Cardboard boxes, cartons and containers
139	12.08	Paper bags
140	12.09	Paper-making
141	12.10	Pencils, penholders, chalks, crayons
142	12.11	Other
CLASS 13 : Rubber		
143	13.01	Rubber goods (including tyres made)
144	13.02	Tyre retreading and repairing

continued

Table 1.10 continued

Factory class		
No.	Code	Title
CLASS 14 : Musical Instruments		
145	14.01	Gramophones and gramophone records
146	14.02	Pianos, piano-players, organs
147	14.03	Other
CLASS 15 : Miscellaneous Products		
148	15.01)	Linoleum, leathercloth, oilcloth, etc.
	15.02)	Bone, horn, ivory and shell
	15.10)	Other
149	15.03	Plastic moulding and products
150	15.04	Brooms and brushes
151	15.05)	Optical instruments and appliances
	15.06)	Surgical and other scientific instruments and appliances
	15.07)	Photographic material (including developing and printing)
152	15.08	Toys, games and sports requisites
153	15.09	Artificial flowers
CLASS 16 : Heat, Light and Power		
154	16.01	Electric light and power - government
155	16.02	Electric light and power - local authority
156	16.03	Electric light and power - companies
157	16.04	Gas works - government
158	16.05	Gas works - local authority
159	16.06	Gas works - companies

Source : Published by Commonwealth Statistician.

TABLE 1.11 : CORRESPONDENCE BETWEEN THE FACTORY CLASS CLASSIFICATION AND THE INDUSTRY CLASSIFICATION USED IN THIS STUDY

Industry number ^a	Factory class number ^b
18	40% of 21; 101; 40% of 104; 115
19	102; 114
20	99; 100; 113
21	18; 20; 60% of 21; 103
22	91; 92; 116
23	95; 96
24	98
25	93; 94; 70% of 97; 60% of 104; 105; 106; 107
26	108
27	109; 111
28	30% of 97; 110
29	112
30	60; 33.3% of 62; 6% of 70; 72
31	64; 6% of 70; 25% of 129
32	50% of 61; 33.3% of 62; 65; 6% of 70; 25% of 129
33	50% of 61; 33.3% of 62; 7% of 70; 25% of 129
34	69
35	75% of 70
36	66; 67; 90% of 131
37	63
38	77; 78; 79-85; 90
39	86; 87
40	117; 121; 122; 127
41	118; 126
42	119; 120; 123; 124; 130
43	128; 25% of 129; 150
44	140
45	60% of 138; 139; 60% of 142
46	40% of 138; 40% of 142
47	132
48	133-137
49	23
50	14; 26
51	17
52	70% of 15
53	22
54	30% of 15
55	16; 24; 25
56	40% of 2; 19
57	11; 12
58	9; 10
59	5
60	44% of 7
61	6; 66% of 7
62	60% of 2; 3; 4; 8; 13
63	1; 90% of 27; 28; 49

continued

Table 1.11 continued

Industry number ^a	Factory class number ^b
64	31; 46; 47; 53
65	10% of 27; 20% of 29; 20% of 30; 5% of 48
66	55% of 48
67	20% of 29; 20% of 30; 44; 50; 52; 55; 57; 59; 10% of 131; 10% of 148
68	35; 37; 38; 39; 41; 125
69	42; 43
70	33; 34
71	40
72	50% of 58; 45% of 148; 75% of 151
73	56; 145
74	40% of 48; 51; 54
75	32
76	45
77	20% of 29; 20% of 30
78	40% of 29; 40% of 30
79	71; 73; 74; 75; 76
80	143
81	149; 153
82	141
83	50% of 58; 88; 146; 147; 152; 45% of 148; 25% of 151
84	154-156
85	157-159

a For key to industry numbers see Appendix Table 1.1.

b For key to factory class numbers see Appendix Table 1.10.

TABLE 1.12 : PRIVATE AND PUBLIC INVESTMENT IN DWELLINGS, 1911/12 to 1970/71

Year	Private sector investment	Public sector investment	Total investment
	(\$m)	(\$m)	(\$m)
1911/12	21.0	0.5	21.5
1912/13	31.5	0.7	32.2
1913/14	34.1	1.1	35.2
1914/15	29.9	0.8	30.7
1915/16	23.0	0.6	23.6
1916/17	19.4	0.3	19.7
1917/18	19.1	0.1	19.2
1918/19	26.3	0.1	26.4
1919/20	30.7	9.4	40.1
1920/21	28.2	15.0	43.2
1921/22	42.2	5.1	47.3
1922/23	60.0	4.3	64.3
1923/24	66.4	5.2	71.6
1924/25	67.1	3.6	70.7
1925/26	69.1	2.3	71.4
1926/27	76.4	3.1	79.5
1927/28	78.4	3.3	81.7
1928/29	68.0	3.5	71.5
1929/30	48.9	2.1	51.0
1930/31	25.0	0.3	25.3
1931/32	15.4	0.2	15.6
1932/33	22.5	0.1	22.6
1933/34	29.3	0.1	29.4
1934/35	37.0	0.3	37.3
1935/36	47.2	0.5	47.7
1936/37	54.3	0.4	54.7
1937/38	61.5	0.4	61.9
1938/39	56.0	0.3	56.3
1939/40	58.0	0.9	58.9
1940/41	54.0	0.7	54.7
1941/42	34.0	0.6	34.6
1942/43	14.0	0.4	14.4
1943/44	10.0	0.4	10.4
1944/45	14.0	0.5	14.5
1945/46	30.0	5.6	35.6
1946/47	64.0	13.9	77.9
1947/48	96.0	21.1	117.1
1948/49	144.0	35.0	179.0
1949/50	190.0	53.0	243.0
1950/51	270.0	70.0	340.0
1951/52	341.0	93.0	434.0
1952/53	358.0	69.0	427.0
1953/54	376.0	75.0	451.0
1954/55	415.0	72.0	487.0
1955/56	421.0	66.0	487.0
1956/57	422.0	43.0	465.0

continued

Table 1.12 continued

Year	Private sector investment	Public sector investment	Total investment
	(\$m)	(\$m)	(\$m)
1957/58	486.0	37.0	523.0
1958/59	534.0	45.0	579.0
1959/60	620.0	28.0	648.0
1960/61	673.0	27.0	700.0
1961/62	603.0	42.0	645.0
1962/63	663.0	38.0	701.0
1963/64	767.0	50.0	817.0
1964/65	905.0	57.0	962.0
1965/66	912.0	63.0	975.0
1966/67	988.0	68.0	1 056.0
1967/68	1 120.0	62.0	1 182.0
1968/69	1 294.0	76.0	1 370.0
1969/70	1 488.0	92.0	1 580.0
1970/71	1 536.0	107.0	1 643.0

Source : See Section 3.3.2.10.

APPENDIX 2 : INDUSTRY CLASSIFICATION OF MINING INDUSTRIES

Data for the mining sector are not published by the ABS for the ASIC industry groupings distinguished in the I-0 tables and in the ORANI industry classification. These industries are shown in Table 2.1 column 2. Columns 1 and 3 of this table show the industries for which data were reported for years prior to 1968/69, and from 1968/69, respectively. The procedures used to map the initial values of capital and the investment series from these alternative classifications into the required industries are described in this appendix.

The initial book values for mining industries (Section 3.3.1.1) were mapped into the industries in the following way. The values for Non-Metal mining and Construction materials quarrying were added together to form values for the Non-Metallic minerals n.e.c. industry. In order to split the values for Metal mining and Fuel mining into their respective industries (Table 2.1), use was made of total book values of assets, published at a more detailed industry level. The average share of assets of the Iron ore industry in the total book value of Metal mining assets in 1953 and 1954 was used to split values for Metal mining into the industries Iron ore and Other metallic minerals. Using the total book values for the assets of the Coal and Crude oil industries, available separately in 1953 and 1954, this method was used to split the book value for Fuel mining into its ORANI industry components.

An investment series classified by ASIC industries for the period 1953 to 1974/75 was obtained in two stages. First, for the years 1953 to 1968 the four industries reported in the Mining and Quarrying statistical bulletin (column 1, Table 2.1) were mapped into the five industry ORANI classification

(column 2, Table 2.1), and second, the five industries shown in the Mining Establishments bulletin (column 3, Table 2.1) were allocated to the ORANI industries.

TABLE 2.1 : CONCORDANCE BETWEEN DIFFERENT MINING INDUSTRY CLASSIFICATIONS

Mining and Quarrying statistical bulletin classification (prior to 1968/69)	ORANI industry (with ASIC identifiers)	Mining Establishments bulletin classification (1968/69 and later)
Metal mining	Iron ore (ASIC 1104)	Iron ore
	Other metallic minerals (ASIC 110, excl. 1104)	Other metallic minerals
Fuel mining	Coal (ASIC 120)	Black coal
	Crude oil (ASIC 130)	Brown coal and crude oil
Non-Metal mining	Non-Metallic minerals n.e.c. (ASIC 140,150)	Non-Metallic minerals n.e.c.
Construction materials quarrying		

For the period 1953 to 1968, investment values reported in each year, by three asset categories, in the Non-Metal mining and the Construction materials quarrying industries were summed to form the series for the Non-Metallic minerals n.e.c. industry. The procedure used to disaggregate investment by asset type, reported for the Metal and Fuel mining industries, into their respective ASIC industries was twofold. First, an estimate of total investment in each of the ASIC industries (Iron ore, Other metallic minerals, Coal, and Crude oil) was made for the period 1953 to 1968, and second, these totals were disaggregated into three asset categories.

Total investment in the Iron ore and the Other metallic minerals industries were available separately in 1953, 1954, 1966, 1967 and 1968. The average share of Iron ore investment in total Metal mining investment in 1953 and 1954 was used to separate the value of Iron ore investment from total Metal mining investment for the period 1955 to 1964 while the share in 1966 was used in 1965. The investment data available for Metal mining overall showed a substantial rise in 1965 over previous levels and the disaggregation available in 1966 indicated that this arose from increased Iron ore investment. This is supported by the data available on the share of Iron ore production in the total value of production of Metal mining industries which shows that between 1953 and 1965 it fluctuated between 5 and 8 per cent, while in 1966 it more than doubled to 13 per cent, and rose to 22 per cent in 1967.

Between 1953 and 1968, total investment in the Crude oil industry was published in only three years (1953, 1954 and 1956). In the years prior to 1962 Crude oil investment was not included with Fuel mining investment, while between 1963 and 1968 when it became more significant, it was included with Coal investment statistics. The average share of total Crude oil investment to total

Coal investment for the three years when separate statistics were available (1.74 per cent) was used to estimate Crude oil investment for the years to 1962. In 1963 and 1964 this share was increased to reflect the increased investment in the industry resulting from rising production levels. In years prior to 1963 the value of petroleum production was negligible. In 1964, while the value of petroleum production had increased substantially it still comprised only 1.47 per cent of total fuel production. In 1965, 1966, 1967 and 1968 its share was 3.2, 5.11, 10.53 and 15.74 per cent respectively. For the period 1965 to 1968 the BMR provided estimates of total investment in the Crude oil industry and Coal investment was obtained as a residual.

To obtain an investment series for each ASIC industry split into three asset categories (buildings, mine development, and vehicles and machinery) the above total investment series were disaggregated using the following shares. For the Iron ore and the Other metallic minerals industries the average proportions of each of these asset categories in the Iron ore industry and the Other metallic minerals industry between 1968/69 and 1974/75 were used.

Since investment in the Crude oil industry was negligible for the years 1953 to 1962, it sufficed to use the share of each asset category in total Fuel mining investment in each year to disaggregate total investment in this industry as well as for the disaggregation of new assets in the Coal industry. However, for the period 1963 to 1968 when investment by the Crude oil industry constituted a larger share of Fuel mining investment, this assumption is less reasonable. The shares of each asset category reported between 1968/69 and 1974/75 in the brown coal and crude oil and the black coal industries (column 3, Table 2.1) were used to disaggregate total investment in the Crude oil industry and the Coal industry (column 2, Table 2.1), respectively. In the absence of

any other data, it seemed reasonable to use for the ORANI Coal industry (column 2, Table 2.1) the asset proportions reported for black coal between 1968/69 and 1974/75 because black coal dominated this industry: its production was, on average, 14 times greater than that of brown coal over this period. Similarly, for the same period the value of Crude oil production was, on average, 9 times greater than that of brown coal, so that it was reasonable to use the asset split for brown coal and crude oil (column 3, Table 2.1) to represent that of the ORANI Crude oil industry (column 2, Table 2.1).

The second mapping involved allocating the investment data reported for the years 1968/69 to 1974/75 in the black coal, and the brown coal and crude oil industries to the ORANI industries Coal and Crude oil. Estimates of total investment in the ORANI Crude oil industry (provided by the BMR) and the ORANI Coal industry (derived as the difference between the BMR figures and published investment data) were disaggregated into four asset categories (buildings, mine development, plant and machinery, and motor vehicles) using the share of each category in each year between 1968/69 and 1974/75 in total investment reported in the black coal and the brown coal and crude oil categories (Table 2.1, column 3), respectively.

APPENDIX 3 : ADJUSTMENTS TO THE INVESTMENT DATA USED IN THE CALIBRATION EXERCISE

Several adjustments to the data on actual levels of investment by ORANI commodities and by investing industries in 1971/72 (Section 4.2.2) were made so that major deviations from trend were removed. The final step was to bring the adjusted row and column totals into equality.

3.1 Adjustments to Investment by Using Industries

There were several industries in which investment appeared to be unusually low in 1971/72. These were the Pastoral zone, Wheat-Sheep zone, High rainfall zone, Chemical fertilisers, Glass and glass products, and Agricultural machinery industries.

It was assumed that actual investment in each of the Pastoral zone, Wheat-Sheep zone and High rainfall zone industries was only 54 per cent of the typical level.¹ The atypically low level of actual investment by the Agricultural machinery industry (only half that of the typical level) is related to depressed investment expenditure in the agricultural industries. In the Chemical fertilisers and the Glass products industries, relatively high investment in capacity expansion in the years immediately prior to 1971/72, resulted in relatively low investment in 1971/72. To obtain typical investment, actual investment in these industries was multiplied by 13.3 and 1.7 respectively.

Typical investment was lower than actual investment in the Iron ore (70 per cent of actual investment), Non-Metallic n.e.c. mining (80 per cent), Basic iron and steel (80 per cent), Other basic metal products (80 per cent),

1. See Dixon, Harrower and Vincent [1978].

Ship and boat building (60 per cent), and Air transport (70 per cent). The atypically high investment in the Iron ore and Non-Metallic n.e.c. mining industries was due to expansion in production facilities and infrastructure (for example, at Mt. Shay, Parabadoo, and Mt. Tom Price). The higher level of investment in the Basic iron and steel industry and the Other basic metal products industry resulted from increased capacity installation in the iron ore pelletising and metallising, and the alumina and aluminium smelting sectors respectively. In the Ship and boat building and repair industry three docks were expanded and re-equipped in 1971/72. Investment in the Air transport industry was atypically high due to the importation of four jumbo jets.

Finally, the value of road construction investment was deducted from investment reported for the Forestry and logging industry and the Road transport industry (\$550m).¹

3.2 Adjustments to Investment by Commodity Input

Several adjustments to these estimates were made. First, there was evidence which suggested that the estimated value of motor vehicles supplied for investment purposes may have been too high (see below) and a figure \$140m lower was used. Second, the actual value of aircraft building supplied to investment included the importation of four jumbo jets worth \$100m. It was

1. The estimated value of roads was not included in the capital stock matrix as a satisfactory way of allocating its value to using industries could not be determined. This is consistent with the I-O table which does not include the value of the output of roads in the intermediate output and usage quadrant; although it does include the value of road construction, supplied by the Other building and construction industry, in the GFCE columns. For an estimate of the value of roads refer to Commonwealth Bureau of Roads [1975].

assumed that the purchase of one was typical, and \$75m was deducted to obtain the typical level of investment. Third, the value of road construction investment (\$550m) was deducted from Building n.e.c. and construction inputs to investment.

A second set of adjustments to the estimates was necessitated by the effects on demand for investment goods of the adjustments for using industries outlined above. For each of the twelve using industries which were adjusted, the commodities shown in Appendix Table 4.2 as accounting for most capital (between them, at least 75 per cent) were determined. The difference between the actual and typical level of investment for each using industry was then allocated to the commodities in proportion to their importance. The greatest relative change occurred in the value of Agricultural machinery supplied to investment which increased by 40 per cent because of the additions made to investment in the agricultural sector.

We conclude this section by presenting evidence which indicates that the estimates of the motor vehicles commodity component of GFCE based on the 1968/69 and 1971/72 I-0 tables¹ appear to be too high. These estimates of GFCE, disaggregated broadly by investing sectors, are shown in Table 3.1.

1. Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Catalogue No. 5209.0 (Ref. No. 7.11), Canberra, 1978; and Caddy and Lawson [1977].

TABLE 3.1 : INITIAL ESTIMATES OF THE MOTOR VEHICLES COMMODITY COMPONENT OF GFCE, BY THREE MAJOR SECTORS, 1968/69 AND 1971/72

Investing Sector	1968/69		1971/72	
	Basic values	Purchasers' prices	Basic values	Purchasers' prices
	(\$m)	(\$m)	(\$m)	(\$m)
Private	504.6	716.3	644.8	919.3
Public Enterprise	11.2	11.3	9.5	9.7
General Government	39.6	40.2	51.8	52.5
TOTAL	555.4	767.8	706.1	981.5

Source : See footnote 1 on previous page.

The estimates of the total Motor vehicles commodity component of GFCE (purchasers' prices) based on the 1968/69 and 1971/72 I-0 tables appear to be too high when compared with two other sources of information. These alternative sources are:

- (i) the total value of new registrations of vehicles for investment purposes in 1968/69 and 1971/72 (Table 3.2);

and

- (ii) the value of investment expenditure on vehicles reported in the economic censuses conducted in 1968/69 and 1971/72 (Table 3.3).

TABLE 3.2 : VALUE OF NEW REGISTRATIONS OF VEHICLES USED FOR BUSINESS PURPOSES IN 1968/69 AND 1971/72, PURCHASERS' PRICES

Type of Vehicle ^a	1968/69			1971/72		
	New registrations ^b	Average unit price ^b	Value new reg.	New registrations ^b	Average unit price ^b	Value new reg.
	(No.)	(\$)	(\$m)	(No.)	(\$)	(\$m)
Trucks and other truck types	29 391	5 510	161.9	29 143	7 478	217.9
Light commercial vehicles	52 788	2 368	125.0	59 385	2 707	167.9
Motor Vehicles and Station Wagons:						
Small	43 803	1 992	87.3	51 875	2 323	120.5
Medium	68 883	2 688	185.2	68 834	3 044	209.5
Light	2 771	6 279	17.3	2 756	8 808	24.3
Other ^c	n.a.	n.a.	125.7	n.a.	n.a.	132.5
TOTAL			702.4			872.6

a All new registrations of trucks and light commercial vehicles were assumed to be used for business purposes. In the case of motor vehicles and station wagons it was assumed that 30 per cent of total new registrations were directed to business uses.

b Internal communication and Tariff Board, The Demand for Commercial Vehicles Industry Economics Branch Study, Canberra, 1973 (mimeo).

c Includes buses, vehicle bodies, caravans and semi-trailers. This estimate was provided by the ABS for 1968/69, and our own estimate was made for 1971/72.

Note that the estimates in Tables 3.1 and 3.2 are not defined on a consistent basis. The figures based on the I-0 tables show capital expenditure less the value of disposals of motor vehicles while the estimates of the value of new registrations do not have the value of disposals of

vehicles deducted.¹ An indication of the proportion of disposals of vehicles to the value of new investment is given by dividing new fixed capital expenditure on motor vehicles by fixed capital expenditure less disposals (reported in the economic censuses) in 1968/69 and 1971/72. These shares were 74 per cent and 66 per cent in each year respectively.² If an allowance for disposals of motor vehicles were made it would reduce the estimate of the value of new registrations and result in a larger discrepancy between the estimates.

The contention that the vehicle commodity content of GFCE on vehicles shown in Table 3.1 is overestimated is also supported by considering investment on vehicles which is reported in several ABS census publications (Table 3.3). In 1968/69 data showing investment on vehicles are available for most industries, yet this total (\$120.8m) is far short of \$767.8m, the figure which is shown in the I-0 table in that year. The level of vehicle investment in the major sectors for which vehicle investment is not available in 1968/69 and 1971/72 is estimated in Table 3.4. To this is added investment reported in the economic censuses. These estimates are well below those based on the I-0 table (Table 3.5).

-
1. That is, those which leave the sector during the year.
 2. The use of these shares would involve assuming, (a) that there are no intra-business sector transactions; and (b) all disposals are of vehicles less than one year old. There is no information on these transactions.

TABLE 3.3 : NEW INVESTMENT ON MOTOR VEHICLES^a REPORTED IN ECONOMIC
CENSUSES^b IN 1968/69 AND 1971/72

Sector	Year	
	1968/69	1971/72
	(\$m)	(\$m)
Mining	3.8	5.7
Manufacturing	38.5	43.1
Electricity and Gas	6.5	6.2
Wholesale Trade	37.1	n.a.
Retail Trade	31.5	n.a.
Selected Service Establishments	3.4	n.a.
TOTAL	120.8	55.0

a Defined as investment on new and secondhand vehicles less disposals. Note that it is valued in purchasers' prices.

b Conducted by the ABS.

TABLE 3.4 : ESTIMATED LEVEL OF NEW INVESTMENT IN VEHICLES BY SIX INDUSTRIAL SECTORS, 1968/69 AND 1971/72, PURCHASERS' PRICES

Investing sector	1968/69	1971/72
	(\$m)	(\$m)
Agriculture ^a	75.1	66.5
Building and Construction ^b	13.9	12.7
Wholesale and Retail Trade ^c	See Table 3.3	111.8
Road Transport ^d	146.4	143.5
Finance Sector ^e	79.6	154.2
Miscellaneous Industries ^f	100.0	130.0
Total Estimated for these Sectors	415.0	618.7
Total Vehicle Investment from Censuses (Table 3.3)	120.8	55.0
Total Vehicle Investment	535.8	673.7

a 11.56 per cent of total investment by private and public sectors in the agricultural sector reported in the ANA. This share is based on the share of the stock of vehicles in the total stock of fixed capital in 1971/72. This was supplied by the BAE from farm survey data.

b 10 per cent of total investment by the sector in each year reported in the ANA.

c 20 per cent of total investment by the private sector reported in the ANA in 1971/72. This is the share of vehicle investment in total investment reported in the 1968/69 wholesale and retail censuses.

d Vehicle investment was estimated in three stages. First, the total level of Road transport investment was estimated. Second, this was disaggregated into two asset categories ("buildings" and "plant, machinery and vehicles"). Finally, vehicle investment was assumed to be 90 per cent of total plant, machinery and vehicle investment. Total Road transport investment was estimated by taking total private sector investment in transport and public enterprise Air transport investment (both reported in the ANA), and deducting from this, survey data collected by ABS for private shipping, and private and public enterprise Air transport. (This inflated the survey estimate of private Road transport and was consistent with opinion within ABS (private communication) that survey data for Road transport investment was understated as only enterprises subject to payroll tax are eligible for inclusion in the survey.) The shares used to disaggregate total investment into two asset categories in 1968/69 and 1971/72 were taken from ABS survey data. Public enterprise investment on Road transport was added to the estimate for the private sector.

e Assumed to be 20 per cent of total finance investment for the private and public sectors reported in the ANA.

f These industries are Water, sewerage and drainage; Rail, Water and Air transport; Communication; Public administration; Health; Education; Welfare services; and Entertainment, Recreation and Personal services.

TABLE 3.5 : COMPARISON OF THREE ESTIMATES OF MOTOR VEHICLES COMMODITY COMPONENT OF GFCE, PURCHASERS' PRICES, 1968/69 AND 1971/72

Method/Source	1968/69	1971/72
	(\$m)	(\$m)
(1) Input-Output tables (Table 3.1)	767.8	981.5
(2) Value of New Registrations (Table 3.2)	702.4	872.6
(3) Census plus Estimates by Sector (Table 3.4)	535.8	673.7

The method used to estimate the motor vehicles commodity component of GFCE from the 1968/69 I-0 table is now described. The estimate is derived as a residual after deducting intermediate usage, private final consumption expenditure, increase in stocks, and exports from the estimated total supply of deliveries from the Motor vehicles industry. An error in any of these variables will affect the GFCE estimate. The most likely source of error is that private final consumption expenditure is understated. The level of private consumption expenditure estimated for use in the ANA was also used in the I-0 tables. The method used to estimate private final consumption expenditure on vehicles was as follows:

- (a) The total value of new registrations of motor vehicles is estimated by applying the average price to the number of new registrations.
- (b) This is allocated to sectors of end use (private and business).
- (c) Added to the private expenditure estimate are purchases of secondhand cars from the business sector (very little data on this) and the profit margins on transfers of vehicles.

The value of motor vehicles inputs to investment which was used in the calibration exercise was about \$560m. This was estimated by taking the simple average of estimates (2) and (3) shown in Table 3.5 and converting this to basic values.

Finally, a comment is made on the importance of the size of the figure used for the total supply of motor vehicles in 1971/72 in the calibration of the capital stock matrix. The use of a GFCE figure of about \$750m (basic values) resulted in the adjusted capital stock matrix having a stock of vehicles of \$6.7b. However, the use of a figure of about \$560m (basic values) resulted in a capital stock of vehicles of \$3.3b.

This second lower valuation is reasonably consistent with our estimate of the total stock of vehicles used for business purposes for individual industries, which add to \$2.8b, basic values (\$3.8b purchasers' prices). It is also consistent with an industry-wide estimate of the stock of vehicles for 1971/72 of \$4.6b (purchasers' prices). This estimate, made using the perpetual inventory method, was based on IAC data on the value of new registrations in each year for the major vehicle types (trucks, \$1.8b, light commercial vehicles \$1.1b, and motor vehicles and station wagons used for business purposes \$1.7b).

3.3 Equality of the Row and Column Sums

The final adjustment involved increasing the row totals (which summed initially to \$8 876.5m) proportionally so that they equalled the total of the column sums (\$8 911.6m, Table 12).

APPENDIX 4 : THE RESULTS

TABLE 4.1 : INDUSTRY CAPITAL STOCKS AT PURCHASERS' PRICES BY BROAD ASSET CATEGORIES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)¹

Industry	Buildings	Plant and Machinery	Mine Development	Motor Vehicles	Total
1 Pastoral Zone	286.9	57.0	0.0	32.8	376.6
2 Wheat-Sheep Zone	1 017.2	554.9	0.0	178.2	1 750.3
3 High Rainfall Zone	658.6	184.5	0.0	98.9	942.0
4 Northern Beef	142.2	31.4	0.0	10.0	183.6
5 Milk Cattle and Pigs	1 080.3	189.1	0.0	67.2	1 336.6
6 Other Farming Export	234.0	161.7	0.0	46.1	441.8
7 Other Farming Imp. Competing	187.5	77.7	0.0	38.5	303.7
8 Poultry	50.2	15.9	0.0	7.7	73.9
9 Services to Agriculture	76.8	128.1	0.0	51.2	256.2
10 Forestry and Logging	37.6	96.0	0.0	18.0	151.6
11 Fishing and Hunting	2.0	81.4	0.0	2.6	86.0
12 Iron	112.3	219.5	1.2	2.9	335.9
13 Other Metallic Minerals	367.1	305.3	42.2	13.3	728.0
14 Coal	178.2	350.3	37.3	7.5	573.3
15 Crude Oil	208.2	36.1	18.4	.9	263.6
16 Non-Metallic Nec	60.3	83.6	1.8	9.9	155.6
17 Services to Mining	12.0	20.0	0.0	8.0	40.0
18 Meat Products	80.8	82.9	0.0	12.1	175.8
19 Milk Products	68.4	78.6	0.0	22.7	169.7
20 Fruit and Veg. Products	41.8	46.1	0.0	4.3	92.3
21 Margarine, Oils and Fats	11.5	15.7	0.0	1.0	28.2
22 Flour and Cereal Products	29.9	36.2	0.0	3.7	69.8
23 Bread, Cakes and Biscuits	63.0	56.5	0.0	15.9	135.5
24 Confectionery Products	16.3	19.4	0.0	1.6	37.3
25 Food Products Nec	101.9	135.1	0.0	9.6	246.6
26 Soft Drinks	23.1	33.1	0.0	6.9	63.1
27 Beer and Malt	65.9	76.0	0.0	1.9	143.7
28 Alcoholic Bev. Nec	23.5	42.8	0.0	3.0	69.3
29 Tobacco Products	16.9	23.9	0.0	.3	41.0
30 Prepared Fibres	12.8	16.0	0.0	.7	29.6
31 Man-Made Fibres	14.2	39.3	0.0	1.2	54.8
32 Cotton, Silk, Flax Yarns	22.3	31.8	0.0	1.0	55.1
33 Wool and Worsted Yarns	17.0	26.0	0.0	.9	43.9
34 Textile Finishing	7.4	11.0	0.0	.4	18.9
35 Textile Floor Coverings	12.5	15.4	0.0	.9	28.8
36 Textile Products Nec	6.0	6.3	0.0	1.1	13.5
37 Knitting Mills	20.2	46.3	0.0	4.6	71.2
38 Clothing	36.2	27.8	0.0	6.6	70.6

1. For a description of the calibration process see Section 4.2.

TABLE 4.1 (CIB) : INDUSTRIAL CAPITAL STOCKS AT PURCHASERS PRICES BY BROAD ASSECI CATEGORIES - AUSTRALIA, 1971-74 (MIB)
(UNCALIBRATED) 1

Industry	Buildings	Plant and Machinery	Mine Development	Motor Vehicles	Total
39 Footwear	11.9	33.4	0.0	3.9	49.2
40 Sawmill Products	40.5	39.4	0.0	11.1	91.0
41 Plywood, Veneers and Boards	13.8	26.9	0.0	1.0	41.8
42 Joinery and Wood Products	28.7	15.7	0.0	5.2	49.6
43 Furniture	27.4	18.5	0.0	4.4	50.3
44 Pulp, Paper and Paperboard	55.8	165.4	0.0	1.0	222.3
45 Fibreboard and Paper Containers	34.0	47.6	0.0	4.3	85.9
46 Paper Products Nec	20.3	23.4	0.0	1.5	45.2
47 Newspapers and Books	53.4	66.1	0.0	5.1	124.5
48 Printing	64.6	95.0	0.0	8.9	168.4
49 Chemical Fertilisers	29.7	96.9	0.0	2.1	128.7
50 Industrial Chemicals Nec	95.8	278.3	0.0	7.0	381.0
51 Paints and Varnishes	17.4	10.3	0.0	3.8	31.5
52 Pharmaceuticals	38.6	28.1	0.0	4.5	71.1
53 Soap and Detergents	8.7	14.1	0.0	1.5	24.3
54 Cosmetics, Toilet Preparations	17.0	9.6	0.0	1.6	28.1
55 Chemical Products Nec	32.1	22.4	0.0	1.8	56.3
56 Petroleum and Coal Products	57.7	213.7	0.0	3.7	275.2
57 Glass Products	37.3	48.3	0.0	2.8	88.4
58 Clay Products	47.3	90.3	0.0	5.7	143.3
59 Cement	22.5	79.6	0.0	3.7	105.8
60 Ready-Mixed Concrete	8.9	19.5	0.0	4.8	33.1
61 Concrete Products	27.1	44.8	0.0	6.5	78.4
62 Non-Metallic Min. Products	34.9	35.3	0.0	3.4	73.5
63 Basic Iron and Steel	199.2	621.2	0.0	11.7	832.0
64 Other Basic Metal Products	188.6	588.6	0.0	2.8	780.1
65 Structural Metal Products	63.0	92.8	0.0	9.5	165.2
66 Sheet Metal Products	45.8	73.3	0.0	5.8	124.9
67 Metal Products Nec	137.2	112.6	0.0	15.2	265.1
68 Motor Vehicles	209.1	304.9	0.0	24.0	538.1
69 Ship and Boat Building	25.6	18.5	0.0	1.8	45.9
70 Locomotives and Rolling Stock	29.6	12.5	0.0	.5	42.7
71 Aircraft Building	63.4	43.6	0.0	1	107.1
72 Scientific Equipment	22.2	24.8	0.0	2.1	49.1
73 Electronic Equipment	26.3	42.5	0.0	1.6	70.3
74 Household Appliances Nec	36.9	42.9	0.0	3.6	83.5
75 Electrical Machinery Nec	106.1	97.7	0.0	5.6	209.4
76 Agricultural Machinery	18.4	16.2	0.0	2.7	37.3

1. For a description of the calibration process see Section 4.2.

TABLE 4.1 (ctd) : INDUSTRY CAPITAL STOCKS AT PURCHASERS' PRICES BY BROAD ASSET CATEGORIES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED) 1

Industry	Buildings	Plant and Machinery	Mine Development	Motor Vehicles	Total
77	Construction Etc. Equipment	44.0	0.0	4.7	82.8
78	Other Machinery and Equip.	96.4	0.0	14.5	212.8
79	Leather Products	7.6	0.0	1.1	15.1
80	Rubber Products	29.1	0.0	1.9	102.8
81	Plastic Products	34.7	0.0	4.7	134.6
82	Signs, Writing Equipment	2.3	0.0	1.3	12.8
83	Other Manufacturing	13.5	0.0	1.9	31.3
84	Electricity	1 350.5	998.7	33.6	2 382.8
85	Gas	68.4	50.8	6.5	125.7
86	Water, Sewerage and Drainage	2 223.3	635.5	180.0	3 038.8
87	Residential Buildings	107.3	89.0	13.8	210.2
88	Building Nec and Construction	173.6	525.3	41.7	740.6
89	Wholesale Trade	2 117.1	776.9	374.7	3 268.7
90	Retail Trade	886.4	325.3	1 368.6	1 368.6
91	Motor Vehicle Repairs	68.4	25.1	12.1	105.6
92	Other Repairs	109.8	40.3	19.4	169.5
93	Road Transport	272.7	54.5	1 576.6	1 903.8
94	Rail Transport	1 482.0	702.7	10.9	2 195.5
95	Water Transport	341.9	488.8	7.3	838.0
96	Air Transport	395.7	544.3	49.9	990.0
97	Communication	1 746.0	1 178.3	58.6	2 982.9
98	Banking	380.6	76.8	21.2	478.6
99	Finance and Life Insurance	1 585.7	144.3	79.4	1 809.4
100	Other Insurance	86.2	17.3	4.8	108.2
101	Investment, Real Estate, Etc.	981.0	89.3	49.1	1 119.4
102	Other Business Services	326.8	66.5	18.2	411.5
103	Ownership Of Dwellings	23 716.3	0.0	0.0	23 716.3
104	Public Administration	1 222.6	168.2	44.7	1 435.5
105	Defence	0.0	0.0	0.0	0.0
106	Health	2 921.2	573.0	31.1	3 525.3
107	Education	2 468.2	388.2	35.5	2 891.9
108	Welfare Services	572.0	194.0	26.8	792.9
109	Entertainment	658.5	95.9	25.0	779.4
110	Restaurants, Hotels and Clubs	953.8	226.5	34.1	1 214.4
111	Personal Services	124.9	29.7	4.5	159.0
112	Total	54 970.4	15 913.1	3 826.9	74 811.3

1. For a description of the calibration process see Section 4.2.

TABLE 2.2 : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED)

Commodity	Industry							Poultry
	Pastoral Zone	Wheat-Sheep Zone	High Rainfall Zone	Northern Beef	Milk Cattle	Other Farming Export	Other Farming Import Comp	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45 Furniture	.2	1.0	.7	1	3	.3	.1	.0
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	.8	17.7	.9	0.0	.9	0.0	0.0	0.0
69 Metal Products Nec	.5	2.2	.9	0.0	.4	0.0	0.0	.5
70 Motor Vehicles	23.1	125.5	69.7	7.1	47.3	32.5	27.1	5.4
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	1.3	.8	.2	.5	0.0	0.0	0.0	0.0
74 Scientific Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75 Electronic Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76 Household Appliances	.5	4.6	1.5	.3	27.6	3.7	.6	.7
77 Electrical Machinery	3.4	6.6	2.6	2.2	3.9	3.9	.5	.4
78 Agricultural Mach.	22.8	292.3	95.6	12.0	75.6	63.2	43.5	7.0
79 Construction Equipment	3.6	9.8	4.7	2.5	3.1	8.9	2.5	.6
80 Other Machinery	4.4	23.0	11.0	3.0	15.6	24.3	1.9	1.1
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	263.3	933.7	604.5	130.6	991.6	214.8	172.1	46.1
91 Wholesale Trade	13.6	120.1	43.8	6.9	41.3	36.6	18.1	3.7
92 Retail Trade	4.6	25.1	13.8	1.4	9.4	6.5	5.4	1.1
95 Road Transport	6.2	66.9	22.7	3.3	18.4	17.0	10.1	1.8
96 Rail Transport	1.4	12.6	4.5	.8	3.7	3.8	2.0	.4
97 Water Transport	1.4	16.3	5.4	.7	4.4	3.8	2.4	.4
98 Air Transport	.1	.3	.1	.0	.1	.2	.1	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	0	.3	.1	.0	.1	.1	.0	.0
103 Investment, Real Estate	10.9	38.8	25.1	5.4	41.2	8.9	7.2	1.9
104 Other Business Services	12.6	44.7	28.9	6.2	47.5	10.3	8.2	2.2
115 Taxes and Subsidies	2.0	7.8	5.3	.6	3.9	3.1	1.9	.4
116 Total	376.6	1 750.3	942.0	183.6	1 336.6	441.8	303.7	73.9

I. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED) 1

Commodity	Industry							Crude Oil	Non-Metallic Minerals Nec
	Services to Agriculture	Forestry	Fishing	Iron	Other Met. Minerals	Coal	Crude Oil		
14 Iron	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	42.2	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	37.3	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0
44 Joinery and Wood Prod.	0.0	0.0	0.0	.2	.2	.3	.0	.1	.1
45 Furniture	.2	.7	.5	.4	.6	.4	.1	.2	.2
67 Structural Metal Prod.	0.0	0.0	0.0	.2	.3	.3	.0	.1	.1
68 Sheet Metal Products	0.0	.6	0.0	.2	.3	.3	.0	.1	.1
69 Metal Products Nec	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	36.1	12.7	1.8	2.1	9.4	5.3	.6	7.0	0.0
71 Ship and Boat Building	0.0	0.0	65.6	2.5	1.7	11.9	1.2	0.0	0.0
72 Locomotives	0.0	0.0	0.0	10.6	5.4	18.5	1.9	1.5	0.0
73 Aircraft Building	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	21.4	.0	1.4	.2	.2	.3	.0	.1	.1
75 Electronic Equipment	2.3	2.6	1.4	8.7	14.5	11.1	1.1	2.0	0.0
76 Household Appliances	1.1	.3	3.6	.2	.3	.3	.0	.1	.1
77 Electrical Machinery	3.5	.2	0.0	32.6	40.5	49.4	5.1	11.1	0.0
78 Agricultural Mach.	32.2	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	11.9	43.4	3.0	76.2	100.6	104.9	10.8	29.1	0.0
80 Other Machinery	9.4	2.4	6.4	17.6	40.3	45.1	4.7	11.3	0.0
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	70.5	34.6	1.9	103.1	337.0	163.6	191.1	55.4	0.0
91 Wholesale Trade	30.3	19.9	9.2	39.3	58.5	64.0	6.6	16.8	0.0
92 Retail Trade	7.4	2.8	.5	1.3	3.2	2.1	.2	1.6	0.0
95 Road Transport	10.3	11.3	1.6	17.7	24.2	25.8	2.7	7.0	0.0
96 Rail Transport	2.6	4.0	.5	7.1	9.8	10.4	1.1	2.8	0.0
97 Water Transport	2.2	1.4	.2	1.9	2.6	2.7	.3	.7	0.0
98 Air Transport	.6	.6	.1	1.1	1.5	1.5	.2	.4	0.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	0.0	.0	.0	.1	.1	.1	.0	.0	.0
103 Investment, Real Estate	2.9	1.4	.1	4.3	14.0	6.8	7.9	2.3	0.0
104 Other Business Services	3.4	1.7	.1	4.9	16.1	7.8	9.1	2.6	0.0
115 Taxes and Subsidies	3.4	1.8	..	2.4	4.6	2.9	.3	1.8	0.0
116 Total	256.2	151.6	86.0	335.9	728.0	573.3	263.6	155.6	0.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)¹

Commodity	Industry							
	Services to Mining	Meat Products	Milk Products	Fruit and Veg Products	Margarine and Oils	Flour and Cereal Prod	Bread and Cakes	Confectionery Products
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.2	.2	.0	.1	.0	.0
45 Furniture	.0	.0	.0	.4	.0	.3	.0	.1
67 Structural Metal Prod.	.0	1.1	11.7	2.0	2.3	4.0	.7	2.3
68 Sheet Metal Products	.0	.2	10.1	.5	.1	.1	.1	.1
69 Metal Products Nec	.0	.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	5.6	8.5	16.0	3.0	.7	2.6	11.2	1.2
71 Ship and Boat Building	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	7.5	.0	1.8	.4	.0	.3	.0	.0
75 Electronic Equipment	4.4	.7	.1	.2	.0	.1	.4	.1
76 Household Appliances	.0	3.4	9.8	.8	.1	.2	.3	.1
77 Electrical Machinery	1.6	.9	4.0	.2	.3	3.3	1.9	.6
78 Agricultural Mach.	0.0	0.0	3	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	.1	1.8	.9	.6	.1	.4	.4	1.5
80 Other Machinery	.4	47.5	21.8	26.1	8.1	16.9	28.7	8.6
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
84 Signs, Writing Equip.	0.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	11.0	74.2	62.8	38.4	10.6	27.5	57.8	14.9
91 Wholesale Trade	4.1	21.2	15.4	11.4	3.5	7.9	14.0	4.2
92 Retail Trade	1.5	1.8	3.2	.6	.1	.5	2.3	.2
95 Road Transport	.2	3.2	2.1	1.7	.5	1.2	2.0	.8
96 Rail Transport	.1	1.3	.7	1.3	.2	.5	.8	.3
97 Water Transport	.1	.4	.7	.2	.1	.2	.4	.1
98 Air Transport	.1	.1	.1	.0	.0	.0	.0	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.5	3.1	2.6	1.6	.4	1.1	2.4	.6
104 Other Business Services	.5	3.6	3.0	1.8	.5	1.3	2.8	.7
115 Taxes and Subsidies	.3	2.8	2.5	1.4	.4	1.0	2.2	.5
116 Total	40.0	175.8	169.7	92.3	28.2	69.8	135.5	37.3

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (cont) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED)¹

Commodity	Industry							
	Food Products Nec	Soft drinks	Beer and Malt	Alcoholic Bev Nec	Tobacco Products	Prepared Fibres	Man-Made Fibres, Yarn	Cotton, Silk, Flax Yarns
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.3	.3	.0	.0	.0	.0	.0	.0
45 Furniture	.6	.5	.0	.0	.1	.1	.1	.1
67 Structural Metal Prod.	6.3	2.2	29.4	16.6	.4	.1	.4	.3
68 Sheet Metal Products	5.8	.8	.0	.0	.1	1.7	.7	.5
69 Metal Products Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	6.8	4.9	1.3	2.1	.2	.5	.9	.7
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	.5	.1	1.2	.7	.1	.1	.1	.1
74 Scientific Equipment	3.2	.1	2.2	.7	.0	.0	.3	.2
75 Electronic Equipment	.6	3.3	.3	.2	.1	.0	.0	.0
76 Household Appliances	4.6	1.9	2.0	1.1	.3	.1	.2	.1
77 Electrical Machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78 Agricultural Mach.	6.5	.6	.1	.0	.7	.1	.2	.2
79 Construction Equipment	65.0	14.6	24.3	13.7	13.4	8.9	24.2	19.6
80 Other Machinery	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0
83 Plastic Products	.0	1.2	2.8	1.6	.9	.0	.0	.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	93.5	23.1	60.5	21.6	15.5	11.8	13.0	20.4
90 Building Nec	31.0	7.6	11.3	6.5	5.7	3.9	9.9	8.0
91 Wholesale Trade	1.7	1.0	.4	.5	.0	.1	.2	.2
92 Retail Trade	5.3	1.1	1.7	1.0	.9	.5	1.4	1.2
95 Road Transport	2.2	.5	.7	.4	.6	.2	.6	.5
96 Rail Transport	.8	.2	.8	.2	.1	.1	.2	.1
97 Water Transport	.2	.0	.0	.0	.0	.0	.0	.0
98 Air Transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
99 Communication	.0	.0	.0	.0	.0	.0	.0	.0
102 Other Insurance	3.9	1.0	2.5	.9	.6	.5	.5	.8
103 Investment, Real Estate	4.5	1.1	2.9	1.0	.7	.6	.6	1.0
104 Other Business Services	3.5	1.1	1.2	.8	.6	.4	1.1	.9
115 Taxes and Subsidies	246.6	65.1	143.7	69.3	41.0	29.6	54.8	55.1
116 Total								

¹ For a description of the calibration process see Section 4.7

TABLE 4.2 (cont) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED)¹

Commodity	Industry							Sawmill Products
	Wool and Worsted Yarns	Textile Finishing	Textile Floor Coverings	Textile Products Nec	Knitting Mills	Clothing	Footwear	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.0	.0	.0	.0	.0
45 Furniture	.1	.0	.1	.0	.2	.1	.1	.1
67 Structural Metal Prod.	.5	.3	.1	.1	.4	.3	.3	3.3
68 Sheet Metal Products	.4	.3	.3	.1	.8	.5	.0	.1
69 Metal Products Nec	.0	.0	.0	.0	.0	.0	.0	0.0
70 Motor Vehicles	.6	.3	.6	.8	3.3	4.7	2.7	7.8
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.4	.0	.1	.0	.2	.1	.0	.0
75 Electronic Equipment	.1	.1	.1	.0	.3	.2	.3	.2
76 Household Appliances	.0	.0	.0	.0	.0	.0	.0	.0
77 Electrical Machinery	.4	.0	.1	.0	.2	.1	.1	5.3
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	.2	.1	.1	.0	.3	.2	1.8	3.8
80 Other Machinery	15.4	6.5	9.5	3.9	28.4	17.1	19.3	15.0
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	15.6	6.8	11.5	5.5	18.5	33.2	10.9	37.2
91 Wholesale Trade	6.5	2.7	3.9	1.7	12.0	7.5	8.6	8.9
92 Retail Trade	.1	.1	.1	.2	.7	.9	.6	1.6
95 Road Transport	.9	.4	.6	.2	1.7	1.1	1.5	1.8
96 Rail Transport	.4	.2	.2	.1	.7	.4	.6	.8
97 Water Transport	.1	.1	.1	.0	.2	.1	.2	.3
98 Air Transport	.0	.0	.0	.0	.0	.0	.0	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.6	.3	.5	.2	.8	1.4	.5	1.5
104 Other Business Services	.7	.3	.6	.3	.9	1.6	.5	1.8
115 Taxes and Subsidies	.7	.3	.4	.2	.4	1.1	1.1	1.5
116 Total	43.9	18.9	28.8	13.5	71.2	70.6	49.2	91.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)

Commodity	Industry							Printing
	Plywood, Veneers	Joinery & Wood Prods	Furniture	Pulp and Paper	Fibreboard	Paper Products Nec	Newspapers and Books	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.1	.0	.0	.2	.3
45 Furniture	.0	.0	.0	.2	.0	.0	.4	.6
67 Structural Metal Prod.	2.0	.3	.3	6.6	.7	.9	0.0	0.0
68 Sheet Metal Products	.1	.0	.0	0.0	.2	0.0	.6	.9
69 Metal Products Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	.7	3.7	3.1	.7	3.0	1.0	3.6	6.3
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.1	.1	.1	.6	.5	.1	.2	.4
75 Electronic Equipment	.2	.1	.1	7.7	.2	1.1	2.9	4.1
76 Household Appliances	.0	.0	.0	.1	.0	.0	.1	.2
77 Electrical Machinery	4.1	1.9	2.3	6.8	2.9	1.0	0.0	0.0
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	4.0	1.4	1.7	5.0	1.0	.7	1.5	2.2
80 Other Machinery	8.3	6.9	8.1	86.0	26.6	12.2	38.0	54.7
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.1	.2
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	12.7	26.3	25.2	51.3	31.2	18.7	49.0	59.3
91 Wholesale Trade	5.4	3.9	4.5	38.2	11.8	5.5	16.6	24.0
92 Retail Trade	.2	.7	.6	.9	.6	.3	1.0	1.6
95 Road Transport	1.4	.8	.9	6.0	1.8	.9	2.5	3.6
96 Rail Transport	.6	.3	.4	2.5	1.1	.4	1.1	1.5
97 Water Transport	.2	.1	.1	.8	.2	.1	.3	.4
98 Air Transport	.1	.0	.0	.1	.0	.0	.1	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.5	1.1	1.0	2.1	1.3	.8	2.0	2.5
104 Other Business Services	.6	1.3	1.2	2.5	1.5	.9	2.3	2.8
115 Taxes and Subsidies	.5	.7	.7	3.8	1.4	.6	1.9	2.8
116 Total	41.8	49.6	50.3	222.3	85.9	45.2	124.5	168.4

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (cont) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED) 1

Commodity	Industry								Oil & Coal Products
	Chemical Fertilisers	Industrial Chemicals	Paints, Varnishes	Pharmaceuticals	Soap and Detergents	Cosmetics, Toilet Prep	Chemical Prod Nec		
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.1	.4	.0	.1	.0	.0	.0	.3	.3
45 Furniture	.3	1.0	.0	.1	.1	.0	.0	.1	1.0
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	14.7	73.2	3.4	6.6	3.6	1.5	2.6	21.3	0.0
69 Metal Products Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	1.5	4.9	2.7	3.2	1.1	1.1	1.2	2.6	0.0
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.5	.6	.0	.5	.0	.1	.1	.6	.6
75 Electronic Equipment	4.9	5.5	.5	2.8	.4	.8	1.7	6.5	0.0
76 Household Appliances	.0	.0	.0	.0	.0	.0	.0	.0	.0
77 Electrical Machinery	5.8	12.9	.3	1.2	.5	.5	1.9	7.6	0.0
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	20.5	9.2	.2	.8	1.4	1.1	3.6	5.4	0.0
80 Other Machinery	20.4	100.5	3.2	8.6	4.1	2.8	5.8	105.5	0.0
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	27.2	87.9	16.0	35.4	8.0	15.6	29.4	53.0	0.0
91 Wholesale Trade	18.6	55.5	2.2	5.6	2.8	2.0	4.5	48.7	0.0
92 Retail Trade	.8	1.5	.6	.9	.2	.3	.4	1.1	1.1
95 Road Transport	5.8	9.0	.3	.8	.6	.4	1.2	7.5	0.0
96 Rail Transport	2.3	3.4	.1	.3	.2	.2	.5	3.1	0.0
97 Water Transport	.8	2.0	.1	.2	.1	.1	.2	1.2	0.0
98 Air Transport	.3	.3	.0	.0	.0	.0	.1	.2	0.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.1	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	1.1	3.7	.7	1.5	.3	.6	1.2	2.2	0.0
104 Other Business Services	1.3	4.2	.8	1.7	.4	.7	1.4	2.5	0.0
115 Taxes and Subsidies	1.5	5.1	.4	.7	.3	.2	.5	4.8	0.0
116 Total	128.7	381.0	31.5	71.1	24.3	28.1	56.3	275.2	0.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)

Commodity	Industry							Other Basic Metals
	Glass Products	Clay Products	Cement	Ready-Mixed Concrete	Concrete Products	Non-Metallic Min Products	Basic Iron and Steel	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	2	.3	.0	.0	.1	.1	.0	.0
45 Furniture	.4	.8	.0	.0	.2	.2	.2	.2
67 Structural Metal Prod.	10.4	5.1	0.0	.9	6.5	2.0	1.4	121.0
68 Sheet Metal Products	1.2	0.0	.0	0.0	.3	1.0	1.2	6.7
69 Metal Products Nec	1.0	0.0	0.0	0.0	.1	.2	0.0	1.5
70 Motor Vehicles	2.0	4.0	2.6	3.4	4.6	2.4	8.2	2.0
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	14.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.4	0.0	.3	.1	.1	.3	.7	2.6
75 Electronic Equipment	3.1	.4	.0	.3	.1	.2	11.0	2.3
76 Household Appliances	.0	.0	.0	.0	.0	.0	.6	2.2
77 Electrical Machinery	5.2	1.5	1.1	2.5	6.3	3.3	67.1	65.8
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	1.4	8.1	3.5	1.7	6.2	2.4	114.0	39.9
80 Other Machinery	13.7	44.5	47.2	8.0	12.5	15.1	202.9	194.2
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	.1	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	34.2	43.4	20.6	8.1	24.9	32.0	182.8	173.1
91 Wholesale Trade	8.1	21.2	20.3	4.5	8.7	7.8	131.6	105.7
92 Retail Trade	.7	.9	.5	.7	.9	.5	2.8	.9
95 Road Transport	1.4	4.3	3.4	.9	2.2	1.5	36.6	21.7
96 Rail Transport	.5	1.8	1.4	.4	.9	.6	15.0	8.8
97 Water Transport	.4	.6	1.4	.1	.4	.2	4.0	5.1
98 Air Transport	.0	.1	.1	.0	.1	.1	1.8	.8
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.1	.2
103 Investment, Real Estate	1.4	1.8	.9	.3	1.0	1.3	7.6	7.2
104 Other Business Services	1.6	2.1	1.0	.4	1.2	1.5	8.7	8.3
115 Taxes and Subsidies	.9	2.3	2.2	.7	1.1	.9	9.5	10.0
116 Total	88.4	143.3	105.8	33.1	78.4	73.5	832.0	780.1

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED)¹

Commodity	Industry							Scientific Equipment
	Structural Metal	Sheet Metal Products	Metal Products Nec	Motor Vehicles	Ship & Boat Building	Locomotives	Aircraft Building	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.2	.2	.3	.2	.0	.0	.0	.1
45 Furniture	.5	.4	.6	1.1	.0	.0	.1	.1
67 Structural Metal Prod.	.9	.7	1.1	.3	.0	.0	.1	.2
68 Sheet Metal Products	2.4	1.9	2.9	1.3	.1	.1	1.9	2.1
69 Metal Products Nec	.1	.1	.1	.3	.0	.0	.2	.6
70 Motor Vehicles	6.7	4.1	10.7	16.9	1.2	.4	.1	1.5
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	3.5	2.8	4.2	1.1	.1	.0	.3	2.8
75 Electronic Equipment	4.4	3.5	5.4	7.3	.1	.3	6.6	3.0
76 Household Appliances	0	0	0	0	0	0	0	0
77 Electrical Machinery	15.6	3.1	4.7	12.6	.8	.5	1.8	.8
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	5.6	.9	1.3	14.6	1.1	.6	.5	.1
80 Other Machinery	32.9	37.1	57.0	164.9	10.1	6.8	19.2	8.2
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0	0	0	.3	0	0	0	0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	57.8	42.0	126.0	192.0	23.5	27.2	58.2	20.4
91 Wholesale Trade	19.9	17.5	27.4	75.3	4.6	3.1	9.4	5.3
92 Retail Trade	1.7	1.1	2.6	4.1	.3	.1	.6	.6
95 Road Transport	3.4	2.4	3.8	12.7	.8	.5	1.3	.6
96 Rail Transport	1.4	1.0	1.6	5.3	.3	.2	.5	.2
97 Water Transport	.5	.3	.5	1.5	.1	.1	.2	.1
98 Air Transport	.2	.1	.1	.3	.0	.0	.0	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	0	0	0	.1	0	0	0	0
103 Investment, Real Estate	2.4	1.7	5.2	8.0	1.0	1.1	2.4	.8
104 Other Business Services	2.8	2.0	6.0	9.2	1.1	1.3	2.8	1.0
115 Taxes and Subsidies	2.3	2.0	3.4	8.7	.6	.3	.9	.5
116 Total	165.2	124.9	265.1	538.1	45.9	42.7	107.1	49.1

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED) 1

Commodity	Industry							Rubber Products
	Electronic Equipment	Household Appliances	Electrical Machinery	Agricultural Machinery	Construction Equipment	Other Machinery	Leather Products	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	1	.0	.0	.0	.0	.8
45 Furniture	.1	.1	.3	.0	.0	.0	.0	1.8
67 Structural Metal Prod.	.0	.0	.1	.0	.0	.0	.0	1.2
68 Sheet Metal Products	2.2	2.2	5.0	.1	.1	.4	.1	.3
69 Metal Products Nec	1.4	1.4	3.2	.0	.0	.1	.0	.1
70 Motor Vehicles	1.1	2.6	3.9	1.9	3.3	10.2	.8	1.3
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.3	.3	.7	.0	.0	.0	.0	.0
75 Electronic Equipment	6.7	1.4	7.8	.3	.5	1.6	.1	.5
76 Household Appliances	.0	.0	.1	.0	.0	.0	.0	.0
77 Electrical Machinery	1.8	1.8	4.1	.7	1.4	4.3	.1	.1
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	4.6	5.1	11.7	.8	1.6	4.9	.1	1.0
80 Other Machinery	12.7	16.7	34.3	8.9	18.8	56.3	3.9	42.3
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	24.1	33.9	97.4	16.9	40.4	88.5	6.9	26.7
91 Wholesale Trade	8.5	9.6	21.0	4.1	8.7	25.9	1.7	17.7
92 Retail Trade	.8	.7	1.5	.4	.7	2.2	.2	.3
95 Road Transport	1.8	2.1	4.7	.7	1.5	4.3	.2	2.7
96 Rail Transport	.7	.9	1.9	.3	.6	1.8	.1	1.1
97 Water Transport	.2	.3	.6	.1	.2	.5	.0	.3
98 Air Transport	.1	.1	.2	.0	.0	.1	.0	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	1.0	1.4	4.0	.7	1.7	3.7	.3	1.1
104 Other Business Services	1.2	1.6	4.7	.8	1.9	4.2	.3	1.3
115 Taxes and Subsidies	.8	1.0	2.1	.6	1.1	3.4	.2	1.9
116 Total	70.3	83.5	209.4	37.3	82.8	212.8	15.1	102.8

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED) 1

Commodity	Industry							Building Nec
	Plastic Products	Signs, Writing Equip	Other Manufacturing	Electricity	Gas	Water, Sewerage	Residential Building	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.1	.1	.0	1.0	.0	12.3	.1	.8
45 Furniture	.3	.2	.1	41.4	.6	4.4	2.4	2.4
67 Structural Metal Prod.	0.0	.4	.1	490.0	1.0	30.4	.1	58.8
68 Sheet Metal Products	8.8	.0	1.4	19.5	.1	35.7	.8	2.3
69 Metal Products Nec	0.0	.1	.4	4.7	16.3	10.8	.8	2.2
70 Motor Vehicles	3.3	.9	1.4	33.3	6.5	178.4	9.7	29.4
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9
72 Locomotives	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.6	.6	1.8	35.7	2.0	31.5	1.2	2.0
75 Electronic Equipment	9.4	.2	1.9	10.0	1.0	114.4	.0	2.5
76 Household Appliances	.0	.1	.0	2.6	.0	.1	.0	4.4
77 Electrical Machinery	12.3	.5	.5	69.3	.8	3.6	6.4	4.4
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	31.8	0.0	0.0
79 Construction Equipment	10.2	.1	.1	26.1	1.2	171.0	40.0	226.6
80 Other Machinery	26.5	4.2	5.2	279.6	25.6	68.5	6.8	35.2
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	19.1	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.1	.0	6.4	.0	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	31.9	2.1	12.4	1 330.0	67.3	2 189.5	98.5	159.3
91 Wholesale Trade	18.6	2.2	3.4	26.4	2.0	31.0	18.3	96.8
92 Retail Trade	1.5	.2	.4	.5	.1	.9	2.0	6.3
95 Road Transport	4.0	.3	.4	7.2	.4	17.5	9.0	50.8
96 Rail Transport	1.6	.1	.2	2.0	.1	5.8	3.6	19.8
97 Water Transport	.6	.1	.1	7.3	.9	2.9	.9	6.4
98 Air Transport	.2	.0	.0	.2	.0	.9	.6	3.3
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.3	.0	.1	.0	.2
103 Investment, Real Estate	1.3	.1	.5	9.5	.6	15.7	4.1	6.6
104 Other Business Services	1.5	.1	.6	11.0	.5	18.1	4.7	7.6
115 Taxes and Subsidies	1.8	.3	.4	1.6	.2	1.2	1.9	6.7
116 Total	134.6	12.8	31.3	2 382.8	125.7	3 038.8	210.2	740.6

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (UNCALIBRATED)

Commodity	Industry							
	Wholesale Trade	Retail Trade	Motor Vehicle Repairs	Other Repairs	Road Transport	Rail Transport	Water Transport	Air Transport
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	5.9	14.9	.0	.0	.0	.7	.6	5.4
45 Furniture	36.2	29.3	.0	.0	.1	1.4	1.3	9.8
67 Structural Metal Prod.	49.0	18.2	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	93.5	53.1	.0	.0	.1	1.4	1.9	9.4
69 Metal Products Nec	0.0	0.0	.1	.2	0.0	0.0	0.0	0.0
70 Motor Vehicles	263.9	110.5	8.5	13.7	1	110.7	10.8	35.2
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	486.9	.3
72 Locomotives	0.0	0.0	0.0	0.0	12.5	638.9	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	2.8	277.6
74 Scientific Equipment	24.0	.1	.2	.3	0.0	.1	.5	1.8
75 Electronic Equipment	61.7	22.0	1.0	1.6	1.3	14.1	14.9	44.6
76 Household Appliances	64.3	76.0	.0	.0	.0	.1	.0	.0
77 Electrical Machinery	13.1	1.3	2.1	3.4	0.0	7.0	3.1	10.2
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	84.6	16.1	.3	.5	0.0	5.7	4.5	23.7
80 Other Machinery	144.0	27.7	13.4	21.6	25.3	30.3	12.3	27.2
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	3.9	1.6	.0	.0	.0	.1	.0	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	1	813.6	62.8	100.8	250.3	1	459.4	363.2
91 Wholesale Trade	162.3	59.1	6.9	11.0	136.1	2.0	41.8	117.0
92 Retail Trade	57.8	23.9	1.8	2.9	219.2	.0	2.5	11.9
95 Road Transport	34.1	10.2	1.5	1.5	14.0	.6	5.6	8.9
96 Rail Transport	12.7	3.1	.4	.7	7.3	.2	1.0	3.5
97 Water Transport	6.3	2.5	.1	.2	3.7	.1	.4	1.2
98 Air Transport	1.9	.4	.0	.0	.1	.0	.1	.4
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.2	.1	.0	.0	.1	.0	.0	.0
103 Investment, Real Estate	80.8	33.8	2.6	4.2	10.4	10.5	13.0	15.1
104 Other Business Services	93.0	38.9	3.0	4.8	12.0	12.1	15.0	17.4
115 Taxes and Subsidies	0.0	11.9	1.4	2.2	100.7	.2	..	6.2
116 Total	3 268.7	1 368.6	105.6	169.5	1 903.8	2 195.5	838.0	990.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)¹

Commodity	Industry							Public Admin
	Communication	Banking	Finance and Life Ins	Other Insurance	Investment, Real Estate	Other Business Serv	Ownership Of Dwellings	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	11.4	14.2	26.7	3.2	.7	.5	0.0	9.9
45 Furniture	35.3	4.3	8.1	1.0	6.4	5.3	0.0	34.4
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	34.6	2.8	5.3	.6	1.5	2.4	0.0	39.5
69 Metal Products Nec	0.0	8.6	16.1	1.9	0.0	0.0	0.0	0.0
70 Motor Vehicles	58.0	14.9	55.9	3.4	34.6	12.8	0.0	44.0
71 Ship and Boat Building	0.0	0.0	0.0	0.0	.5	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	.3	0.0	0.0	0.0
74 Scientific Equipment	2.2	.0	.0	.0	.0	7.5	0.0	1.7
75 Electronic Equipment	471.3	17.6	33.1	4.0	3.5	5.3	0.0	16.7
76 Household Appliances	6.1	.0	.0	.0	.0	.0	0.0	1.5
77 Electrical Machinery	446.1	2.0	3.8	.5	.0	5.0	0.0	.0
78 Agricultural Mach.	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0
79 Construction Equipment	76.8	0.0	0.0	0.0	15.0	0.0	0.0	.1
80 Other Machinery	67.1	9.7	18.2	2.2	30.5	22.7	0.0	59.1
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.1	.4	.7	.1	.0	.0	0.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	355.5	349.4	1 455.5	79.1	900.5	300.0	0.0	1 202.7
91 Wholesale Trade	16.1	14.0	29.4	3.2	22.8	15.0	0.0	4.1
92 Retail Trade	6.3	4.7	14.4	1.1	7.2	3.0	0.0	.4
95 Road Transport	1.9	1.9	3.9	.4	5.9	1.8	0.0	.8
96 Rail Transport	2.6	.4	1.0	.1	2.2	.7	0.0	.2
97 Water Transport	.8	.3	.6	.1	.7	.3	0.0	.0
98 Air Transport	.4	.0	.0	.0	.2	.2	0.0	.0
99 Communication	1 385.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	0.0	.0
103 Investment, Real Estate	2.6	14.5	60.5	3.3	37.4	12.5	905.2	9.3
104 Other Business Services	2.9	16.7	69.7	3.8	43.1	14.4	1 041.9	10.7
115 Taxes and Subsidies	1.2	2.0	6.3	.5	4.5	2.2	0.0	.4
116 Total	2 982.9	478.6	1 809.4	108.2	1 119.4	411.5	23 716.3	1 435.5

1. For a description of the calibration process see Section 4.2.

TABLE 4.2 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(UNCALIBRATED)

Commodity	Industry							Total
	Defence	Health	Education	Welfare Services	Entertainment	Restaurants, Hotels	Personal Services	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.2
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.3
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
44 Joinery and Wood Prod.	0.0	11.2	11.4	3.0	1.5	8.7	.1	151.1
45 Furniture	0.0	50.4	64.5	14.0	8.6	30.6	.3	421.7
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	882.4
68 Sheet Metal Products	0.0	78.5	91.2	13.3	1.6	29.2	.1	744.2
69 Metal Products Nec	0.0	0.0	.0	0.0	1.6	0.0	0.0	78.1
70 Motor Vehicles	0.0	30.6	35.0	18.9	17.6	24.0	3.1	2 810.3
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	592.3
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	712.2
73 Aircraft Building	0.0	1.9	.0	0.0	0.0	0.0	0.0	289.8
74 Scientific Equipment	0.0	300.2	30.8	0.0	1.4	0.0	.2	507.8
75 Electronic Equipment	0.0	17.1	17.7	7.7	22.9	9.0	.5	1 089.9
76 Household Appliances	0.0	23.9	6.8	3.2	.4	93.8	.1	351.6
77 Electrical Machinery	0.0	2.4	.0	.8	.8	1.9	.1	1 083.4
78 Agricultural Mach.	0.0	0.0	.1	0.0	0.0	0.0	0.0	687.2
79 Construction Equipment	0.0	0.0	.2	0.0	.3	0.0	0.0	1 431.1
80 Other Machinery	0.0	59.1	150.5	88.6	31.2	11.2	18.3	3 559.9
83 Plastic Products	0.0	15.8	0.0	0.0	0.0	1.0	0.0	36.0
84 Signs, Writing Equip.	0.0	.1	.0	.0	.0	2.3	.0	23.5
85 Other Manufacturing	0.0	0.0	1.9	6.5	.3	0.0	0.0	8.8
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21 769.2
90 Building Nec	0.0	2 873.6	2 428.0	525.0	604.4	875.5	114.6	28 218.9
91 Wholesale Trade	0.0	10.3	9.9	44.1	20.0	33.9	7.8	2 529.3
92 Retail Trade	0.0	.3	.3	4.5	5.6	5.6	.7	522.3
95 Road Transport	0.0	1.2	1.7	7.2	2.6	4.2	1.1	643.5
96 Rail Transport	0.0	.2	.4	2.5	1.0	.9	.5	220.6
97 Water Transport	0.0	3	.3	1.1	.4	1.0	.1	115.8
98 Air Transport	0.0	.2	.1	.1	.1	.1	.0	21.3
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1 385.0
102 Other Insurance	0.0	.0	.0	.0	.0	.0	.0	3.2
103 Investment, Real Estate	0.0	22.1	18.7	21.8	25.1	36.4	4.8	1 672.4
104 Other Business Services	0.0	25.5	21.5	25.1	28.9	41.9	5.5	1 924.9
115 Taxes and Subsidies	0.0	.4	.8	5.3	3.0	3.1	1.0	250.8
116 Total	0.0	3 525.3	2 891.9	792.9	779.4	1 214.4	159.0	74 811.3

i. For a description of the calibration process see Section 4.2.

TABLE 4.3 : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m) (CALIBRATED)

Commodity	Industry							Poultry
	Pastoral Zone	Wheat-Sheep Zone	High Rainfall Zone	Northern Beef	Milk Cattle	Other Farming Export	Other Farming Import Comp	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45 Furniture	.1	.5	.3	.0	.2	.1	.1	.0
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	.8	18.3	.9	1.1	1.1	0.0	0.0	.4
69 Metal Products Nec	.7	3.2	1.1	3.2	.6	0.0	0.0	0.0
70 Motor Vehicles	26.4	143.1	74.4	13.3	63.7	28.9	30.0	4.8
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	1.0	.6	.2	.6	0.0	0.0	0.0	0.0
74 Scientific Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75 Electronic Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76 Household Appliances	.5	5.1	1.6	.5	36.4	3.3	.7	.6
77 Electrical Machinery	2.8	5.4	2.0	2.9	3.8	2.4	.4	.2
78 Agricultural Mach.	21.8	278.5	85.2	18.9	85.0	47.0	40.2	5.2
79 Construction Equipment	1.8	4.8	2.2	2.0	1.8	3.4	1.2	.2
80 Other Machinery	4.1	21.2	9.5	4.5	17.1	17.5	1.7	.8
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	228.3	807.5	489.3	186.1	1 012.5	144.9	144.4	31.0
91 Wholesale Trade	13.6	119.8	40.9	11.4	48.7	28.5	17.5	2.8
92 Retail Trade	7.8	42.6	22.3	3.9	18.9	8.6	8.9	1.4
95 Road Transport	6.5	70.3	22.3	5.8	22.8	13.9	10.3	1.4
96 Rail Transport	1.1	10.1	3.4	1.0	3.5	2.4	1.5	.2
97 Water Transport	1.7	19.3	6.0	1.4	6.1	3.5	2.8	.4
98 Air Transport	.1	.2	.1	.1	.1	.1	.0	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.3	.1	.0	.1	.1	.0	.0
103 Investment, Real Estate	8.1	28.8	17.5	6.6	36.1	5.2	5.2	1.1
104 Other Business Services	11.5	40.7	24.7	9.4	51.1	7.3	7.3	1.6
115 Taxes and Subsidies	4.3	16.7	11.3	1.4	8.3	6.6	4.0	.9
116 Total	343.0	1 637.1	814.8	270.0	1 418.1	323.6	276.1	53.3

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)¹

Commodity	Industry							Crude Oil	Non-Metallic Minerals Nec
	Services to Agriculture	Forestry	Fishing	Iron	Other Met. Minerals	Coal			
14 Iron	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	58.3	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	46.3	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0
44 Joinery and Wood Prod.	0.0	0.0	0.0	.1	.2	.2	.0	.1	.1
45 Furniture	.2	.8	.7	.3	.3	.3	.0	.1	.1
67 Structural Metal Prod.	0.0	0.0	0.0	.2	.2	.2	.0	.1	.1
68 Sheet Metal Products	0.0	1.6	0.0	.3	.3	.3	.0	.1	.1
69 Metal Products Nec	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	56.5	35.2	6.0	3.1	13.1	6.3	.5	14.5	0.0
71 Ship and Boat Building	0.0	0.0	34.1	.6	.4	2.0	.2	.8	0.0
72 Locomotives	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	21.1	.0	2.8	.2	.2	.2	.0	.1	.1
75 Electronic Equipment	1.0	2.2	1.4	3.8	6.0	3.9	.3	1.2	1.2
76 Household Appliances	1.6	.9	11.5	.3	.3	.3	.0	.1	.1
77 Electrical Machinery	3.9	.4	0.0	34.6	40.3	42.0	2.8	16.3	0.0
78 Agricultural Mach.	42.1	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	8.1	52.0	4.1	49.0	60.7	54.1	3.6	26.0	0.0
80 Other Machinery	11.9	5.4	16.8	21.3	45.8	43.7	2.9	19.0	0.0
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	83.7	72.7	4.6	116.6	357.7	148.3	112.9	87.1	0.0
91 Wholesale Trade	41.5	48.4	26.0	51.2	71.6	67.0	4.5	30.4	0.0
92 Retail Trade	17.2	11.5	2.5	2.8	6.8	3.8	.3	4.9	0.0
95 Road Transport	14.9	28.9	4.7	24.3	31.2	28.3	1.9	13.3	0.0
96 Rail Transport	2.9	7.9	1.0	7.5	9.6	8.8	.6	4.1	0.0
97 Water Transport	3.6	4.1	.5	2.9	3.7	3.4	.2	1.6	0.0
98 Air Transport	.7	1.2	.2	1.2	1.5	1.3	.1	.6	0.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.1	.1	.0	.1	.1	.1	.0	.0	.0
103 Investment, Real Estate	3.0	2.6	.2	4.2	12.8	5.3	4.0	3.1	0.0
104 Other Business Services	4.2	3.7	.2	5.9	18.0	7.5	5.7	4.4	0.0
115 Taxes and Subsidies	7.3	3.8	..	5.1	9.9	6.1	.7	3.8	0.0
116 Total	329.9	304.3	92.2	342.5	751.1	486.1	150.5	235.5	0.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							
	Services to Mining	Meat Products	Milk Products	Fruit and Veg Products	Margarine and Oils	Flour and Cereal Prod	Bread and Cakes	Confectionery Products
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.1	.0	.1	.0	.0
45 Furniture	.0	.0	.0	.2	.0	.1	.0	.0
67 Structural Metal Prod.	.0	1.1	7.3	1.2	1.5	2.2	.5	1.1
68 Sheet Metal Products	.0	.3	9.8	.5	.1	.1	6.8	.1
69 Metal Products Nec	0.0	.0	0.0	0.0	0.0	0.0	0.0	.1
70 Motor Vehicles	7.2	14.4	17.1	3.2	.8	2.5	12.1	.9
71 Ship and Boat Building	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	6.1	.0	1.2	.3	.0	.2	.0	.0
75 Electronic Equipment	1.7	.3	.0	.1	.0	.0	.1	.0
76 Household Appliances	.0	5.7	10.2	.8	.2	.2	.3	.1
77 Electrical Machinery	1.5	1.1	3.0	.1	.3	2.2	1.5	.3
78 Agricultural Mach.	0.0	0.0	.3	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	.1	1.3	.4	.3	.1	.2	.2	.5
80 Other Machinery	.4	65.3	18.9	22.1	7.4	13.1	25.2	5.7
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
84 Signs, Writing Equip.	0.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	10.7	95.4	51.0	30.3	9.1	19.9	47.4	9.3
91 Wholesale Trade	4.6	31.5	14.4	10.4	3.4	6.6	13.3	3.1
92 Retail Trade	2.9	4.4	5.1	1.0	.2	.8	3.6	.3
95 Road Transport	.2	5.0	2.1	1.6	.5	1.0	1.9	.6
96 Rail Transport	.1	1.6	.6	.5	.2	.3	.6	.2
97 Water Transport	.1	.7	.8	.3	.1	.2	.4	.1
98 Air Transport	.1	.1	.1	.0	.0	.0	.0	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.4	3.4	1.8	1.1	.3	.7	1.7	.3
104 Other Business Services	.5	4.8	2.6	1.5	.5	1.0	2.4	.5
115 Taxes and Subsidies	.5	5.9	5.3	2.9	.8	2.1	4.8	1.0
116 Total	37.6	242.5	152.1	78.3	25.6	53.7	122.8	24.5

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)¹

Commodity	Industry							Cotton, Silk, Flax Yarns
	Food Products Nec	Soft drinks	Beer and Malt	Alcoholic Bev Nec	Tobacco Products	Prepared Fibres	Man-Made Fibres, Yarn	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.2	.2	.0	.0	.0	.0	.0	.0
45 Furniture	.2	.2	.0	.0	.0	.0	.1	.1
67 Structural Metal Prod.	3.4	3.4	21.1	4.5	.4	.0	.5	.3
68 Sheet Metal Products	4.8	.8	.0	.0	.1	.7	1.3	.7
69 Metal Products Nec	0.0	.0	0.0	0.0	0.0	0.0	0.0	.0
70 Motor Vehicles	6.2	5.0	1.6	1.0	.3	.3	1.9	1.0
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.3	.1	.2	.0	.1	.0	.2	.1
75 Electronic Equipment	.9	.0	.4	.1	.0	.0	.2	.1
76 Household Appliances	.5	3.4	.4	.1	.1	.0	.0	.0
77 Electrical Machinery	3.0	1.4	1.8	.4	.2	.0	.3	.1
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	2.6	.3	.0	.0	.4	.0	.2	.1
80 Other Machinery	48.3	12.2	24.4	5.2	14.9	3.4	42.0	24.0
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	2.3	6.3	1.3	2.2	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	65.0	18.0	56.8	7.6	16.1	4.3	21.2	23.4
91 Wholesale Trade	24.8	6.9	12.3	2.7	6.8	1.6	18.6	10.6
92 Retail Trade	2.3	1.5	.8	.3	.1	.1	.7	.4
95 Road Transport	4.5	1.0	2.0	.4	1.2	.2	2.8	1.6
96 Rail Transport	1.4	.3	.6	.1	.4	.1	.9	.5
97 Water Transport	.8	.2	1.0	.2	.2	.0	.4	.2
98 Air Transport	.1	.0	.0	.0	.0	.0	.0	.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	2.3	.6	2.0	.3	.6	.2	.8	.8
104 Other Business Services	3.3	.9	2.9	.4	.8	.2	1.1	1.2
115 Taxes and Subsidies	7.4	2.3	2.5	1.7	1.2	.9	2.3	1.8
116 Total	182.1	57.7	137.3	26.3	46.2	12.1	95.5	67.3

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Sawmill Products
	Wool and Worsted Yarns	Textile Finishing	Textile Floor Coverings	Textile Products Nec	Knitting Mills	Clothing	Footwear	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.0	.0	.0	.0	.0
45 Furniture	.0	.0	.0	.0	.1	.0	.0	.0
67 Structural Metal Prod.	.2	.1	.1	.1	.2	.2	.1	.1
68 Sheet Metal Products	.3	.2	.2	.2	.6	.5	.0	.1
69 Metal Products Nec	.0	.0	.0	.0	.0	.0	.0	.0
70 Motor Vehicles	.4	.2	.6	1.6	2.8	4.9	1.8	13.8
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.2	.0	.0	.0	.1	.1	.0	.0
75 Electronic Equipment	.0	.0	.0	.0	.1	.1	.0	.1
76 Household Appliances	.0	.0	.0	.0	.0	.0	.0	.0
77 Electrical Machinery	.2	.0	.0	.0	.1	.1	.1	.1
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	.0	.0	.0	.0	.1	.1	.5	2.9
80 Other Machinery	9.1	3.7	7.7	6.3	19.5	14.6	10.3	21.4
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	8.6	3.7	8.8	8.4	11.9	26.5	5.5	49.7
91 Wholesale Trade	4.1	1.7	3.5	2.9	8.8	6.9	8.8	13.8
92 Retail Trade	.1	.1	.2	.5	.9	1.5	.6	4.1
95 Road Transport	.6	.3	.5	.4	1.3	1.0	.9	3.0
96 Rail Transport	.2	.1	.2	.1	.4	.3	.3	1.0
97 Water Transport	.1	.0	.1	.1	.1	.2	.1	.5
98 Air Transport	.0	.0	.0	.0	.0	.0	.0	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.3	.1	.3	.3	.4	.9	.2	1.8
104 Other Business Services	.4	.2	.4	.4	.6	1.3	.3	2.5
115 Taxes and Subsidies	1.5	.6	1.0	.5	3.1	2.4	2.3	3.1
116 Total	26.6	11.1	23.9	21.9	51.3	61.6	28.1	128.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Printing
	Plywood, Veneers	Joinery & Wood Prods	Furniture	Pulp and Paper	Fibreboard	Paper Products Nec	Newspapers and Books	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.1	.0	.0	.1	.2
45 Furniture	.0	.0	.0	.1	.0	.0	.2	.4
67 Structural Metal Prod.	1.4	.5	.2	2.8	.4	.6	0.0	0.0
68 Sheet Metal Products	.1	.1	.0	0.0	.2	0.0	.6	1.1
69 Metal Products Nec	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0
70 Motor Vehicles	.9	11.1	3.7	.5	3.2	1.2	3.6	8.5
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.1	.1	.1	.3	.4	.1	.2	.3
75 Electronic Equipment	.1	.1	.0	1.6	.1	.4	.9	1.7
76 Household Appliances	.0	.0	.0	.0	.0	.0	.1	.2
77 Electrical Machinery	3.5	4.1	1.9	3.5	2.2	.8	0.0	0.0
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	2.1	1.8	.8	1.6	.5	.4	.7	1.3
80 Other Machinery	8.1	16.7	7.8	50.1	23.1	11.5	31.4	59.9
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.2	.5
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	11.6	59.7	22.5	28.0	25.5	16.5	37.8	60.8
91 Wholesale Trade	5.7	10.2	4.6	24.1	11.1	5.6	14.8	28.4
92 Retail Trade	.3	3.3	1.1	.9	1.0	.5	1.5	3.3
95 Road Transport	1.6	2.1	.9	4.0	1.8	.9	2.4	4.5
96 Rail Transport	.5	.7	.3	1.3	.6	.3	.8	1.4
97 Water Transport	.3	.3	.1	.6	.3	.1	.3	.6
98 Air Transport	.1	.1	.0	.1	.0	.0	.1	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.4	2.1	.8	1.0	.9	.6	1.4	2.2
104 Other Business Services	.6	3.0	1.1	1.4	1.3	.8	1.9	3.1
115 Taxes and Subsidies	1.2	1.4	1.4	8.2	3.0	1.3	4.1	6.1
116 Total	38.4	117.4	47.6	130.1	75.6	41.8	102.9	184.4

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							
	Chemical Fertilisers	Industrial Chemicals	Paints, Varnishes	Pharmaceuticals	Soap and Detergents	Cosmetics, Toilet Prep	Chemical Prod Nec	Oil & Coal Products
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.1	.2	.0	.0	.0	.0	.0	.1
45 Furniture	.1	.3	.0	.0	.0	.0	.0	.2
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	8.3	48.9	2.0	5.4	4.1	.4	1.8	9.2
69 Metal Products Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	.9	3.6	1.8	2.9	1.3	.3	1.0	1.2
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.2	.3	.0	.3	.0	.3	.1	.2
75 Electronic Equipment	.9	1.2	.1	.7	.1	.1	.4	.9
76 Household Appliances	.0	.0	.0	.0	.0	.0	.0	.0
77 Electrical Machinery	2.6	6.8	.1	.8	.4	.1	1.1	2.6
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	5.5	2.9	.1	.3	.8	.1	1.2	1.1
80 Other Machinery	10.3	60.3	1.8	6.3	4.2	.6	3.7	40.8
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	12.9	49.3	8.1	24.3	7.6	3.4	17.5	19.2
91 Wholesale Trade	10.1	35.9	1.3	4.5	3.1	.5	3.1	20.4
92 Retail Trade	.7	1.7	.6	1.2	.5	.1	.5	.8
95 Road Transport	3.3	6.2	.2	.7	.7	.1	.8	3.3
96 Rail Transport	1.0	1.8	.1	.2	.2	.0	.3	1.0
97 Water Transport	.5	1.6	.1	.2	.2	.0	.1	.6
98 Air Transport	.1	.1	.0	.0	.0	.0	.0	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	.5	1.8	.3	.9	.3	.1	.6	.7
104 Other Business Services	.7	2.5	.4	1.2	.4	.2	.9	1.0
115 Taxes and Subsidies	3.1	10.8	.8	1.5	.6	.5	1.0	10.3
116 Total	62.0	236.3	17.7	51.6	24.6	6.7	33.9	113.7

i. For a description of the calibration process see Section 4.2.

TABLE 4.3 (cont) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry										Other Basic Metals
	Glass Products	Clay Products	Cement	Ready-Mixed Concrete	Concrete Products	Non-Metallic Min Products	Basic Iron and Steel				
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.1	.2	.0	.0	.1	.1	.0	.0	.0	.0	.0
45 Furniture	.2	.3	.0	.2	.1	.1	.1	.1	.1	.1	.1
67 Structural Metal Prod.	4.9	2.9	0.0	.5	3.7	.7	1.4	1.4	96.7	8.3	8.3
68 Sheet Metal Products	.9	0.0	.0	.0	.3	.5	1.8	1.8	0.0	0.0	0.0
69 Metal Products Nec	1.0	0.0	0.0	0.0	.2	.1	0.0	0.0	0.0	0.0	0.0
70 Motor Vehicles	1.6	3.9	1.6	3.1	4.6	1.4	13.6	1.4	2.5	2.5	2.5
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.2	0.0	.1	.0	.0	.0	.8	.0	2.3	2.3	2.3
75 Electronic Equipment	.8	.1	.0	.1	.0	.0	5.3	1.0	1.0	1.0	1.0
76 Household Appliances	.0	.0	.0	.0	.0	.0	.9	.0	3.0	3.0	3.0
77 Electrical Machinery	3.0	1.0	.5	1.6	4.4	1.3	79.0	1.3	64.5	64.5	64.5
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	.5	3.4	.9	.7	2.7	.6	81.3	.6	23.7	23.7	23.7
80 Other Machinery	9.0	35.1	23.8	5.9	10.1	7.0	271.8	7.0	216.9	216.9	216.9
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	.0	.0	.0	.0	.0	.0	.2	.0	.2	.2	.2
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	21.0	32.0	9.7	5.6	18.8	13.9	229.2	13.9	180.9	180.9	180.9
91 Wholesale Trade	5.8	18.1	11.1	3.6	7.6	3.9	190.3	3.9	127.4	127.4	127.4
92 Retail Trade	.8	1.2	.5	.9	1.4	.4	6.8	.4	1.8	1.8	1.8
95 Road Transport	1.0	3.9	1.9	.7	2.1	.8	55.6	.8	27.5	27.5	27.5
96 Rail Transport	.3	1.2	.6	.2	.6	.2	17.5	.2	8.5	8.5	8.5
97 Water Transport	.3	.6	.2	.1	.4	.1	6.9	.1	7.3	7.3	7.3
98 Air Transport	.0	.1	.0	.0	.1	.0	2.1	.0	.8	.8	.8
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.2	.0	.2	.2	.2
103 Investment, Real Estate	.8	1.1	.3	.2	.7	.5	8.2	.5	6.5	6.5	6.5
104 Other Business Services	1.1	1.6	.5	.3	.9	.7	11.6	.7	9.1	9.1	9.1
115 Taxes and Subsidies	1.9	5.0	4.8	1.5	2.4	2.0	20.4	2.0	21.3	21.3	21.3
116 Total	55.0	111.8	56.8	25.1	61.2	34.3	1 013.1	34.3	813.2	813.2	813.2

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED) 1

Commodity	Industry							
	Structural Metal	Sheet Metal Products	Metal Products Nec	Motor Vehicles	Ship & Boat Building	Locomotives	Aircraft Building	Scientific Equipment
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	1.1	2.2	1.1	1.1	0.0	0.0	1.1	0.0
45 Furniture	2.2	3.3	2.2	4.4	0.0	0.0	2.2	0.0
67 Structural Metal Prod.	4.4	7.7	5.5	1.1	0.0	0.0	2.2	1.1
68 Sheet Metal Products	1.5	3.0	2.0	1.0	1.1	0.0	5.8	1.3
69 Metal Products Nec	1.1	1.1	1.1	3.3	0.0	0.0	8.8	5.5
70 Motor Vehicles	4.8	7.2	8.0	14.0	1.2	3.3	2.2	1.1
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	1.6	3.1	2.0	6.6	0.0	0.0	7.7	1.2
75 Electronic Equipment	9.9	1.8	1.2	1.8	0.0	1.1	6.6	6.6
76 Household Appliances	8.0	3.9	2.5	7.4	5.5	3.3	4.5	4.4
77 Electrical Machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78 Agricultural Mach.	1.7	7.7	4.4	5.2	5.5	2.2	8.8	0.0
79 Construction Equipment	19.1	53.1	34.4	110.7	7.8	4.0	53.0	4.6
80 Other Machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83 Plastic Products	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	31.4	56.2	71.2	120.6	17.0	14.9	150.6	10.8
90 Building Nec	12.5	27.1	17.9	54.6	3.9	1.9	28.0	3.2
91 Wholesale Trade	1.9	3.0	2.9	5.0	4.4	1.1	3.1	6.6
92 Retail Trade	2.2	3.9	2.6	9.7	7.7	3.3	4.0	4.4
95 Road Transport	7.7	1.3	8.8	3.1	2.2	1.1	1.3	1.1
96 Rail Transport	4.4	6.6	4.4	1.3	1.1	0.0	6.6	1.1
97 Water Transport	1.1	1.1	1.1	2.2	0.0	0.0	1.1	0.0
98 Air Transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	1.1	2.0	4.0	4.0	0.0	0.0	0.0	0.0
103 Investment, Real Estate	1.6	2.8	3.6	6.1	6.6	5.5	5.4	4.4
104 Other Business Services	5.0	4.2	7.3	18.7	9.9	8.8	7.6	5.5
115 Taxes and Subsidies	95.3	175.4	160.7	365.6	35.2	24.3	275.3	27.3
116 Total								

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Rubber Products
	Electronic Equipment	Household Appliances	Electrical Machinery	Agricultural Machinery	Construction Equipment	Other Machinery	Leather Products	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	.0	.0	.0	.0	.0	.0	.0	.9
45 Furniture	.1	.0	.1	.0	.0	.0	.0	1.5
67 Structural Metal Prod.	.0	.0	.0	.0	.0	.0	.0	1.4
68 Sheet Metal Products	4.8	1.6	3.7	.1	1.6	.4	.1	.5
69 Metal Products Nec	4.2	1.4	3.2	.0	.0	.1	.0	.2
70 Motor Vehicles	2.6	2.0	3.2	2.5	1.1	11.2	1.0	2.5
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.5	.2	.4	.0	.0	.0	.0	.0
75 Electronic Equipment	4.8	.3	1.8	.1	.1	.5	.0	.3
76 Household Appliances	.1	.0	.1	.0	.0	.0	.0	.0
77 Electrical Machinery	3.1	1.0	2.4	.6	.4	3.4	.1	.1
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	4.8	1.7	4.1	.4	.2	2.3	.0	.9
80 Other Machinery	24.7	10.5	22.4	9.4	5.2	50.2	4.0	66.4
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2
84 Signs, Writing Equip.	0.0	.0	.0	.0	.0	.0	.0	.0
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	44.1	20.0	59.5	16.7	10.5	73.8	6.6	39.2
91 Wholesale Trade	17.9	6.6	14.8	4.7	2.6	24.9	1.9	30.0
92 Retail Trade	3.0	.8	1.8	.8	.4	3.6	.3	.9
95 Road Transport	4.0	1.5	3.5	.8	.5	4.4	.3	4.8
96 Rail Transport	1.2	.5	1.1	.3	.1	1.4	.1	1.5
97 Water Transport	.6	.2	.5	.1	.1	.6	.0	.7
98 Air Transport	.1	.1	.1	.0	.0	.1	.1	.1
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.0	.0	.0	.0	.0
103 Investment, Real Estate	1.6	.7	2.1	.6	.4	2.6	.2	1.4
104 Other Business Services	2.2	1.0	3.0	.8	.5	3.7	.3	2.0
115 Taxes and Subsidies	1.7	2.2	4.5	1.2	2.4	7.2	.5	4.0
116 Total	126.3	52.3	132.2	39.2	24.5	190.7	15.5	159.4

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (cont) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Building Nec
	Plastic Products	Signs, Writing Equip	Other Manufacturing	Electricity	Gas	Water, Sewerage	Residential Building	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	0	2	0	8	0	6.5	.1	.5
45 Furniture	.1	.3	.0	1.3	.0	16.6	.4	1.2
67 Structural Metal Prod.	0.0	.7	.0	422.6	1.0	16.4	.1	40.5
68 Sheet Metal Products	6.9	26.2	.1	8.6	.2	30.0	1.0	2.4
69 Metal Products Nec	0.0	.3	.2	8.6	36.8	12.4	1.3	3.2
70 Motor Vehicles	2.9	2.5	.6	49.5	11.9	165.9	12.9	34.9
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
72 Locomotives	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74 Scientific Equipment	.4	1.1	.5	33.5	2.3	18.5	1.0	1.5
75 Electronic Equipment	2.4	.2	.2	4.4	.5	31.4	.0	.9
76 Household Appliances	.0	.2	.0	3.7	.0	2.4	.0	5.1
77 Electrical Machinery	7.6	.9	.2	73.3	1.0	2.4	6.0	3.7
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	24.7	0.0	0.0
79 Construction Equipment	3.8	.1	.0	16.7	1.0	68.6	22.8	116.1
80 Other Machinery	18.7	9.3	1.8	337.0	38.1	51.6	7.2	33.9
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	11.8	0.0	0.0
84 Signs, Writing Equip.	0	0	0	.3	.0	10.9	.0	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	21.0	4.4	4.0	1 499.8	93.6	1 544.0	98.9	143.5
91 Wholesale Trade	14.2	5.2	1.3	34.3	3.1	25.2	21.2	100.6
92 Retail Trade	2.0	.8	.3	1.2	.2	1.2	3.9	11.1
95 Road Transport	3.2	.7	.1	3.2	.6	15.0	11.0	55.5
96 Rail Transport	1.0	.2	.0	2.1	.2	3.8	1.3	16.6
97 Water Transport	.5	.1	.0	11.2	.2	2.8	1.3	7.8
98 Air Transport	.1	.0	.0	.2	.0	.6	.6	2.8
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.0	.0	.0	.4	.0	.1	.0	.2
103 Investment, Real Estate	.8	.2	.1	9.2	.6	9.5	3.5	5.1
104 Other Business Services	1.1	.2	.2	13.0	.8	13.4	5.0	7.2
115 Taxes and Subsidies	3.9	.6	.8	3.5	.4	2.7	4.1	14.3
116 Total	90.5	28.2	11.0	2 567.8	192.6	2 086.1	205.6	610.0

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							
	Wholesale Trade	Retail Trade	Motor Vehicle Repairs	Other Repairs	Road Transport	Rail Transport	Water Transport	Air Transport
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	2.6	9.5	.0	.0	.0	.9	1.0	3.5
45 Furniture	16.3	14.4	.0	.0	.0	1.5	1.7	4.9
67 Structural Metal Prod.	16.1	12.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	64.8	54.4	.0	.0	.1	3.0	5.3	9.7
69 Metal Products Nec	0.0	0.0	.2	.3	0.0	0.0	0.0	0.0
70 Motor Vehicles	202.7	125.4	12.8	20.6	1 271.8	26.3	15.5	40.2
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	235.9	.1
72 Locomotives	0.0	0.0	0.0	0.0	3.8	414.7	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	0.0	0.0	5.8	213.8
74 Scientific Equipment	11.6	.1	.2	.3	0.0	.1	1.0	1.3
75 Electronic Equipment	14.0	7.4	.4	.7	.4	10.1	13.3	15.1
76 Household Appliances	48.3	84.3	.0	.0	.0	.1	.1	.1
77 Electrical Machinery	7.2	1.1	2.3	3.6	0.0	12.1	6.7	8.3
78 Agricultural Mach.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 Construction Equipment	28.0	7.9	.2	.3	0.0	6.0	5.8	11.7
80 Other Machinery	89.6	25.5	16.4	26.3	23.4	59.9	30.1	25.2
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	5.5	3.4	.0	.0	.0	.3	.3	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90 Building Nec	1 131.6	700.0	71.6	115.0	217.4	2 701.7	716.8	315.1
91 Wholesale Trade	109.0	58.7	9.1	14.5	136.3	4.2	110.2	117.0
92 Retail Trade	66.2	40.5	4.0	6.4	374.0	.2	11.2	20.3
95 Road Transport	24.1	10.6	1.3	2.1	14.8	1.3	15.4	9.4
96 Rail Transport	6.8	2.5	.4	.7	5.9	.4	2.2	2.8
97 Water Transport	5.0	2.9	.2	.3	4.4	.2	1.4	1.4
98 Air Transport	1.0	.3	.0	.0	.0	.1	.2	.3
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102 Other Insurance	.1	.1	.0	.0	.1	.0	.0	.0
103 Investment, Real Estate	40.4	25.0	2.6	4.1	7.8	16.6	25.6	11.2
104 Other Business Services	57.1	35.3	3.6	5.8	11.0	23.5	36.1	15.9
115 Taxes and Subsidies	68.3	25.4	2.9	4.7	215.3	.4	..	13.2
116 Total	2 016.5	1 246.5	128.2	205.8	2 286.6	3 283.8	1 050.1	840.5

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Public Admin
	Communication	Banking	Finance and Life Ins	Other Insurance	Investment, Real Estate	Other Business Serv	Ownership Of Dwellings	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44 Joinery and Wood Prod.	8.9	14.1	19.6	5.5	.7	.5	0.0	12.2
45 Furniture	21.1	3.3	4.6	1.3	4.8	3.9	0.0	32.5
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68 Sheet Metal Products	43.1	4.5	6.3	1.8	2.4	3.7	0.0	77.9
69 Metal Products Nec	0.0	18.7	25.9	7.2	0.0	0.0	0.0	0.0
70 Motor Vehicles	80.1	26.3	72.7	10.3	59.9	21.8	0.0	96.2
71 Ship and Boat Building	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73 Aircraft Building	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0
74 Scientific Equipment	1.9	0	0	0	0	8.0	0.0	2.3
75 Electronic Equipment	192.0	9.2	12.7	3.6	1.8	2.7	0.0	10.8
76 Household Appliances	8.2	0	0	0	0	0	0.0	3.2
77 Electrical Machinery	437.9	2.5	3.5	1.0	0	6.1	0.0	0
78 Agricultural Mach.	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0
79 Construction Equipment	45.7	0.0	0.0	0.0	11.2	0.0	0.0	1
80 Other Machinery	75.1	13.8	19.2	5.4	42.8	31.2	0.0	104.7
83 Plastic Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84 Signs, Writing Equip.	3	1.3	1.7	.5	.0	.0	0.0	.1
85 Other Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89 Residential Buildings	371.9	467.0	1 434.4	182.1	1 182.1	386.9	0.0	1 993.4
90 Building Nec	19.5	21.6	33.4	8.4	34.5	22.3	0.0	7.8
91 Wholesale Trade	6	12.4	27.8	4.8	18.5	7.7	0.0	1.2
92 Retail Trade	8.1	3.1	4.7	1.2	9.4	2.8	0.0	1.6
95 Road Transport	2.5	.6	.9	.2	2.7	.8	0.0	.3
96 Rail Transport	1.1	.5	.9	.2	1.3	.5	0.0	.3
97 Water Transport	4	0	0	0	.3	.2	0.0	.0
98 Air Transport	1 612.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
99 Communication	0	0	0	0	0	0	0.0	0.0
102 Other Insurance	2.3	16.7	51.2	6.5	42.2	13.8	566.0	13.2
103 Investment, Real Estate	3.2	23.5	72.3	9.2	59.6	19.5	799.5	18.6
104 Other Business Services	2.6	4.3	13.4	1.0	9.6	4.7	0.0	.9
115 Taxes and Subsidies	2 938.8	643.4	1 805.1	250.0	1 486.9	537.2	24 178.7	2 377.2
116 Total								

1. For a description of the calibration process see Section 4.2.

TABLE 4.3 (ctd) : COMMODITY COMPOSITION OF INDUSTRY CAPITAL STOCKS AT BASIC VALUES - AUSTRALIA, 1971-72 (\$m)
(CALIBRATED)

Commodity	Industry							Total
	Defence	Health	Education	Welfare Services	Entertainment	Restaurants, Hotels	Personal Services	
14 Iron	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1
15 Other Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.3
16 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.3
17 Crude Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8
18 Non-Metallic Nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6
44 Joinery and Wood Prod.	0.0	3.5	9.4	4	8	6.0	1	111.5
45 Furniture	0.0	11.9	40.8	1.5	3.7	16.4	.2	215.4
67 Structural Metal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	679.8
68 Sheet Metal Products	0.0	38.8	120.6	3.0	1.5	32.6	.2	713.3
69 Metal Products Nec	0.0	0.0	.1	0.0	1.9	0.0	0.0	137.6
70 Motor Vehicles	0.0	16.7	51.2	4.8	17.3	29.7	5.1	3 251.2
71 Ship and Boat Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	278.8
72 Locomotives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	441.4
73 Aircraft Building	0.0	.7	0	0.0	0.0	0.0	0.0	227.6
74 Scientific Equipment	0.0	103.6	28.4	0.0	9	0.0	2	268.8
75 Electronic Equipment	0.0	2.8	7.6	.6	6.7	3.3	.2	416.9
76 Household Appliances	0.0	12.8	9.8	.8	.4	113.5	.2	381.3
77 Electrical Machinery	0.0	.9	0	.1	.6	1.7	.1	1 000.1
78 Agricultural Mach.	0.0	0.0	.2	0.0	0.0	0.0	0.0	672.5
79 Construction Equipment	0.0	0.0	1	0.0	.1	0.0	0.0	790.8
80 Other Machinery	0.0	26.2	178.6	18.1	24.9	11.2	24.3	3 433.5
83 Plastic Products	0.0	5.7	0.0	0.0	0.0	.8	0.0	18.6
84 Signs, Writing Equip.	0.0	.1	.1	.0	0	5.2	0	44.7
85 Other Manufacturing	0.0	0.0	1.5	.8	.2	0.0	0.0	2.5
89 Residential Buildings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22 813.3
90 Building Nec	0.0	1 191.9	2 696.6	100.4	451.8	821.1	142.0	27 094.9
91 Wholesale Trade	0.0	4.9	12.7	9.7	17.3	36.7	11.2	2 649.5
92 Retail Trade	0.0	.2	.7	1.7	8.2	10.4	1.6	895.8
95 Road Transport	0.0	.6	2.3	1.7	4.8	1.6	1.6	725.7
96 Rail Transport	0.0	.1	.4	.4	.8	1.3	.5	190.0
97 Water Transport	0.0	.2	.5	.3	.4	1.3	.2	144.0
98 Air Transport	0.0	.1	0	0	.0	.1	0	20.9
99 Communication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1 612.5
102 Other Insurance	0.0	0	0	0	0	0	0	0
103 Investment, Real Estate	0.0	7.9	17.8	3.6	16.1	29.3	5.1	1 178.7
104 Other Business Services	0.0	11.1	25.2	5.1	22.8	41.4	7.2	1 664.9
115 Taxes and Subsidies	0.0	.9	1.6	11.4	6.5	6.7	2.2	536.4
116 Total	0.0	1 441.6	3 206.4	164.5	585.0	1 172.9	202.3	72 736.6

1. For a description of the calibration process see Section 4.2.

APPENDIX 5 : COMPUTATION OF THE VECTOR OF INVESTMENT BY INVESTING
INDUSTRIES AND THE CALIBRATED CAPITAL STOCK MATRIX¹

J is the vector of gross investment by using industries in the snapshot year (in this case, 1971/72), valued in output units,² which is estimated endogenously in SNAPSHOT. Thus

$$(A5.1) \quad J = K_{t+1} - (I - \hat{n})K_t$$

and K_t and K_{t+1} are vectors of industry capital stocks in the snapshot and post-snapshot years respectively, and \hat{n} is a diagonal matrix of exogenous industry-specific depreciation rates.

To calculate J , we need in addition the following three equations from SNAPSHOT:

$$(A5.2) \quad K_t = (I + \hat{h})^t \cdot K_0$$

where K_0 is a vector of industry capital stocks in the base year and \hat{h} is a diagonal matrix of industry capital growth rates over the snapshot period.

$$(A5.3) \quad K_{t+1} = (I + \hat{h})K_t$$

and, since we are measuring capital in output units,

1. This appendix makes use of several equations in the SNAPSHOT model. For full details see Dixon, Harrower and Powell [1976], Dixon [1977], and Dixon, Harrower and Vincent [1978].

2. That is, a unit of J is the amount of investment required to produce one extra unit of output.

$$(A5.4) \quad X = K_t$$

where X is a vector of total domestic outputs of industries during the snapshot year.¹

From (A5.2) and (A5.4) we can calculate \hat{h} . The j^{th} element, \hat{h}_j , is given by

$$(A5.5) \quad \hat{h}_j = \left(\frac{X_j}{K_{0j}} \right)^{1/t} - 1 .$$

Substituting in (A5.2) and (A5.3) and then into (A5.1), we obtain

$$(A5.6) \quad J = (\hat{h} + \hat{\eta}) (I + \hat{h})^t \cdot K_0 .$$

The investment matrix, V , is then formed using

$$(A5.7) \quad V = C \hat{J} ,$$

where \hat{J} is a diagonal matrix formed from J and C is the capital coefficients matrix.

The procedures outlined in Section 4.2 provide new row and column sums for V . The elements of V are then adjusted using the well-known RAS technique² to

1. In SNAPSHOT, equation (A5.4) is formulated as an inequality (capacity constraint). By interpreting X as output of a 'typical' year (i.e. adjusting actual outputs to account for atypically low values in 1971/72) we are able to convert the inequality to an equality.

2. See for example Bacharach [1970].

form a new investment matrix V^* . The adjusted capital coefficients matrix C^* is then obtained via

$$(A5.8) \quad C^* = V^* \hat{J}^{-1} .$$

The calibrated capital stock matrix in value terms was then obtained by multiplying each column of C^* by the corresponding industry's value of 'normal' output in 1971/72.

APPENDIX 6 : SENSITIVITY OF THE CAPITAL STOCKS TO LIFETIME ASSUMPTIONS

It was noted in Section 4.3.1 that the use of incorrect lifetimes may account for some of the differences between the original and calibrated capital stock matrices. To test how sensitive our original capital stock estimates were to changes in the lifetimes used, we re-estimated capital stocks (for those industries where the PIM had been used) with different lifetime assumptions. Capital stocks for the mining, manufacturing and Water, sewerage and drainage industries were re-estimated assuming first, that asset lives were 10 per cent lower, and second, that asset lives were 10 per cent higher than those shown in Table 8. For the remaining industries the experiment was conducted using lifetimes which were 10 per cent lower than those originally employed.

The results are summarised in Table 6.1 (percentage change in total capital in each industry) and Table 6.2 (percentage change in capital by major asset category in each sector).

Although the capital stock changes with the use of alternative lifetimes, it is relatively insensitive. The sensitivity, however, depends on the pattern of investment over the period. In particular, if the use of an initial book value has produced an apparently large amount of investment early in the asset's life relative to total real investment levels in later years, the capital stock estimate will be relatively more sensitive. The industries where the change in the total capital stock (Table 6.1) is greatest (at least 10 per cent in each experiment) are Locomotives and rolling stock, Leather products, Clothing and Prepared fibres. These industries are characterised by static or declining levels of real investment over the period and relatively large initial values of capital in 1936/37 compared with investment levels in later years.

Table 6.1 continued

Industry ^a	Percentage change ^b		
	10 per cent decrease in lifetime	10 per cent increase in lifetime	
49	Chemical Fertilisers	- 5	4
50	Industrial Chemicals Nec	- 6	6
51	Paints and Varnishes	- 8	7
52	Pharmaceuticals	- 6	5
53	Soap and Detergents	- 7	6
54	Cosmetic, Toilet Preparations	- 6	5
55	Chemical Products Nec	-10	9
56	Petroleum and Coal Products	- 7	8
57	Glass Products	- 6	5
58	Clay Products	- 6	5
59	Cement	- 6	6
60	Ready-Mixed Concrete	- 5	5
61	Concrete Products	- 6	5
62	Non-Metallic Mineral Products	-10	8
63	Basic Iron and Steel	- 7	6
64	Other Basic Metal Products	- 4	3
65	Structural Metal Products	- 6	5
66	Sheet Metal Products	- 4	4
67	Metal Products Nec	- 8	7
68	Motor Vehicles	- 6	5
69	Ship and Boat Building	- 9	8
70	Locomotives and Rolling Stock	-20	17
71	Aircraft Building	- 4	3
72	Scientific Equipment	- 6	5
73	Electronic Equipment	- 5	4
74	Household Appliances Nec	- 6	5
75	Electrical Machinery Nec	- 7	7
76	Agricultural Machinery	- 8	7
77	Construction Etc., Equipment	- 7	6
78	Other Machinery and Equipment	- 6	5
79	Leather Products	-15	12
80	Rubber Products	- 7	6
81	Plastic Products	- 4	4
82	Signs, Writing Equipment	- 1	2
83	Other Manufacturing	- 7	5
Total Manufacturing		- 7	5
84	Electricity	- 4	4
85	Gas	- 5	5

continued

Table 6.1 continued

Industry ^a	Percentage change ^b	
	10 per cent decrease in lifetime	10 per cent increase in lifetime
86 Water, Sewerage and Drainage	- 6	5
87-88 Building and Construction	- 7	n.e.
89-92 Trade	- 6	n.e.
93 Road Transport	- 6	n.e.
94 Rail Transport	- 8	n.e.
95 Water Transport	- 7	n.e.
96 Air Transport	- 6	n.e.
97 Communication	- 2	n.e.
98-102 Finance and Business Services	- 2	n.e.
103 Ownership of Dwellings	- 5	n.e.
104 Public Administration	- 6	n.e.
107 Education	- 4	n.e.
109-111 Entertainment, Restaurants and Personal Services	- 5	n.e.
Total Services	- 5	n.e.

a Refers only to industries estimated using the PIM.

b The capital stock estimated with alternative lifetime assumptions less the capital stock estimated with original lifetimes, divided by the latter capital stock estimate.

(p) part.

n.e. not estimated.

TABLE 6.2 : PERCENTAGE CHANGE IN CAPITAL STOCKS BY ASSET CATEGORY AND SECTOR WHEN ALTERNATIVE LIFETIMES ARE USED, 1971/72

Sector ^a	Percentage change in lifetime ^b					
	10 per cent decrease			10 per cent increase		
	Buildings ^c	Plant and machinery	Motor vehicles	Buildings ^c	Plant and machinery	Motor vehicles
12- 16 Mining	- 3	- 4	- 5	3	4	3
18- 83 Manufacturing	- 8	- 6	- 7	5	5	5
84- 86 Electricity, Gas and Water	- 7	- 6	- 7	4	5	5
87- 88 Building and Construction	- 6	- 7	- 7	n.e.	n.e.	n.e.
89- 92 Trade	- 4	- 8	- 8	n.e.	n.e.	n.e.
93- 97 Transport and Communication	- 4	- 7	- 5	n.e.	n.e.	n.e.
98-102 Finance and Business Services	- 1	- 6	- 6	n.e.	n.e.	n.e.
104,107 Public Administration and Education	- 4	- 7	- 6	n.e.	n.e.	n.e.
109-111 Entertainment, Restaurants and Personal Services	- 4	- 8	- 7	n.e.	n.e.	n.e.

a Refers only to industries estimated using the PIM.

b The capital stock estimated with alternative lifetime assumptions less the capital stock estimated with original lifetimes, divided by the latter capital stock estimate.

c For the mining sector includes mine development.

n.e. not estimated.

APPENDIX 7 : COMPARISONS WITH OTHER AUSTRALIAN AND OVERSEAS ESTIMATES

In this section the results in Appendix Tables 4.1 and 4.2 are used to make some descriptive comparisons with other Australian and overseas studies. Due to the problems of expressing values (in different base years or currencies) on a comparable basis, the comparisons drawn here mainly consider the allocation of capital stocks across industries and asset categories.

7.1 Australian Capital Stock Estimates

Of the Australian studies which estimate capital stocks, comparisons are made here only where the capital stock is disaggregated by industry of use and where the same definition of capital is employed.

Haig [forthcoming]¹ uses the perpetual inventory method to estimate the value of capital stocks by asset category (buildings and structures, and plant and machinery) in nine manufacturing industries for the years 1919/20 to 1960/61.

The allocation of the total stock of manufacturing capital across using industries are shown for the period 1920/21 to 1971/72 (at ten-yearly intervals) in Table 7.1. Compared with Haig's estimates in 1960/61 the shares of capital allocated in this study are similar for the Non-Metallic mineral products, Chemicals, Food products and Other manufacturing industries, lower for Textiles, Clothing, Leather and Wood products, and higher for the Metals and metal products industry.

1. This discussion is based on a preliminary draft which is currently being substantially revised (for example, capital stocks are being estimated for years to 1976/77).

Perhaps the most important conclusion from Table 7.1, however, is the broad consistency in the trend of the shares of capital over the period. If both estimates are reasonably accurate (and it must be noted that there are differences in methodology) it indicates that between 1919/20 and 1971/72 significant increases in the share of capital employed in certain industries (Chemicals, and Metals and metal products) and significant reductions in others (Clothing, Leather, Food products and Wood products) occurred.

TABLE 7.1 : SHARE OF CAPITAL EMPLOYED IN EACH MANUFACTURING INDUSTRY, AUSTRALIA

Industry	Year					
	1920/21	1930/31	1940/41	1950/51	1960/61	1971/72
	%	%	%	%	%	%
Non-Metallic Mineral Products	6.9	7.5	7.5	5.7	6.5	6.5
Chemicals	6.0	7.0	8.4	9.4	13.1	12.4
Metals and Metal Products	29.8	27.5	31.3	35.6	38.9	44.7
Textiles	3.8	4.3	4.3	5.3	3.9	2.5
Clothing	6.1	6.8	7.0	6.3	4.0	2.9
Leather	1.2	0.9	0.8	0.8	0.4	0.2
Food Products	27.4	28.5	25.0	20.1	17.3	15.8
Wood Products	7.5	4.7	4.3	4.9	4.2	2.9
Other Manufacturing	11.3	12.8	11.4	11.9	11.7	12.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Source : The estimates for 1920/21 to 1960/61 are from Haig [forthcoming] and those for 1971/72 from Appendix Table 4.1.

Capital-coefficients for Australian industries in 1958/59 were estimated by Evans. The perpetual inventory method was used for most industries, and the output measures were adjusted to reflect capacity output. To obtain capital-coefficients in 1971/72 the capital stock estimates shown in Appendix Table 4.1 were grouped into the industries used by Evans and divided by the level of output in 1971/72.¹ For most industries the overall capital-coefficient estimated by Evans for 1958/59 is higher than those presented here (Table 7.2). For more than half the industries the difference was substantial; the 1971/72 ratio was less than half the 1958/59 level.

If we accept the reliability of the two sets of estimates and if methodological differences are not a major factor, the difference in the capital-coefficients for most industries indicates that less capital is required to produce one unit of output in 1971/72 than in 1958/59.

7.2 Overseas Capital Stock Estimates

Some comparisons are made between the allocation of capital across industries and asset categories in Australia and in New Zealand, United Kingdom (U.K.), Germany and Sweden.

1. Brooks and Lawson [1979]. Adjustments were made where there was evidence that an industry's output level was atypical in 1971/72.

TABLE 7.2 : COMPARISON OF CAPITAL-COEFFICIENTS - AUSTRALIA, 1958/59 AND 1971/72^a

Industry	Evans, 1958/59		Uncalibrated estimates in this study, 1971/72	
	Buildings	Other assets	Buildings	Other assets
Coal Mining	.869	.760	.658	1.093
Other Mining	.327	.409	.567	.471
Non-Metal Mine Products	.210	.509	.186	.361
Chemicals	.437	.669	.168	.334
Mineral Oil	.106	.537	.083	.314
Metals, Engineering, Vehicles	.574	.441	.140	.250
Textiles	.293	.454	.107	.177
Clothing	.217	.115	.062	.112
Grain Products	.256	.245	.140	.168
Confectionery	.252	.318	.123	.158
Jam and Fruit Canning	.331	.424	.145	.174
Dairy Products	.238	.315	.079	.118
Other Food Products	.329	.362	.070	.093
Alcoholic Drink	.144	.207	.222	.307
Tobacco Products	.066	.062	.075	.106
Wood Products	.312	.293	.108	.120
Rubber Products	.383	.614	.111	.282
Leather Products	.439	.324	.076	.076
Paper Products and Printing	.321	.332	.136	.199
Paper Making	.369	.123	.218	.648
Other Manufacturing	.459	.490	.079	.200
Gas	.292	1.167	.564	.473
Electricity	1.373	3.757	1.391	1.063
Dwellings	7.532	-	7.768	-
Building and Construction	.032	.290	.047	.110
Trade and Transportation	.923	.923	.571	.493
Finance	.715	.133	.781	.132
		.848		.913

^a Evans' estimates for agricultural industries and some service industries are not included.

Source : Evans [1972], pp.170-175, and Appendix Table 4.1. The outputs used in 1971/72 were taken from Brooks and Lawson [1979].

Capital stocks for New Zealand manufacturing industries for the years 1950/51 to 1972/73 were estimated by Campbell [1977b] using the perpetual inventory method. Two sets of estimates were made; the first, of capacity stock (gross stock of assets valued at the cost of replacing them with new assets) and the second, of wealth stock (net stock of assets valued at the cost of replacing them with assets of equivalent age). Two differences between the estimates made in this study and those for New Zealand which are worth noting are first, that the New Zealand estimates include the value of land with the capital stock of buildings, and second, the New Zealand stocks for each industry include the value of owned and leased assets used in production.

The differences in the allocation of total manufacturing capital across using industries in Australia and New Zealand (Table 7.3) is quite interesting. New Zealand has a far greater share of capital employed in processing agricultural and forestry products (Food, Paper and Wood manufacturing) while in Australia capital is more heavily concentrated in the manufacture of mining products (Petroleum and coal products and Basic metals), Chemicals and Transport equipment. The allocation of the total stock of the two individual asset categories in each country also follows this pattern.

The U.K. publishes official capital stock estimates (Hibbert, Griffin and Walker [1977] which are made using the perpetual inventory method. These estimates show capital stocks by industry of ownership and are made using straight line depreciation and assuming that retirements are distributed around the average expected life.

TABLE 7.3 : ALLOCATION OF TOTAL MANUFACTURING CAPITAL OF EACH ASSET TYPE ACROSS USING INDUSTRIES - AUSTRALIA AND NEW ZEALAND, 1971/72

Industry	Australia		New Zealand	
	Buildings (%)	Plant, machinery and vehicles (%)	Land and buildings (%)	Plant, machinery and vehicles (%)
Food	14.2	10.6	11.9	23.7
Beverages and Tobacco	4.5	3.7	4.0	3.7
Textiles	3.2	3.0	3.0	4.9
Clothing and Footwear	2.3	2.4	2.4	5.6
Wood	2.9	1.9	2.3	5.8
Furniture	0.9	0.4	0.6	2.2
Paper	3.8	4.7	4.4	6.2
Printing	4.0	3.4	3.5	5.7
Leather	0.3	0.2	0.2	0.7
Rubber	1.0	1.4	1.3	1.7
Chemicals	8.2	9.4	9.0	5.6
Petroleum and Coal	2.0	4.2	3.4	0.7
Non-Metallic Mineral Products	6.1	6.7	6.5	4.3
Basic Metals	13.3	23.9	20.0	13.3
Metal Products	8.4	6.0	6.9	7.3
Plant and Machinery	12.0	7.9	9.3	8.9
Transport Equipment	11.2	7.9	9.1	4.6
Miscellaneous Manufacturing	1.7	2.5	2.2	4.1
TOTAL	100.0	100.0	100.0	100.0

Source : Appendix Table 4.1 and Campbell [1977b], Table 2.

The distribution of the total stock of capital across industries in Australia compared with the U.K. (Table 7.4) indicates that Australia has a greater share of capital employed in the agricultural and mining industries, the U.K. has more than double the share of capital in the manufacturing sector than Australia, and that the share of capital employed in the services sector in each country is broadly similar. In Australia the manufacturing industries which employ the largest shares of capital are Other metals, Food, drink and tobacco, and Coal, petroleum and chemicals; in the U.K. the industries are Other metals, Coal, petroleum and chemicals, and Textiles, leather, clothing and other manufacturing. In the services sector the main differences are first, that the U.K. has a greater share of dwellings which are publically owned, second, the U.K. has a greater share of capital in the Gas, Electricity, Rail transport and Water transport industries, and finally, Australia has a greater share of capital in the Water and Road transport industries.

Official capital stock estimates are available for industries in Sweden disaggregated into major asset categories (Tengblad and Westerlund [1975]). The perpetual inventory method was used in the main although some stocks (for example, ships, aircraft, vehicles and residential buildings) were estimated by taking an inventory and applying price data. The possibility of using information on insured values was explored but abandoned for reporting purposes because of problems in obtaining a consistent valuation of assets. The price indices used in the study are adjusted to account for quality change, straight line depreciation is used and retirements are distributed around the expected life.

TABLE 7.4 : ALLOCATION OF TOTAL CAPITAL ACROSS USING INDUSTRIES:
AUSTRALIA AND THE UNITED KINGDOM, 1971/72

Industry ^a	Australia 1/6/71	United Kingdom, 1/1/71
	%	%
Agriculture	7.6	1.9
Forestry and Fishing	0.3	0.2
Mining and Quarrying	2.8	1.3
Food, Drink and Tobacco	1.7	2.6
Coal, Petroleum and Chemicals	1.3	4.2
Iron and Steel	1.1	2.3
Other Metals	3.8	8.1
Non-Metallic Mineral Products	0.7	1.0
Timber and Furniture	0.3	0.3
Paper, Printing and Publishing	0.9	1.5
Textiles, Leather, Clothing and Other Manufacturing	1.0	3.1
Total Manufacturing	10.8	23.1
Construction	1.3	1.3
Gas	0.2	1.5
Electricity	3.2	6.7
Water	4.0	1.8
Rail Transport	2.9	4.5
Road Transport	2.5	1.1
Water Transport	1.1	2.9
Air Transport	1.3	0.6
Communication	4.0	2.9
Trade and Other Service Industries	14.7	10.8
Private Dwellings	29.2	18.8
Public Dwellings	2.5	10.7
Other Public Services	11.6	9.9
Total	100.0	100.0

a The United Kingdom estimate for the value of roads has been excluded for consistency with our estimates.

Source : Appendix Table 4.1 and Hibbert, Griffin and Walker [1977], Table 1.

Tables 7.5 and 7.6 show the industry allocation of total capital stocks in Australia and Sweden, respectively. The broad sectoral distribution of capital in Sweden and the U.K. compared with Australia is similar as the former countries have a lower share in agriculture and mining, a higher share in manufacturing and about the same share in the services sector, as Australia. The manufacturing industries in Sweden which use the greatest shares of capital are Fabricated metal and plant and machinery, Wood, Furniture and paper and Basic metal products. In the services sector, Australia has a greater share of capital employed in the Trade, restaurants and hotels and the Finance and insurance industries while Sweden has a larger share in the Residential buildings, real estate and business services industry.

The asset composition of capital in Australia, Sweden and the U.K. are presented in Table 7.7. Both Sweden and Australia have far lower shares of plant and machinery than the U.K; however, the U.K.'s share of building and construction is the lowest of the three countries. The share of transport equipment is highest in Australia and lowest in Sweden.

TABLE 7.5 : ALLOCATION OF TOTAL CAPITAL OF EACH ASSET TYPE ACROSS USING INDUSTRIES - AUSTRALIA, 1971/72

Industry	Building and construction	Machinery		Total
		Transport	Other	
	%	%	%	%
Agriculture	6.9	11.1	10.7	7.9
Mining	1.9	1.8	6.7	2.8
Food Manufacturing	0.8	1.3	3.3	1.3
Beverages and Tobacco	0.2	0.2	1.2	0.4
Textiles, Clothing and Leather	0.3	0.4	1.8	0.6
Wood, Furniture and Paper	0.4	0.5	2.4	0.8
Printing	0.2	0.2	1.3	0.4
Chemicals, Rubber, Plastics and Coal and Petroleum Products	0.7	0.6	5.9	1.7
Non-Metallic Mineral Products	0.3	0.5	2.2	0.7
Basic Metal Products	0.7	0.7	8.4	2.2
Fabricated Metal and Plant and Machinery	1.7	1.6	7.2	2.7
Other Manufacturing	0.0	0.1	0.2	0.1
Total Manufacturing	5.3	6.1	33.9	10.9
Electricity, Gas and Water	6.6	4.2	11.8	7.4
Construction	0.5	1.1	4.3	1.3
Wholesale and Retail Trade, Restaurants and Hotels	7.5	10.7	9.9	8.2
Transport and Storage	4.5	55.5	2.4	7.9
Communication	3.2	1.0	8.3	4.0
Finance and Insurance	3.7	4.3	0.7	3.2
Residential Buildings, Real estate and Business Services	45.5	1.2	1.1	33.7
Public Administration and Defence	2.2	0.8	1.2	1.9
Social and Related Community Services	10.8	1.7	8.1	9.6
Recreation and Cultural Activities	1.2	0.4	0.7	1.0
Personal and Household Services	0.2	0.1	0.2	0.2
Total Services	85.9	81.0	48.7	78.4
Total	100.0	100.0	100.0	100.0

Source : Appendix Tables 4.1 and 4.2.

TABLE 7.6 : ALLOCATION OF TOTAL CAPITAL OF EACH ASSET TYPE ACROSS USING INDUSTRIES - SWEDEN, 1/1/70

Industry	Building and construction	Machinery		Total
		Transport	Other	
	%	%	%	%
Agriculture	4.6	3.6	9.8	5.3
Mining	0.4	0.1	1.9	0.6
Food Manufacturing	0.8	1.1	3.0	1.2
Beverages and Tobacco	0.2	0.3	0.6	0.2
Textiles, Clothing and Leather	0.5	0.5	2.7	0.8
Wood, Furniture and Paper	1.8	2.1	12.2	3.5
Printing	0.3	0.3	4.1	0.9
Chemicals, Rubber, Plastics and Coal and Petroleum Products	0.7	0.9	4.8	1.4
Non-Metallic Mineral Products	0.5	0.8	3.5	1.0
Basic Metal Products	1.1	1.4	8.6	2.3
Fabricated Metal and Plant and Machinery	2.6	2.5	12.6	4.2
Other Manufacturing	0.0	0.1	0.2	0.1
Total Manufacturing	8.5	10.0	52.3	15.6
Electricity, Gas and Water	7.5	0.3	10.1	7.6
Construction	0.6	6.5	4.1	1.4
Wholesale and Retail Trade, Restaurants and Hotels	2.5	10.5	6.2	3.5
Transport and Storage	9.0	64.0	1.1	10.5
Communication	2.6	0.9	4.5	2.8
Finance and Insurance	0.9	0.2	0.8	0.9
Residential Buildings, Real Estate and Business Services	52.6	0.5	1.3	41.8
Public Administration and Defence	1.8	1.0	1.2	1.7
Social and Related Community Services	6.9	0.2	5.1	6.3
Recreation and Cultural Activi- ties	1.1	0.0	0.4	0.9
Personal and Household Services	1.0	2.2	1.2	1.1
Total Services	86.5	86.3	36.0	78.5
Total	100.0	100.0	100.0	100.0

Source : Tengblad and Westerlund [1975], Table 1.

TABLE 7.7 : ALLOCATION OF TOTAL CAPITAL ACROSS ASSET CATEGORIES - AUSTRALIA, SWEDEN AND THE UNITED KINGDOM

Asset category	Australia	Sweden	United Kingdom
	1971/72	1970	1970
	%	%	%
Motor vehicles	5.1 )	)	2.7)
Other transport equipment	) 7.3)	4.9	) 6.4
	2.2 )	)	3.7)
Plant and machinery	19.1	16.0	31.3
Dwellings	31.7 )	)	29.5)
Other building and construction	) 73.6)	79.1	) 62.3
	41.9 )	)	32.8)
TOTAL	100.0	100.0	100.0

Source : Appendix Table 4.1; Tengblad and Westerlund [1975], Table 1; and Hibbert, Griffin and Walker [1977], Table 2.

Official estimates of capital stocks made using the perpetual inventory method are available for the Federal Republic of Germany (Lutz [1977]). The percentage share of total mining and manufacturing capital by industry in Australia and Germany is shown in Table 7.8. Australia has a far greater share of capital invested in the mining sector and less in the manufacturing sector, than Germany. In the manufacturing sector, the greatest differences in the shares occur first, for the Textiles, Chemicals, and Plant and machinery industries, and second, for the Non-Ferrous metal products industry. For the first group the share in Germany is much greater than in Australia, while in the second case the reverse applies. The industries in Germany which employ the largest shares of assets are Plant and machinery, Chemicals and Food, beverages and tobacco.

TABLE 7.8 : ALLOCATION OF TOTAL MINING AND MANUFACTURING CAPITAL ACROSS USING INDUSTRIES - AUSTRALIA AND THE FEDERAL REPUBLIC OF GERMANY

Industry	Australia, 1971/72	Federal Republic of Germany, 1/1/71
	%	%
Mining-		
Iron Ore	3.3	0.2
Coal	5.7	4.1
Petroleum and Natural Gas	2.6	0.9
Other	9.1	0.7
Total Mining	20.7	5.9
Manufacturing-		
Food, Beverages and Tobacco	12.6	10.8
Clothing	1.4	1.2
Textiles	2.4	5.0
Footwear	0.5	0.4
Leather	0.1	0.3
Plastics	1.3	1.4
Pulp and Paper Products	3.5	3.0
Printing	2.9	2.1
Sawmills and Wood Products	2.3	2.5
Glass	0.9	0.9
Non-Metallic Mineral Products, Rubber	5.3	6.3
Iron and Steel	8.2	9.4
Non-Ferrous Metal Products	7.7	1.9
Chemicals	7.1	14.1
Mineral Oil	2.7	2.7
Transport Equipment	7.2	9.4
Sheet Metal Products	5.5	4.1
Plant and Machinery	7.4	18.4
Musical Instruments and Toys	0.3	0.2
Total Manufacturing	79.3	94.1
TOTAL	100.0	100.0

BIBLIOGRAPHY

- Almon, C., M.B. Buckler, L.M. Horwitz and T.C. Reimbold, 1985 : Interindustry Forecasts of the American Economy, Lexington Books, 1974.
- Australian Bureau of Statistics, Official Year Book of Australia, No. 64, 1974, Catalogue No. 1301.0 (Ref. No. 1.1), Government Printer, Canberra, 1975.
- Australian Bureau of Statistics, Hospitals and Nursing Homes, Catalogue No. 4301.0 (Ref. No. 16.1), Canberra.
- Australian Bureau of Statistics, Australian National Accounts, National Income and Expenditure, Catalogue No. 5204.0 (Ref. No. 7.1), Canberra.
- Australian Bureau of Statistics, Australian National Accounts, Input-Output Tables, 1968-69, Catalogue No. 5209.0 (Ref. No. 7.11), Canberra, 1978.
- Australian Bureau of Statistics, Public Authority Finance : Authorities of the Australian Government, Catalogue No. 5502.0 (Ref. No. 5.12), Canberra.
- Australian Bureau of Statistics, Public Authority Finance, State and Local Authorities, Catalogue No. 5504.0 (Ref. No. 5.43), Canberra.
- Australian Bureau of Statistics, Expenditure on Education, Catalogue No. 5510.0 (Ref. No. 5.44), Canberra.
- Australian Bureau of Statistics, Insurance and Other Private Finance, Catalogue No. 5619.0 (Ref. No. 5.15), Canberra.
- Australian Bureau of Statistics, New Fixed Capital Expenditure by Private Enterprises in Selected Industries, Catalogue No. 5626.0 (Ref. No. 5.8), Canberra.
- Australian Bureau of Statistics, Estimates of Value of Capital Expenditure for Agricultural Purposes, by Agricultural Producers, Australia, Catalogue No. 7504.0 (Ref. No. 10.64), Canberra.
- Australian Bureau of Statistics, Fisheries, Catalogue No. 7603.0 (Ref. No. 10.8), Canberra.
- Australian Bureau of Statistics, Manufacturing Establishments, Details of Operations by Industry Class, Australia, Catalogue No. 8203.0 (Ref. No. 12.29), Canberra.
- Australian Bureau of Statistics, Electricity and Gas Establishments, Details of Operations by Industry Class, Catalogue No. 8208.0 (Ref. No. 12.30), Canberra.
- Australian Bureau of Statistics, Mining Establishments, Details of Operations, Catalogue No. 8402.0 (Ref. No. 10.60), Canberra.
- Australian Bureau of Statistics, Agricultural Machinery Statistics, Catalogue No. 8505.0 (Ref. No. 12.1), Canberra.
- Australian Bureau of Statistics, Tractors, New, Receipts, Sales and Stocks, Catalogue No. 8507.0 (Ref. No. 12.18), Canberra.

- Australian Bureau of Statistics, Building Statistics, Catalogue No. 8705.0 (Ref. No. 3.6), Canberra.
- Australian Bureau of Statistics, Transport and Communication, Catalogue No. 9101.0 (Ref. No. 14.11), Canberra.
- Australian Bureau of Statistics, Bus Fleet Operations Survey, Twelve Months Ended 30 June 1971, Catalogue No. 9203.0 (Ref. No. 14.18), Canberra.
- Australian Bureau of Statistics, Labour Report, Ref. No. 6.7, Canberra.
- Australian Department of Agriculture, Fisheries Division, Economic Survey of the Southern Bluefin Tuna Fishery, Fisheries Report No. 9, Australian Government Publishing Service, Canberra, 1974.
- Australian Department of Agriculture, Fisheries Division, Economic Survey of the W.A. Rock Lobster Fishery, Fisheries Report No. 10, Australian Government Publishing Service, Canberra, 1974.
- Australian Department of Agriculture, Fisheries Division, Western Australian Prawn Fisheries, An Economic Survey, Fisheries Report No. 13, Australian Government Publishing Service, Canberra, 1975.
- Australian Department of Agriculture, Fisheries Division, Preliminary Report : Economic Survey of the Tasmanian Rock Lobster Fishery, 1970/71 to 1972/73, (mimeo).
- Australian Department of Agriculture, Fisheries Division, Preliminary Report : Economic Survey of the South Australian Rock Lobster Fishery, 1970/71 to 1972/73, (mimeo).
- Australian Department of Agriculture, Fisheries Division, Preliminary Report on the Economic Survey of the Tasmanian Abalone Fishery, 1970/71 to 1972/73, (mimeo).
- Australian Department of Agriculture, Fisheries Division, Preliminary Report on the Economics of Abalone Fishing, Victoria Zone 1, 1970/71 to 1972/73, (mimeo).
- Australian Forestry Council, Forestry and Wood-Based Industries Development Conference (Forwood), Report of Panel 4, Harvesting, Australian Government Publishing Service, Canberra, 1974.
- Australian Mining Industry Council, "High Cost of Mining Infrastructure", Press Statement, March 12th, 1971.
- Australian National Line, Annual Report (various issues).
- Bacharach, M., Biproportional Matrices and Input-Output Change, Cambridge University Press, Cambridge, 1970.

- Barna, T., "Alternative Methods of Measuring Capital", in R. Goldsmith and C. Saunders, (eds), The Measurement of National Wealth, Income and Wealth, Series VIII, Bowes and Bowes, London, 1959, pp. 35-59.
- Blitzer, C.R., P.B. Clark and L. Taylor, (eds), Economy-Wide Models and Development Planning, Published for the World Bank by Oxford University Press, London, 1975.
- Brooks, C. and A. Lawson, "Computing a Gross Flows (Industry x Industry) Input-Output Table for 1971/72, at Basic Values with Competing Imports Allocated Indirectly", IMPACT Research Memorandum, Industries Assistance Commission, Melbourne, January, 1979.
- Bureau of Agricultural Economics, Historical Trends in Australian Rural Production, Exports, Farm Income and Indexes of Prices Received and Paid by Farmers, 1952/53 to 1972/73, Australian Government Publishing Service, Canberra, 1974.
- Bureau of Agricultural Economics, The Australian Sheep Industry Survey, 1970/71 to 1972/73, Australian Government Publishing Service, Canberra, 1976.
- Bureau of Agricultural Economics, The Australian Dairyfarming Industry, Report on an Economic Survey, 1971/72 to 1973/74, Australian Government Publishing Service, Canberra, 1975.
- Bureau of Agricultural Economics, The Australian Commercial Egg Producing Industry, An Economic Survey, 1968/69 to 1970/71, Australian Government Publishing Service, Canberra, 1974.
- Bureau of Agricultural Economics, Pig Raising in Australia, An Economic Survey, 1967/68 to 1969/70, Australian Government Publishing Service, Canberra, 1972.
- Bureau of Agricultural Economics, The Northern Territory and Kimberley Region Beef Cattle Industry, 1968/69 to 1970/71, Beef Research Report No. 13, Canberra, 1974.
- Bureau of Agricultural Economics, The Queensland Beef Cattle Industry, 1968/69 to 1970/71, Beef Research Report No. 14, Canberra, 1974.
- Bureau of Agricultural Economics, The Australian Beef Cattle Industry, 1968/69 to 1971/72, Australian Government Publishing Service, Canberra, 1974.
- Bureau of Agricultural Economics, The Australian Cotton Growing Industry, An Economic Survey, 1964/65 to 1966/67, Australian Government Publishing Service, Canberra, 1970.
- Bureau of Agricultural Economics, The Processing Tomato Growing Industry, A Continuous Farm Study, 1966/67 to 1968/69, Australian Government Publishing Service, Canberra, 1971.

- Bureau of Agricultural Economics, Apple and Pear Growing in Tasmania, Victoria and Western Australia, An Economic Survey, 1965/66 to 1968/69, Australian Government Publishing Service, Canberra, 1972.
- Bureau of Agricultural Economics, The Australian Dried Vine Fruit Industry, An Economic Survey, 1965/66 to 1967/68, Australian Government Publishing Service, Canberra, 1971.
- Bureau of Agricultural Economics, The Australian Wine Grape Industry, An Economic Survey, 1965/66 to 1967/68, Australian Government Publishing Service, Canberra, 1973.
- Bureau of Agricultural Economics, The Australian Deciduous Canning Fruit Growing Industry, An Economic Survey, 1965/66 to 1968/69, Australian Government Publishing Service, Canberra, 1971.
- Bureau of Agricultural Economics, The Australian Tobacco Growing Industry, Preliminary Report on an Economic Survey, 1970/71 to 1972/73, Australian Government Publishing Service, Canberra, 1973.
- Bureau of Agricultural Economics, The Australian Peanut Growing Industry, An Economic Survey, 1964/65 to 1967/68, Australian Government Publishing Service, Canberra, 1971.
- Butlin, N.G., Australian Domestic Product, Investment and Foreign Borrowing, 1861 - 1938/39, Cambridge University Press, 1962.
- Caddy, V. and A. Lawson, "Update 1971/72 : Gross Fixed Capital Expenditure", IMPACT Research Memorandum, Industries Assistance Commission, Melbourne, January 1977.
- Campbell, C., Capacity Capital Formation in New Zealand Manufacturing Industries 1952/73, Victoria University, Project on Economic Planning, Occasional Paper No. 31, Wellington, 1977(a).
- Campbell, C., The Stock of Fixed Capital in New Zealand Manufacturing Industries 1950/51 - 1972/73, Victoria University, Project on Economic Planning, Occasional Paper No. 32, Wellington, 1977(b).
- Carter, A.P., "Incremental Flow Coefficients for a Dynamic Input-Output Model with Changing Technology", Ch.15 in T. Barna, (ed), Structural Interdependence and Economic Development, Proceedings of an International Conference on Input-Output Techniques, Geneva, 1961, Macmillan, London, 1963, pp.277-302.
- Carter, A.P., Structural Change in the American Economy, Harvard University Press, Cambridge, Massachusetts, 1970.
- Carter, A.P., "Old and New Structures as Alternatives : Optimal Combinations of 1947 and 1958 Technologies", Ch.4 in W.F. Gosling, (ed), Capital Coefficients and Dynamic Input-Output Models, Input-Output Publishing Company, London, 1975.

- Central Statistical Office, National Income and Expenditure 1966/76, Her Majesty's Stationery Office, London.
- Chenery, H.B., and P.C. Clark, Interindustry Economics, John Wiley and Sons, New York, 1967.
- Clark, C., "Net Capital Stock", Economic Record, Vol.46 (116), December 1970, pp.449-466.
- Clark, C., "Wages, Profits and the Substitution Function", Economic Papers, June 1976, pp.16-30.
- Clark, C., "Capital Requirements in Agriculture : An International Comparison", Review of Income and Wealth, Income and Wealth, Series 13, 1967, pp.205-222.
- Commissioner of Taxation, Australian Taxation Office, Schedule of Rates of Depreciation, Income Tax Order No. 1217, (1974 Revision), Australian Government Publishing Service, 1974.
- Commonwealth of Australia, National Income and Expenditure, Presented for the Information of Honorable Members on the Occasion of the Budget, 1946/47, 1947/48, 1948/49 and 1949/50, Commonwealth Government Printer, Canberra.
- Commonwealth Bureau of Census and Statistics, Australian Standard Industrial Classification (Preliminary Edition), Volume 1 - The Classification, and Volume 2 - Alphabetic Index, Government Printing Office, Canberra, 1969.
- Commonwealth Bureau of Census and Statistics, Australian Production Statistics, Part 1, 1936/37 to 1960/61, Canberra.
- Commonwealth Bureau of Census and Statistics, Secondary Industries Part 1 - Factory and Building Operations, 1961/62 to 1962/63, Canberra.
- Commonwealth Bureau of Census and Statistics, Manufacturing Industry, 1963/64 to 1967/68, Bulletin Nos. 1-5, Commonwealth Government Printer, Canberra.
- Commonwealth Bureau of Census and Statistics, Mining and Quarrying Statistical Bulletin, 1952 to 1968, Bulletin Nos. 1-17, Canberra.
- Commonwealth Bureau of Census and Statistics, Building and Construction, 1964/65 - 1971/72, Bulletin Nos. 1-8, Ref. No. 3.1, (Catalogue No. 8701.0) Canberra.
- Commonwealth Bureau of Census and Statistics, Statistical Bulletin : Fishing and Whaling, Australia, Ref. No. 10.8, 1954/55 to 1969/70, Bulletin Nos. 1-16, Canberra.
- Commonwealth Bureau of Census and Statistics, Statistical Bulletin : Forests and Forest Products, 1970/71, Ref. No. 10.47, (Catalogue No. 7601.0) Canberra.

- Commonwealth Bureau of Census and Statistics, Retail Establishments and Selected Service Establishments, Part I - Details of Operations by Industry Class, 1968/69, Ref. No.11.19 (Catalogue No. 8614.0), Canberra.
- Commonwealth Bureau of Census and Statistics, Economic Censuses : 1968/69, Wholesale Establishments, Details of Operations, 1968/69, Ref. No. 11.61, (Catalogue No. 8631.0), Canberra.
- Commonwealth Bureau of Roads, Report on Roads in Australia, Appendices, 1975.
- Department of Primary Industry, Fisheries Division, Costs and Earnings of Trawlers, An Economic Investigation of the Northern Prawn Fishery, Fisheries Report No. 8, Australian Government Publishing Service, Canberra, 1973.
- Department of Primary Industry, Fisheries Division, Economic Survey of the South Australian Prawn Fishery, Fisheries Report No. 12, Australian Government Publishing Service, Canberra, 1974.
- Department of Primary Industry, Fisheries Division, Preliminary Report : Economic Survey of the Victorian Rock Lobster Fishery, 1970/71 to 1973/74, (mimeo).
- Department of Primary Industry, Fisheries Division, The Economics of the Western Australian Rock Lobster Fishery, 1972/73 to 1974/75, A Preliminary Report, 1976 (mimeo).
- Department of Primary Industry, Fisheries Division, The Economics of the Victorian Wet Fish Fishery, 1970/71 to 1973/74, A Preliminary Report, 1976 (mimeo).
- Department of Primary Industry, Fisheries Division, Preliminary Report : Economic Survey of Victorian Abalone Fishery, Central and Western Zones, 1970/71 to 1973/74, (mimeo).
- Department of Primary Industry, Fisheries Division, Preliminary Report : Economic Survey of South Australian Abalone Fishery, 1970/71 to 1973/74, (mimeo).
- Department of Primary Industry, Directory of Agriculture, Forestry and Fishing, 1974.
- Department of Statistics, Inter-Industry Study of the New Zealand Economy, 1965/66, Part 1 : A Description of the Input-Output Tables and System, and Part 2 : Input-Output Transactions and Derived Tables, Department of Statistics Publication, Wellington, New Zealand, 1974.
- Dixon, P.B., "A Jointmax Algorithm for the Solution of SNAPSHOT", IMPACT Preliminary Working Paper No. SP-03, Industries Assistance Commission, Melbourne, March, 1977.

- Dixon, P.B., "A Skeletal Version of ORANI 78 : Theory, Data, Computations and Results", IMPACT Preliminary Working Paper No. Op-24, Industries Assistance Commission, Melbourne, June, 1979.
- Dixon, P.B., J. Harrower and A.A. Powell, "SNAPSHOT, A Long Term Economy-Wide Model of Australia : Preliminary Outline", IMPACT Preliminary Working Paper No. SP-01, Industries Assistance Commission, Melbourne, February, 1976.
- Dixon, P.B., J. Harrower and D.P. Vincent, "Validation of the SNAPSHOT Model", IMPACT Preliminary Working Paper No. SP-12, Industries Assistance Commission, Melbourne, July 1978.
- Dixon, P.B., B.R. Parmenter, G.J. Ryland and J. Sutton, ORANI, A General Equilibrium Model of the Australian Economy : Current Specification and Illustrations of Use for Policy Analysis - - First Progress Report of the IMPACT Project, Vol.2, Australian Government Publishing Service, Canberra, 1977.
- Dixon, P.B., B.R. Parmenter and J. Sutton, Some Causes of Structural Maladjustment in the Australian Economy, Paper presented at the Winter School of the N.S.W. Branch of the Economic Society of Australia and New Zealand, Sydney, July 29, 1977.
- Dixon, P.B., B.R. Parmenter, A.A. Powell and D.P. Vincent, "The Agricultural Sector of ORANI 78 : Theory, Data and Application", IMPACT Preliminary Working Paper No. OP-25, Industries Assistance Commission, Melbourne, June, 1979.
- Dixon, P.B., D.P. Vincent and A.A. Powell, "Factor Demand and Product Supply Relations in Australian Agriculture : The Cresh/Creth Production System", IMPACT Preliminary Working Paper No. OP-08, Industries Assistance Commission, Melbourne, September, 1977.
- Dixon, P.B., and D.P. Vincent, "The SNAPSHOT Model : Underlying Theory and an Application to the Study of the Implication of Technical Change in Australia to 1990", IMPACT Preliminary Working Paper No. SP-14, Industries Assistance Commission, Melbourne, October, 1979.
- Edwards, H.R., and N.T. Drane, "The Australian Economy", Economic Record, Vol.39(87), September 1963, pp.259-281.
- Evans, H.D., A General Equilibrium Analysis of Protection : The Effects of Protection in Australia, North-Holland Publishing Company, Amsterdam, 1972.
- Evans, H.D. and B. Moore, "Capital and Labour Coefficients in the Service Industries", Econometric Analysis of Protection, Appendix 4 of Progress Report, Monash University, 1973 (mimeo).

- Evans, H.D., B. Moore and G. Horgan, "The Structure of the Australian Capital Stock and Depreciation", Econometric Analysis of Protection, Appendix 7 of Progress Report, Monash University, 1973 (mimeo).
- Fisher, W.H. and C.H. Chilton, "Developing Ex-Ante Input-Output Flow and Capital Coefficients", in A. Brody and A.P. Carter, (eds), Input-Output Techniques, Proceedings of the Fifth International Conference on Input-Output Techniques, Geneva, 1971, North-Holland Publishing Company, 1972, pp. 393-405.
- Forestry and Timber Bureau, Census of Machinery and Logging Personnel Working in Australian Forests, November 1970, Canberra, 1971.
- Garland, J.M. and R.W. Goldsmith, "The National Wealth of Australia", in R. Goldsmith and C. Saunders, (eds), The Measurement of National Wealth, Income and Wealth, Series VIII, Bowes and Bowes, London, 1959, pp.323-364.
- Goldsmith, R.W., "A Perpetual Inventory of National Wealth", Studies in Income and Wealth, Vol.14, Conference on Research in Income and Wealth, National Bureau of Economic Research, New York, 1951.
- Goldsmith, R. and C. Saunders, (eds), The Measurement of National Wealth, Income and Wealth, Series VIII, Bowes and Bowes, London, 1959.
- Gossling, W.F., (ed), Capital Coefficients and Dynamic Input-Output Models, Input-Output Publishing Company, London, 1975.
- Green, M.J., "Investment Matrices for Plant and Machinery : 1963 and 1968", Economic Trends, No.214, August 1971, pp.xi-xvii.
- Green, M.J., "Investment Matrices for the United Kingdom : Their Structure and Use in Forecasting", in W.F. Gossling, (ed), Capital Coefficients and Dynamic Input-Output Models, Input-Output Publishing Company, London, 1975, pp.14-35.
- Gregory, R.G. and D.W. James, "Do New Factories Embody Best Practice Technology?", The Economic Journal, Vo.83(332), December 1973, pp.1133-1155.
- Griffin, T., "Revised Estimates of the Consumption and Stock of Fixed Capital", U.K. Central Statistical Office, Economic Trends, No.264, October 1975, pp.126-129.
- Griffin, T., "The Stock of Fixed Assets in the United Kingdom : How to Make the Best Use of the Statistics", Central Statistical Office, London, Economic Trends, October 1976, pp.130-136.
- Groes, N., "Measurement of Capital in Denmark", Review of Income and Wealth, Vol.22(3), September 1976, pp.271-286.

- Grosse, R.N., "The Structure of Capital", in W. Leontief and others, (eds), Studies in the Structure of the American Economy, Oxford University Press, New York, 1953, pp.185-242.
- Gruen, F.H., "An Estimate of Depreciation of Farm Machinery and Structures Based on Historical Cost", Australian Journal of Agricultural Economics, Vol.7(2), December 1963, pp.180-183.
- Gruen, F.H., K.O. Campbell and J. Crawford, "Report on Shortcomings of Australian Farm Financial Statistics and Desirable Improvements", Australian Journal of Agricultural Economics, Vol.6(2), December 1962, pp.81-84.
- Haig, B.D., "Estimates of Australian Real Product by Industry", Australian Economic Papers, Vol.5, December 1966, pp.230-250.
- Haig, B.D., The Australian Economy to the Year 2000, Projections of Income and Expenditure 1970 to 2000, Prepared for the Commonwealth Bureau of Roads, Melbourne, 1971.
- Haig, B.D., Capital Stock in Manufacturing, Department of Economic History, Australian National University, (forthcoming).
- Helliwell, J., and P. Boxall, "Private Sector Wealth : Quarterly Estimates for Use in an Aggregate Model", The Economic Record, Vol.54(145), April 1978, pp.45-64.
- Hibbert, J., T.J. Griffin and R.L. Walker, "Development of Estimates of the Stock of Fixed Capital in the United Kingdom", Review of Income and Wealth, Series 23, No.2, June 1977, pp.117-135.
- Hope, J.A. and J.B.W. Thomson, Index of Australian Building Statistics, Division of Building Research, Commonwealth Scientific and Industrial Research Organisation, Report OR-8-3, 1970.
- Horgan, G., "Integrated Production Data for 153 Australian Manufacturing Industries", Econometric Analysis of Protection, Appendix 3 of Progress Report, Monash University, 1973 (mimeo).
- Industries Assistance Commission, The Australian Market for Passenger Motor Vehicles, Australian Government Publishing Service, Canberra, 1974.
- Industries Assistance Commission, Report on Petroleum and Mining Industries, Australian Government Publishing Service, Canberra, 1976.
- Johansen, L., A Multisectoral Study of Economic Growth, North-Holland Publishing Company, 1974.
- Jorgenson, D.W., and Z. Griliches, "Explanation of Productivity Change", Ch.19 in Amartya Sen, (ed), Growth Economics, Penguin Modern Economics Readings, Penguin Books, 1970, pp.420-473.

- Kee, C.H., Estimates of Korean Capital and Inventory Coefficients in 1968, Yonsei University, Seoul, Korea, 1970.
- Kendrick, J.W., Productivity Trends in the United States, A Study by the National Bureau of Economic Research, Princeton University Press, 1961.
- Kendrick, J.W., "Some Theoretical Aspects of Capital Measurement", American Economic Association, May 1969, pp.102-111.
- Kendrick, J.W., and K.S. Lee, Quarterly Estimates of Capital Stocks in the U.S. Private Domestic Economy, by Major Industry Groups, U.S. National Science Foundation, Paper presented at the International Association for Research in Income and Wealth, Fourteenth General Conference, Aulanko, Finland, August 1975.
- Khan, A.R. and A. MacEwan, "A Multisectoral Analysis of Capital Requirements for Development Planning in Pakistan", Pakistan Development Review, No.7, Winter 1967, pp.445-484.
- Klein, L.R., "Some Theoretical Issues in the Measurement of Capacity", Econometrica, Vol.28(2), April 1960, pp.272-286.
- Kompass Australia, Vol.I : Products and Services, and Vol.II : Company Information, Peter Isaacson, Prahran, 1977.
- Kuznets, S., Capital in the American Economy, Its Formation and Financing, A Study by the National Bureau of Economic Research, Princeton University Press, 1961.
- Lal, R.N., "Measuring Capital Formation", Artha Vijnana, Vol.19(1), March 1977, pp.1-20.
- Lawson, A., "A Preliminary Absorption (Commodity by Industry) Matrix for 1971-72", IMPACT Research Memorandum, Industries Assistance Commission, Melbourne, January 1979.
- Lutzel, H., "Estimates of Capital Stock by Industries in the Federal Republic of Germany", The Review of Income and Wealth, Series 23, No.1, March 1977, pp.63-78.
- MacEwan, A., Development Alternatives in Pakistan, A Multisectoral and Regional Analysis of Planning Problems, Harvard University Press, Cambridge, Massachusetts, 1971.
- Mairesse, J., Fixed Capital Stock Estimates in the French National Accounts, Institut National de la Statistique et des Etudes, Economics paper presented at the International Association for Research in Income and Wealth, Fourteenth General Conference, Aulanko, Finland, August 1975.
- Mumme, A.W., (Chairman), A. Abraham, R. Jolly, G.I. Neville and K.A. Tucker, The Adequacy of Information Systems Supporting Industry and Employment Policies in Australia, Report of Working Group No.2 to Sir John Crawford's Study Group on Structural Adjustment, Canberra, June 1978.

- Neville, J.W., "How Productive is Australian Capital?", Economic Record, Vol.43(103), September 1967, pp.405-411.
- Nevin, E., "The Life of Capital Assets : An Empirical Approach", Oxford Economic Papers, Vol.XV, November 1963, pp.228-243.
- New South Wales Railways, Annual Report (various issues).
- Norton, W.E., (ed), Three Studies of Private Fixed Investment, Reserve Bank of Australia, Occasional Paper No. 3E, 1971.
- Parliament of the Commonwealth of Australia, Department of Transport Annual Report, 1973-74, Parliamentary Paper No. 316, 1974, Government Printer of Australia, Canberra, 1975.
- Parliament of the Commonwealth of Australia, Taxation Statistics, Supplement to the Report to Parliament of the Commission of Taxation, Parliamentary Paper, Australian Government Publishing Service, Canberra.
- Pasinetti, L.L., "The Notion of Vertical Integration in Economic Analysis", Metroeconomica, Vol.XXV(I), Gennaio-Aprile 1973, pp.1-29.
- Pomfret, R., Capital Formation in Canada 1870-1900, Concordia University, Department of Economics, Working paper No. 1977-1.
- Postmaster-General's Department, Financial and Statistical Bulletin (various issues).
- Postmaster-General's Department, Annual Report (various issues).
- Powell, A.A., The IMPACT Project : An Overview - - First Progress Report of the IMPACT Project, Vol.1, Australian Government Publishing Service, Canberra, 1977.
- Qantas, Annual Report (various issues).
- Rea, S.A., 1947 and 1958 Capital Coefficient Estimates, Harvard Economic Research Project, Cambridge, Massachusetts, October 1967 (mimeo).
- Rowe, C., Financial Results of a Survey of the Broiler Growing Industry of New South Wales, New South Wales Department of Agriculture, Division of Marketing and Agricultural Economics, Miscellaneous Bulletin No. 8, Sydney, October 1969.
- Salter, W.E.G., "Marginal Labour and Investment Coefficients in Australian Manufacturing", Economic Record, Vol.38(82), June 1962, pp.137-156.
- Sampson, G.P., Productivity Change in Australian Manufacturing Industry, Unpublished Doctoral Dissertation, Monash University, 1969.
- Solow, R.M., "Technical Progress and Productivity Change", in Amartya Sen, (ed), Growth Economics, Penguin Modern Economics Readings, Penguin Books, 1970, pp.401-419.

- Spielmann, H., "Capacity Measurement in the U.S. Agricultural and Nonagricultural Sectors : A Literature Review", Agricultural Economic Research, Vol.29(2), 1977, pp.31-40.
- Tariff Board, The Demand for Commercial Vehicles, Industry Economics Branch Study, Canberra, 1973 (mimeo).
- Tengblad, A. and N. Westerlund, Capital Stock and Capital Consumption Estimates by Industries etc. in the Swedish National Accounts, Swedish Central Bureau of Statistics, Paper presented at the International Association for Research in Income and Wealth, Fourteenth General Conference, Aulanko, Finland, August 1975.
- Tice, H.S., "Depreciation, Obsolescence and the Measurement of the Aggregate Capital Stock of the United States, 1900-1962", Review of Income and Wealth, Vol.13, June 1967, pp. 119-154.
- Tims, W., Analytical Techniques for Development Planning, Pakistan Institute of Development Economics, Karachi, 1968.
- Tomkins, C.R., "Financial Leasing in the U.K. - The State of Current Research", Credit : Quarterly Review of the Finance Houses Association, Vol.18(1), March 1977, pp.13-18.
- Trans-Australian Airlines, Annual Report (various issues).
- United Nations, Department of Economic and Social Affairs, Input-Output Bibliography 1963-66, Statistical Office of the United Nations, Statistical Papers, Series M No.46, New York, 1967.
- United Nations, Department of Economic and Social Affairs, Input-Output Bibliography 1966-1970, Vol.I : Authors, Vol.II : Countries, and Vol.III : Subjects, Statistical Office of the United Nations, Statistical Papers, Series M No.55, New York, 1972.
- Vaccara, B.N., "Some Reflections on Capital Requirements for 1980", American Economic Association, Vol.67(1), February 1977, pp.122-127.
- Victorian Railways, Annual Report (various issues).
- Vincent, D.P., P.B. Dixon and A.A. Powell, "The Estimation of Supply Response in Australian Agriculture : The Cresh/Creth Production System", IMPACT Preliminary Working paper No. G-12, Industries Assistance Commission, Melbourne, May 1978.
- Waddell, R.M., P.M. Ritz, J.D. Norton and M.K. Wood, Capacity Expansion Planning Factors, Manufacturing Industries, Economic Programming Centre, National Planning Association, Washington, D.C., 1966.
- Ward, M., The Measurement of Capital, The Methodology of Capital Stock Estimates in OECD Countries, Organisation for Economic Co-operation and Development, Paris, 1976.

Woodward, J., "Update 1971-72, Gross Operating Surplus", IMPACT Research Memorandum, Industries Assistance Commission, Melbourne, 1976.

Young, R.R., "Productivity Growth in Australian Rural Industries", Quarterly Review of Agricultural Economics, Vol.24(4), October 1971, pp.185-205.