

Impact Project

Impact Research Centre, The University of Melbourne,
153 Barry Street, Carlton, Victoria 3053 Australia.

Telephone: (03) 344 7417
Telex: AA 35185 UNIMEL
Facsimile: (03) 344 5104

(from overseas: 61 3 344 7417)
Telegrams: UNIMELB, Parkville
(from overseas: 61 3 344 5104)

A MAPPING OF SELECTED AUSTRALIAN CORPORATIONS ACROSS INPUT-OUTPUT INDUSTRIES

by

Peter J. Higgs

IMPACT Research Centre
University of Melbourne

Preliminary Working Paper No. IP-40 Melbourne December 1988

The views expressed in this paper do not necessarily reflect
the opinions of the participating agencies, nor of
the Commonwealth Government.

ISSN 1031-9034

ISBN 0 642 10344 5

IMPACT is an economic and demographic research project which aims to improve the publicly accessible policy information system available to government, private and academic analysts. The Project is conducted by Commonwealth Government agencies in association with the University of Melbourne, La Trobe University, and the Australian National University.

ABSTRACT

This paper establishes procedures for mapping Australian companies to ORANI industries. This is a major task in primary data manipulation. To devise a sound set of procedures requires detailed knowledge of accounting conventions and current practice in company reporting. Of particular importance is the mandatory accounting statement entitled 'Financial Reporting by Segments' which was introduced only in 1985. This statement provides raw data on revenue, profits, and assets, disaggregated by broad industry and geographical segments. All of these items are used as inputs in the mapping procedure. A description is given of the industries in the ORANI model in terms of the ASIC code (with modifications, as necessary, to accommodate agriculture). The industrial composition of all of the corporations in the All Ordinaries Index is then briefly examined; only 15 companies, however, are chosen for detailed mapping. A comprehensive strategy is presented on how to construct the data base for any corporation. This strategy includes procedures on how to cope with complications such as the existence of subsidiary companies and reciprocal holdings by companies of each other's stock. Finally, a detailed mapping of revenue, cost, and asset shares across industries is presented for a selected corporations. Note that the mapping is estimated using the most recent data available.

Contents

Abstract	Page
	i
List of Tables	vi
List of Figures	xiii
1 INTRODUCTION	1
2 BACKGROUND ACCOUNTING CONVENTIONS	4
2.1 Financial Reporting by Segments	4
2.2 Assets	9
2.3 Consolidated and Equity Accounting	12
2.4 Reciprocal Holdings	19
3 THE ORANI INDUSTRIES	20
3.1 The ORANI Agricultural Industries	26
3.2 The ORANI Non-Agricultural Industries	33
4 SELECTION OF CORPORATIONS FOR MAPPING ACROSS ORANI INDUSTRIES	36
5 THE MAPPING	64
5.1 Amalgamated Wireles (AWA)	92
5.1.1 History	92
5.1.2 Industry Segments	92
5.1.3 Geographical Segments	93
5.1.4 Revenue Share Estimates	94
5.1.5 Cost Share Estimates	97
5.1.6 Asset Share Estimates	97
5.2 Ampol	102
5.2.1 History	102
5.2.2 Industry Segments	102
5.2.3 Geographical Segments	104
5.2.4 Revenue Share Estimates	110
5.2.5 Cost Share Estimates	113
5.2.6 Asset Share Estimates	117

5.3 Ampol Exploration

5.3.1 History	124
5.3.2 Industry Segments	124
5.3.3 Geographical Segments	126
5.3.4 Revenue Share Estimates	126
5.3.5 Cost Share Estimates	129
5.3.6 Asset Share Estimates	132

5.4 Arncliffe

5.4.1 History	134
5.4.2 Industry Segments	134
5.4.3 Geographical Segments	135
5.4.4 Revenue Share Estimates	136
5.4.5 Cost Share Estimates	137
5.4.6 Asset Share Estimates	142

5.5 Australian National Industries (ANI)

5.5.1 History	145
5.5.2 Industry Segments	145
5.5.3 Geographical Segments	146
5.5.4 Revenue Share Estimates	150
5.5.5 Cost Share Estimates	150
5.5.6 Asset Share Estimates	154

5.6 Bundaberg Sugar

5.6.1 History	157
5.6.2 Industry Segments	158
5.6.3 Geographical Segments	159
5.6.4 Revenue Share Estimates	159
5.6.5 Cost Share Estimates	159
5.6.6 Asset Share Estimates	163

5.7 Coal and Allied Industries

5.7.1 History	166
5.7.2 Industry Segments	166
5.7.3 Geographical Segments	169
5.7.4 Revenue Share Estimates	169
5.7.5 Cost Share Estimates	172
5.7.6 Asset Share Estimates	176

5.8 Comalco

5.8.1 History	184
5.8.2 Industry Segments	184
5.8.3 Geographical Segments	184
5.8.4 Revenue Share Estimates	186
5.8.5 Cost Share Estimates	186
5.8.6 Asset Share Estimates	189

5.9 Email

5.9.1 History	195
5.9.2 Industry Segments	195
5.9.3 Geographical Segments	196
5.9.4 Revenue Share Estimates	196
5.9.5 Cost Share Estimates	196
5.9.6 Asset Share Estimates	200

5.10 Giant Resources

5.10.1 History	203
5.10.2 Industry Segments	203
5.10.3 Geographical Segments	203
5.10.4 Revenue Share Estimates	204
5.10.5 Cost Share Estimates	204
5.10.6 Asset Share Estimates	209

5.11 Jennings Industries

5.11.1 History	213
5.11.2 Industry Segments	213
5.11.3 Geographical Segments	214
5.11.4 Revenue Share Estimates	214
5.11.5 Cost Share Estimates	217
5.11.6 Asset Share Estimates	217

5.12 Oil Search

5.12.1 History	222
5.12.2 Industry Segments	222
5.12.3 Geographical Segments	222
5.12.4 Revenue Share Estimates	225
5.12.5 Cost Share Estimates	225
5.12.6 Asset Share Estimates	229

5.13 Pioneer Concrete

5.13.1 History	232
5.13.2 Industry Segments	232
5.13.3 Geographical Segments	234
5.13.4 Revenue Share Estimates	239
5.13.5 Cost Share Estimates	243
5.13.6 Asset Share Estimates	247

List of Tables

5.14 Howard Smith	255	3.1	Agricultural Industries in ORANI	105
5.14.1 History	255	3.2	Agricultural Commodities in ORANI	107
5.14.2 Industry Segments	256	3.3	Non-Agricultural ORANI Industries in Terms of the National Input-Output Classifications and the Australian Standard Industry Classification	107
5.14.3 Geographical Segments	258	4.1	The All Ordinaries Index Broken Down Into Australian Stock Exchange Industry Classifications	108
5.14.4 Revenue Share Estimates	259	4.2	Corporations Selected for Mapping Across ORANI Industries	109
5.14.5 Cost Share Estimates	264	5.1	A Preliminary Mapping from the Australian Stock Exchange Industry Classifications to the ORANI Industry Classifications	111
5.14.6 Asset Share Estimates	269	5.1.1	A Mapping of AHA's Areas of Economic Activity to the ORANI Industries	112
5.15 Westpac	273	5.1.2	A Mapping of AHA's Revenue Across ORANI Industries	105
5.15.1 History	273	5.1.3	A Mapping of AHA's Profit Across ORANI Industries	106
5.15.2 Industry Segments	273	5.1.4	A Mapping of AHA's Costs Across ORANI Industries	108
5.15.3 Geographical Segments	274	5.1.5	A Mapping of AHA's Assets Across ORANI Industries	108
5.15.4 Revenue Share Estimates	274	5.2.1	Contributions to the Consolidated Accounts of Ampol from its Holdings in Ampol Exploration and Giant Resources	109
5.15.5 Cost Share Estimates	277	5.2.2	Estimates of the Book Values and Contributions to Net Profits of Ampol's Subsidiary and Associate Companies Grouped According to their Economic Activities	106
5.15.6 Asset Share Estimates	277	5.2.3	Estimates of the Contributions to the Consolidated Accounts of Ampol from its Economic Activities (Net of its Holdings in Ampol Exploration and Giant Resources)	108
DIRECTIONS FOR FUTURE WORK	282	5.2.4	A Mapping of Ampol's Areas of Economic Activity (Net of its Holdings in Ampol Exploration and Giant Resources) to the ORANI Industries	109
APPENDIX	283	5.2.5	A Mapping of Ampol's Total Revenue Across ORANI Industries	111
A.1 Reciprocal Holdings	284	5.2.6	A Mapping of Ampol's Foreign Revenue Across ORANI Industries	112
A.2 A Note on Estimating Capital Stock Shares	291			
REFERENCES	299			

5.2.7	A Mapping of Ampol's Domestic Revenue Across ORANI Industries	114
5.2.8	A Mapping of Ampol's Total Profit Across ORANI Industries	115
5.2.9	A Mapping of Ampol's Foreign Profit Across ORANI Industries	116
5.2.10	A Mapping of Ampol's Domestic Profit Across ORANI Industries	118
5.2.11	A Mapping of Ampol's Domestic Costs Across ORANI Industries	119
5.2.12	A Mapping of Ampol's Total Assets Across ORANI Industries	120
5.2.13	A Mapping of Ampol's Foreign Assets Across ORANI Industries	121
5.2.14	A Mapping of Ampol's Domestic Assets Across ORANI Industries	123
5.3.1	Estimated Industry Segmented Data for Ampol Exploration	125
5.3.2	A Mapping of Ampol Exploration's Areas of Economic Activity to the ORANI Industries	127
5.3.3	A Mapping of Ampol Exploration's Revenue Across ORANI Industries	128
5.3.4	A Mapping of Ampol Exploration's Profit Across ORANI Industries	130
5.3.5	A Mapping of Ampol Exploration's Costs Across ORANI Industries	131
5.3.6	A Mapping of Ampol Exploration's Assets Across ORANI Industries	133
5.4.1	A Mapping of Arnotts' Areas of Economic Activity to the ORANI Industries	136
5.4.2	A Mapping of Arnotts' Revenue Across ORANI Industries	139
5.4.3	A Mapping of Arnotts' Profit Across ORANI Industries	140
5.4.4	A Mapping of Arnotts' Costs Across ORANI Industries	141
5.4.5	A Mapping of Arnotts' Assets Across ORANI Industries	144
5.5.1	A Breakdown of Australian National Industries' Net Profit and Revenue Grouped According to Economic Activities	147

5.5.2	A Mapping of Australian National Industries' Areas of Economic Activity to the ORANI Industries	151
5.5.3	A Mapping of Australian National Industries' Revenue Across ORANI Industries	152
5.5.4	A Mapping of Australian National Industries' Profit Across ORANI Industries	153
5.5.5	A Mapping of Australian National Industries' Costs Across ORANI Industries	155
5.5.6	A Mapping of Australian National Industries' Assets Across ORANI Industries	156
5.6.1	A Mapping of Bundaberg Sugar's Areas of Economic Activity to the ORANI Industries	160
5.6.2	A Mapping of Bundaberg Sugar's Revenue Across ORANI Industries	161
5.6.3	A Mapping of Bundaberg Sugar's Profit Across ORANI Industries	162
5.6.4	A Mapping of Bundaberg Sugar's Costs Across ORANI Industries	164
5.6.5	A Mapping of Bundaberg Sugar's Assets Across ORANI Industries	165
5.7.1	A Mapping of Coal and Allied Industries' Areas of Economic Activity (Net of Its Holding in Howard Smith) to the ORANI Industries	170
5.7.2	A Mapping of Coal and Allied Industries' Total Revenue Across ORANI Industries	171
5.7.3	A Mapping of Coal and Allied Industries' Foreign Revenue Across ORANI Industries	173
5.7.4	A Mapping of Coal and Allied Industries' Domestic Revenue Across ORANI Industries	174
5.7.5	A Mapping of Coal and Allied Industries' Total Profit Across ORANI Industries	175
5.7.6	A Mapping of Coal and Allied Industries' Foreign Profit Across ORANI Industries	177
5.7.7	A Mapping of Coal and Allied Industries' Domestic Profit Across ORANI Industries	178
5.7.8	A Mapping of Coal and Allied Industries' Domestic Costs Across ORANI Industries	179
5.7.9	A Mapping of Coal and Allied Industries' Total Assets Across ORANI Industries	180

5.7.10	A Mapping of Coal and Allied Industries' Foreign Assets Across ORANI Industries	181
5.7.11	A Mapping of Coal and Allied Industries' Domestic Assets Across ORANI Industries	183
5.8.1	Estimates of the Contributions to Consolidated Accounts of Comalco from its Economic Activities	185
5.8.2	Estimates of the Contributions to Consolidated Accounts of Comalco from its Foreign Economic Activities	187
5.8.3	A Mapping of Comalco's Areas of Economic Activity to the ORANI Industries	188
5.8.4	A Mapping of Comalco's Revenue Across ORANI Industries	190
5.8.5	A Mapping of Comalco's Profit Across ORANI Industries	191
5.8.6	A Mapping of Comalco's Costs Across ORANI Industries	192
5.8.7	A Mapping of Comalco's Assets Across ORANI Industries	193
5.9.1	A Mapping of Enall's Areas of Economic Activity to the ORANI Industries	197
5.9.2	A Mapping of Enall's Revenue Across ORANI Industries	198
5.9.3	A Mapping of Enall's Profit Across ORANI Industries	199
5.9.4	A Mapping of Enall's Costs Across ORANI Industries	201
5.9.5	A Mapping of Enall's Assets Across ORANI Industries	202
5.10.1	A Breakdown of Giant Resources' Revenue, Profit, and Assets by Geographical Region and Economic Activity	205
5.10.2	A Mapping of Giant Resources' Areas of Economic Activity to the ORANI Industries	207
5.10.3	A Mapping of Giant Resources' Revenue Across ORANI Industries	208
5.10.4	A Mapping of Giant Resources' Profit Across ORANI Industries	210
5.10.5	A Mapping of Giant Resources' Costs Across ORANI Industries	211
5.10.6	A Mapping of Giant Resources' Assets Across ORANI Industries	212
5.11.1	A Mapping of Jennings Industries' Areas of Economic Activity to the ORANI Industries	215

5.11.2	A Mapping of Jennings Industries' Revenue Across ORANI Industries	216
5.11.3	A Mapping of Jennings Industries' Profit Across ORANI Industries	217
5.11.4	A Mapping of Jennings Industries' Costs Across ORANI Industries	219
5.11.5	A Mapping of Jennings Industries' Assets Across ORANI Industries	220
5.12.1	Estimated Industry Segmented Data for Oil Search for the 18 Months Ending 31st December 1987	223
5.12.2	Estimated Industry Segmented Data for Oil Search for the 12 Months Ending 31st December 1987	224
5.12.3	A Mapping of Oil Search's Areas of Economic Activity to the ORANI Industries	226
5.12.4	A Mapping of Oil Search's Revenue Across ORANI Industries	227
5.12.5	A Mapping of Oil Search's Profit Across ORANI Industries	228
5.12.6	A Mapping of Oil Search's Costs Across ORANI Industries	230
5.12.7	A Mapping of Oil Search's Assets Across ORANI Industries	231
5.13.1	Contribution to the Consolidated Accounts of Pioneer Concrete from its Holdings in Ampol and Oil Search	235
5.13.2	A Breakdown of the Contributions to the Consolidated Industry Segment Accounts of Pioneer Concrete from its Holdings in Ampol and Oil Search	236
5.13.3	A Geographical Breakdown by Industry Segments of the Contributions to the Consolidated Revenue of Pioneer Concrete from its Holdings in Ampol and Oil Search	237
5.13.4	A Geographical Breakdown by Industry Segments of the Contributions to the Consolidated Profit of Pioneer Concrete from its Holdings in Ampol and Oil Search	238
5.13.5	A Geographical Breakdown by Industry Segments of the Contributions to the Consolidated Assets of Pioneer Concrete from its Holdings in Ampol and Oil Search	240

5.13.6	A Mapping of Pioneer Concrete's Areas of Economic Activity (Net of Its Holding in Ampol and Oil Search) to the ORANI Industries	241
5.13.7	A Mapping of Pioneer Concrete's Total Revenue Across ORANI Industries	242
5.13.8	A Mapping of Pioneer Concrete's Foreign Revenue Across ORANI Industries	244
5.13.9	A Mapping of Pioneer Concrete's Domestic Revenue Across ORANI Industries	245
5.13.10	A Mapping of Pioneer Concrete's Total Profit Across ORANI Industries	246
5.13.11	A Mapping of Pioneer Concrete's Foreign Profit Across ORANI Industries	248
5.13.12	A Mapping of Pioneer Concrete's Domestic Profit Across ORANI Industries	249
5.13.13	A Mapping of Pioneer Concrete's Domestic Costs Across ORANI Industries	250
5.13.14	A Mapping of Pioneer Concrete's Total Assets Across ORANI Industries	251
5.13.15	A Mapping of Pioneer Concrete's Foreign Assets Across ORANI Industries	253
5.13.16	A Mapping of Pioneer Concrete's Domestic Assets Across ORANI Industries	254
5.14.1	A Mapping of Howard Smith's Areas of Economic Activity (Net of Its Holding in Coal and Allied Industries) to the ORANI Industries	260
5.14.2	A Mapping of Howard Smith's Total Revenue Across ORANI Industries	261
5.14.3	A Mapping of Howard Smith's Foreign Revenue Across ORANI Industries	262
5.14.4	A Mapping of Howard Smith's Domestic Revenue Across ORANI Industries	263
5.14.5	A Mapping of Howard Smith's Total Profit Across ORANI Industries	265
5.14.6	A Mapping of Howard Smith's Foreign Profit Across ORANI Industries	266
5.14.7	A Mapping of Howard Smith's Domestic Profit Across ORANI Industries	267

5.14.8	A Mapping of Howard Smith's Costs Across ORANI Industries	268
5.14.9	A Mapping of Howard Smith's Total Assets Across ORANI Industries	270
5.14.10	A Mapping of Howard Smith's Foreign Assets Across ORANI Industries	271
5.14.11	A Mapping of Howard Smith's Domestic Assets Across ORANI Industries	272
5.15.1	A Mapping of Westpac's Areas of Economic Activity to the ORANI Industries	275
5.15.2	A Mapping of Westpac's Revenue Across ORANI Industries	276
5.15.3	A Mapping of Westpac's Profit Across ORANI Industries	278
5.15.4	A Mapping of Westpac's Costs Across ORANI Industries	279
5.15.5	A Mapping of Westpac's Assets Across ORANI Industries	280

List of Figures

	Page
2.1 Consolidated Accounting	14
2.2 Equity Accounting	18
3.1 Geographical Location of the ORANI Pastoral Zone, Wheat-Sheep Zone, High Rainfall Zone, and Northern Beef Industries	22
5.1 Ownership Accounting	65
5.2 Strategy for Estimating a Mapping of the Activities of a Corporation Across ORANI Industries	77
5.2.1 Ampol Corporate Structure	103
5.7.1 Activities of Coal and Allied Industries	167
5.13.1 Pioneer Concrete Corporate Structure	233

A MAPPING OF SELECTED AUSTRALIAN CORPORATIONS ACROSS INPUT-OUTPUT INDUSTRIES*

by

Peter J. Higgs

1. INTRODUCTION

The ORANI model of the Australian economy developed by Dixon, Parmenter, Sutton, and Vincent (1982) has traditionally been used to study the performance of industries based on the input-output categories of the Australian Bureau of Statistics (hereafter ABS); see ABS (1987) and Kenderes (1988). Higgs (1988) describes an application how the ORANI model could in theory be used for forecasting the performance of portfolios of Australian equities. To implement this theory requires a mapping of the capital stocks of corporations across the ORANI industries. In this paper such a mapping is developed for selected Australian corporations.

* This research was supported in part by the Superannuation Fund Investment Trust, Canberra. The author is particularly indebted to Bob Clift, Gerard de Valence, Mike Kenderes, Patricia McBride, and Alan Powell for comments and assistance.

The very first step in estimating the above mapping is to define capital stocks. Hourigan, (1980, pp. 8-9), who estimated the capital stock matrix for ORANI, defines capital as follows:

"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 within one year."

This definition is appropriate if we are just concerned with physical capital. However, we are ultimately interested in capital as seen by investors on the stockmarket. Therefore we need to add to the above definition intangible assets such as good will, and natural and/or non-reproducible resources such as mineral deposits, forests and fishery resources. Also to be included 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 next step is to investigate the available data. Fortunately, a statement on "Financial Reporting by Segments" was introduced as a required accounting standard in Australia in 1985. This statement is discussed in detail in section 2, however, briefly, the statement requires corporations to report on an industry and geographical basis their revenue, profit, and assets. Assets are also defined in section 2 and the definition approximately corresponds to the above definition of capital. Thus the industry segmented asset data could provide a good basis for estimating a mapping of the capital stocks of corporations across industries. In addition, the industry

segmented revenue and profit data could be used to estimate mappings of the revenue and profit of corporations across industries. These last two mappings would make it possible to use the ORANI model to produce projections of revenue and profit by corporations.

The remainder of the paper is organized as follows. In section 2 some accounting conventions are discussed. A detailed description of the ORANI industries is given in section 3. The criteria for the selection of Australian corporations for which the mapping is estimated is discussed in section 4. The mapping for each of the selected corporations across the ORANI industry classifications is given in section 5. Concluding remarks are offered in section 6. Finally, some technical notes are contained in an appendix.

2. BACKGROUND ACCOUNTING CONVENTIONS

In this section a number of accounting conventions are discussed. These conventions are important as they describe the procedures used to construct the data that are used in estimating the mappings of corporations across industries. The conventions discussed include the Australian accounting statement on 'Financial Reporting by Segments'; the accounting definition of assets; consolidated and equity accounts; and conventions concerning the reporting of reciprocal holdings of companies.

2.1 Financial Reporting by Segments

In March of 1984 the National Councils of The Institute of Chartered Accountants in Australia and the Australian Society of Accountants issued an Australian Accounting Standard (hereafter AAS) relating to 'Financial Reporting by Segments'. This statement is referred to as AAS 16; see Australian Society of Accountants (1979, pp. 1143-1154). AAS 16 has only been operative in respect of any accounting period ending on or after 31 March 1985. The following paragraph of AAS 16 explains the reasons for inclusion of segment information in financial statements:

3 The principal objective in requiring the disclosure of segment information is to enable users of financial statements to make a better analysis of an entity's past performance. Segmentation by industry and geographical areas is highly relevant to an analysis of a company's profit prospects and risk exposure when making investment and credit decisions. The operations and results of different industry and geographical segments may be subject to a variety of special risks such as the effect of technological change, the degree of government

assistance, exchange rate fluctuations, international trade competition and political instability. By extending financial statements to include information about activities in different industries and foreign locations, improved assessments can be made regarding the reporting entity as a whole.

As financial reporting by segments is the primary source of data for estimating the mappings of corporations across industries, the contents of AAS 16 are described below in considerable detail.

Comprehensive guidelines on the identification of industry segments are not given in AAS 16, however, the statement does make the following suggestion:

- 6 The Australian Standard Industry Classification, compiled by the Australian Bureau of Statistics, may provide a reporting entity with information to assist in identifying industry segments.

The identification of geographical segments is largely covered by the next two paragraphs from AAS 16:

- 8 An entity's operations within Australia are considered to be a separate geographical segment.
- 9 Operations of an entity will only be classified as operations in foreign geographical segments if they extend beyond facilitating export sales or services from the entity's domestic operations. Thus, if the foreign activities of an Australian company were limited to selling and warehousing goods supplied from Australia and a small amount of connected servicing, the operations would usually be viewed as domestic operations. If the products were substantially manufactured, assembled or acquired in the overseas country, the activities would be classified as foreign.

The next point covered by AAS 16 concerns the determination of whether particular segments are material and so warrant disclosure. Paragraphs 11 and 15 are pertinent to this point:

11 After a reporting entity has been divided into industry and geographical segments, it is necessary to decide whether particular segments are material and so warrant separate disclosure. The materiality of a segment to the reporting entity as a whole can be measured in terms of revenue, profits or losses generated, or assets employed. Normally a segment would be considered reportable if one or more of the following conditions applied:

- (a) its revenue is 10 per cent or more of the total segment revenue of all segments (including intersegment sales and transfers);
- (b) the absolute amount of its segment result is 10 per cent or more of the greater, in absolute amount of:
 - (i) the total segment result of all segments that earned a profit; and
 - (ii) the total segment result of all segments that incurred a loss; and/or,
- (c) its segment assets are 10 per cent or more of the total segment assets of all segments.

15 Similarly, a reporting entity that operates predominantly in one geographical location need only disclose that circumstance. An entity is usually considered to be operating predominantly in Australia when revenue, operating profit or loss and assets associated with operations within Australia each constitute more than 90 percent of the related totals for all geographical segments.

The actual information required to be disclosed for each segment is described in paragraphs 30, 31, and 32:

30 For each reportable industry and geographical segment, the following financial information should be disclosed.

- (a) segment revenue (except where a reporting entity is not required to present sales revenue information), distinguishing between revenue derived from customers outside the reporting entity and revenue derived from other segments;

- (b) segment result;
- (c) the carrying amount of segment assets; and,
- (d) the basis of inter-segment pricing.

31 The information provided on segment revenue, segment result and segment assets should each be aggregated to agree with the related information in the consolidated or other main financial statements.

32 When preparing segment information, intersegment transactions that are eliminated from consolidated financial statements should be reinstated on a basis that corresponds with that used in recording intercompany transactions for legal entity reporting purposes.

The four items of financial information in paragraph 30 (i.e., items (a)-(d)) are qualified in AAS 16. These qualifications are discussed in turn below.

Segment revenue (i.e., item (a) of paragraph 30) is defined as revenue, directly attributable to a segment, derived from sales to customers outside the reporting entity and from intersegment sales and transfers of products and services, other than intersegment billings for the cost of shared facilities or other jointly incurred costs; see Australian society of Accountants (1979, p. 1145). According to paragraph 17 of AAS 16 a number of items are excluded from segment revenue:

17 The following revenue items would not normally be included in segment revenue:

- revenue earned at the head office or corporate level and not derived from operations of any segment;
- share of profits from investments accounted for on an equity basis;
- interest and dividend income, other than that earned on an asset included in segment assets;

- Interest earned on advances or loans to other segments, unless segment operations are primarily of a financial nature; and,
- extraordinary gains (net of income taxes).

Intersegment billings for the cost of shared facilities or other jointly incurred costs do not represent intersegment sales or transfers but represent a cost recovery that would need to be offset against segment expenses.

Segment result (i.e., item (b) of paragraph 30) is defined as the difference between segment revenue and segment expense; see Australian Society of Accountants (1979, p. 1144). Segment revenue is defined above, and segment expense is defined as an expense that is directly attributable to a segment, or the relevant portion of an expense that can be allocated on a reasonable basis to a segment for whose benefit the expense was incurred; see Australian Society of Accountants (1979, p. 1144). A number of items are excluded from segment expense, and hence from segment result:

- 18 The following expense items would not normally be included in segment expense:

- general corporate expenses;
- share of losses from investments accounted for on an equity basis;
- interest expense when segment operations are not primarily of a financial nature;
- income tax expense applicable to operating profit; and,
- extraordinary losses (net of income taxes).

Segment assets (i.e., item (c) of paragraph 30) are defined as all assets attributable to a segment, including the portion of those used jointly by two or more segments, that can be allocated to individual segments on a reasonable basis; see Australian Society of

Accountants (1979, p. 1144). The estimation of segment assets is qualified by paragraphs 21 and 22:

21 The relative profitability of different segments is difficult to evaluate without knowledge of the investment in each segment. In identifying assets with segments, the procedures used in allocating jointly used assets to segments would parallel the procedures used in allocating common operating expenses. General corporate assets that are not used in the operations of any particular segment would not be allocated.

22 While provisions for doubtful debts and depreciation would be deducted in obtaining the amounts for segment assets, a segmentation of liabilities to facilitate the computation of "net" investment is not contemplated. For instance, equity capital and debt are normally issued by the entity as a whole and the attribution of particular sources of capital to particular segments could often be arbitrary and misleading. Similarly, advances or loans to another segment would not normally be included in segment assets unless segment operations are of a financial nature or segments are individually responsible for raising finance.

Finally, the importance of knowing the basis of inter-segment pricing (i.e., item (d) of paragraph 30) is explained in paragraph 19:

19 Since intersegment sales and transfers occur within the reporting entity and as a result can be made at prices substantially higher or lower than regular market prices, it is important that the basis used in pricing the intersegment sales and transfers is disclosed in the segment reports.

2.2 ASSETS

In this section we first examine how assets are defined and then secondly discuss how assets are valued. Expressed very simply, assets are defined as 'things owned'. However, there exist many

definitions of assets. Henderson and Peirson (1980) report and discuss at least seven different published definitions. For example, the American Institute of Certified Public Accountants (AICPA) in their statement No. 4 of 1970, defined assets as the :

"economic resources of an enterprise that are recognized and measured in conformity with generally accepted accounting principles. Assets also include certain deferred charges that are not resources but that are recognized and measured in conformity with generally accepted principles."

Henderson and Peirson (1980, p. 18) interpret this definition as follows:

"This definition suggest that assets are either economic resources or things which are not economic resources but which accountants choose to describe as assets. In other words, assets are those items which accountants choose to treat as assets."

The term assets is not defined in the AAS statements. However, following from the above discussion, we will define assets by studying the accounting conventions adopted in Australian annual reports. From observing a limited number of annual reports lodged by Australian companies, assets are defined as the addition of fixed assets, interest in partnerships, investment and loans, non-current assets, and current assets. Fixed assets include land, buildings, equipment, and capital works in progress. Interest in partnerships is the proportion owned in partnerships of fixed and current assets. Investment and loans include shares in other companies and bonds. Non-current assets include lease receivables and future income tax benefits. Current assets include cash and other deposits, debts owed, and inventories. As a final point note that assets are also equal to liabilities plus proprietorship. Thus, an

alternative definition of assets would involve the addition of the different types of liabilities of a company.

The valuation of assets is also a contentious issue in accounting. Following Clift (1985), traditional accounting methods have been criticized as they ignore changes in the value of money and emphasize historical cost. Changes in the value of money make it inappropriate, for many purposes, to compare financial statements over time. Furthermore, the valuation of assets at historical cost is of little interest to the majority of users of financial statements who seek information about the current values of assets. The professional accounting associations in Australia and abroad have been developing accounting standards directed towards alleviating, or removing, these weaknesses. Three broad types of systems have been considered, namely, current purchasing power accounting, current value accounting, and relative price change accounting. These are discussed in Clift (1985, pp. 116-137), however, they are all subject to some difficulties. For example, what particular index number is appropriate for the revaluation of each asset? Does value refer to the liquidation value of each asset or its replacement cost? Possibly as a result of some of these difficulties, none of the above methods are required to be used in the preparation of Australian annual reports.

The basis of valuation most commonly used in Australia is a modified historical cost system; see Clift (1985, p. 97). Major assets are periodically revalued. However, the timing of revaluations is at the discretion of the directors. The actual timing of revaluations is stated in the notes to accounts section of the annual report. Finally,

note that the value of assets reported is net of depreciation and doubtful debts.

2.3 Consolidated and Equity Accounting

The essential difference between consolidated and equity accounting is that consolidated accounting is concerned with control whereas equity accounting is concerned, to some extent, with ownership. Consolidated accounts are the aggregated statements of the holding company and its subsidiary companies with the qualification that all inter-company transactions have been eliminated (i.e., there is no double counting). Following Clift (1985, p. 222), the legal definitions of a subsidiary is given in the Companies Code:

S 7(1) For the purposes of this Act, a corporation shall, subject to the provisions of sub-section (3) of this section, be deemed to be a subsidiary of another corporation, if-

- (a) that other corporation -
 - (i) controls the composition of the board of directors of the first-mentioned corporation;
 - (ii) controls more than half of the voting power of the first-mentioned corporations;
 - (iii) holds more than half of the issued share capital of the first-mentioned corporation...; or
- (b) the first-mentioned corporation is a subsidiary of any corporation which is that other corporation's subsidiary (including a corporation that is that other corporation's subsidiary by another application or other applications of this paragraph).

Consider the case where company A owns more than 50 per cent of company B which in turn owns more than 50 per cent of company C. Under the above definition both B and C are subsidiaries of A.

Consolidated accounts are of particular interest because of their relevance to financial reporting by segments. Financial reporting by segments includes inter-segment transactions; see section 2.1. However, once these transactions are eliminated, the aggregates across segments are consistent with the corresponding figures in the consolidated accounts. In other words, financial reporting by segments is also concerned with control rather than ownership.

In consolidated accounts the revenue, profit, and assets of the subsidiary companies are aggregated (excluding inter-company transactions) with those of the holding company. Note that in the case of profits and assets the interests of the minority shareholders in the subsidiaries, if applicable, are reported separately. However, the consolidated accounts that correspond with the financial reports by segments are inclusive of the interests of minority shareholders.

In consolidated accounts there is a discrete change in how a holding in another company is treated once it ceases to legally be a subsidiary company (i.e., when holding or ownership is 50 per cent or less); see Figure 2.1. For example, consider the case where a company owns, say, 40 per cent of the shares of another company. This investment is recognized in the consolidated accounts as follows. The cost of purchasing the shares will be listed as an asset under the heading Investments. (This entry is subject to periodical revaluation at the discretion of the directors.) Dividends earned from this

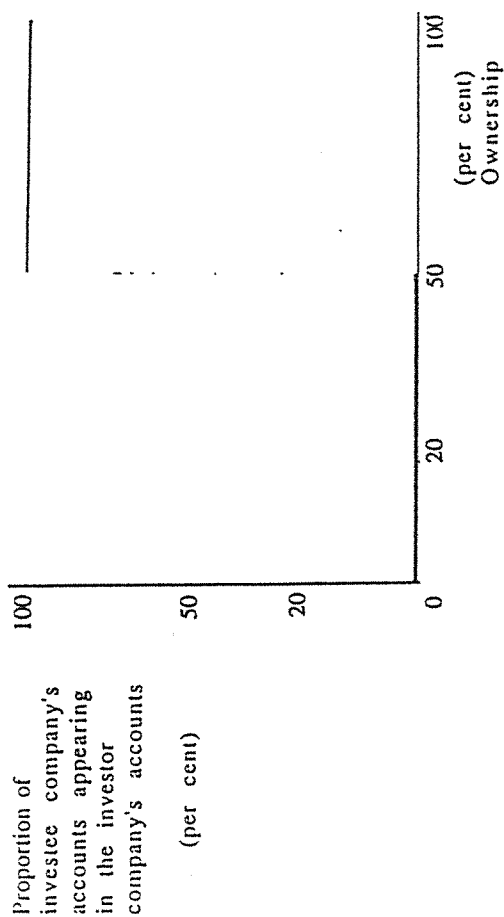


FIGURE 2.1: CONSOLIDATED ACCOUNTING

Investment will be listed as profit from trading under the heading dividends from non-related corporations. However, as profit is not usually fully appropriated as dividends, the holding company's minority interest in the profit will not be fully reflected in the consolidated accounts. Note also that the above investment would only be reflected in the financial reports by segments in terms of revenue and profits via dividends and in terms of assets via the cost of purchasing the shares.

The consolidated accounting conventions used to prepare financial reports by segments can frustrate users who are concerned with ownership and with the valuation of assets at current cost. In summary, there are three basic problems. The first is that the segment reports include the minority shareholders interests. Ideally, these interests would be excluded. The second is that holdings of 50 per cent or less in other companies only contribute to the segmented revenue and profit reports via dividend payments, and they only contribute to segmented asset reports via the initial cost of the investment. The third problem is that, asset values are a mixture of historical cost and periodical revaluations at the discretion of the directors. Ideally, assets would always be valued at current cost.

Equity accounting partially alleviates some of the above problems. Following Clift (1985, p. 365), investments in other companies have traditionally, in Australia, been accounted for at cost. This accounting procedure is known as the 'cost method of accounting for investments' and is consistent with conventional accounting principles; namely, assets are to be recorded at historical cost and only income actually received, that is, realized is to be recognised. However, this approach ignores the earning capacity of the company in which shares are

held. In response to this criticism, the Australian Society of Accountants and the Institute of Chartered Accountants issued a statement number AAS 14, entitled the 'Equity Method of Accounting'. This statement has been operative in respect of any accounting period ending on or after 31 March 1984.

Equity accounting introduces the concept of an associated company. An associated company is defined in AAS 14 as:

- 2 (f) "Associated company" means an investee, not being a subsidiary of the investor, over which the investor has significant influence.

The first thing to note about the above definition is that an associated company is not a subsidiary company. As a result, equity accounting is not applicable to subsidiary companies. The second point is the key phrase in the definition is "significant influence". This phrase is defined and expanded upon in AAS 14 as follows:

- 2 (g) "Significant influence" means the capacity of an investor to affect substantially the financial and/or operating policies of an investee.

- 10 Where an investor holds 20 per cent or more of the voting power in the investee, this could be deemed to lead, in the absence of evidence to the contrary, to a presumption that the investor has a significant influence over the investee. However, this percentage is not intended as an absolute cut-off point. In certain cases an investee will qualify, or will continue to qualify, as an associated company, notwithstanding that the investor's voting power in the investee is less than, or has fallen below, 20 per cent. In other cases an investee will not so qualify even when the investor's voting power in the investee exceeds 20 per cent.

Equity accounting is perhaps best summarized by the following paragraph from AAS 14 that contrasts equity accounting with the cost method of accounting for investments:

- 15 Major points of contrast between the equity method and the cost method are:

- (a) under the cost method, profits retained by an investee and losses incurred by an investee are not disclosed in the financial statements of the investor. Furthermore, by limiting the recognition of earnings from the investment to dividends received or receivable from the investee, there will not necessarily be a correlation between dividends from the investment as disclosed in the financial statements of the investor and the actual results of the investee from period to period; and
- (b) under the equity method, the investor will report a share of the profits and losses and reserves of the associated company, irrespective of whether profits are distributed by the payment of a dividend or are retained by the associated company.

Thus, in equity accounting there are two discrete changes in how a holding in another company is treated as the degree of ownership (or rather influence) changes; see Figure 2.2. If the shareholding is small (i.e., less than 20 per cent) then the investment is treated under equity accounting as it is under consolidated accounting. However, if the shareholding is significant (i.e., more than 20 per cent but not more than 50 per cent) then the holding company will report its share of profits from the associated company irrespective of whether these profits are realised as dividends or not. Finally, if the shareholding is a majority (i.e., more than 50 per cent) then the holding company will report the results of the subsidiary company in the same manner as applicable for consolidated accounts.

2.4 Reciprocal Holdings

Reciprocal holdings refer to the situation where company A holds shares in company B which in turn hold shares in company A. Following Clift (1985, p. 344), the Companies Code (S36) effectively prohibits the ownership of shares by a subsidiary in its holding company. If a company is taken over by a company in which it is a shareholder it must dispose of any shares in the holding company within twelve months after becoming a subsidiary. Thus, reciprocal holdings do not cause any problems for consolidated accounts. However, there is no rule against an associated company holding shares in its investor. If this is the case, then the calculation of the proportion of income of the associated company that the investor company is entitled to is complicated. A correct procedure for making this calculation is described in Appendix A.1. However, this is not the procedure used in equity accounting.

In the present accounting standard governing equity accounting, the effect of reciprocal shareholdings on the share of profits are ignored. Following Clift (1985, p. 399), any dividends received by the associated company from the investor are first excluded from net profit for the purpose of calculating the 'share of profit of associated company'. Second, in preparing the equity supplementary financial statements for the investor any amount shown by the associated company as its share of the investor's profit is not to be included; see paragraphs 40 and 41 of AAS 14.

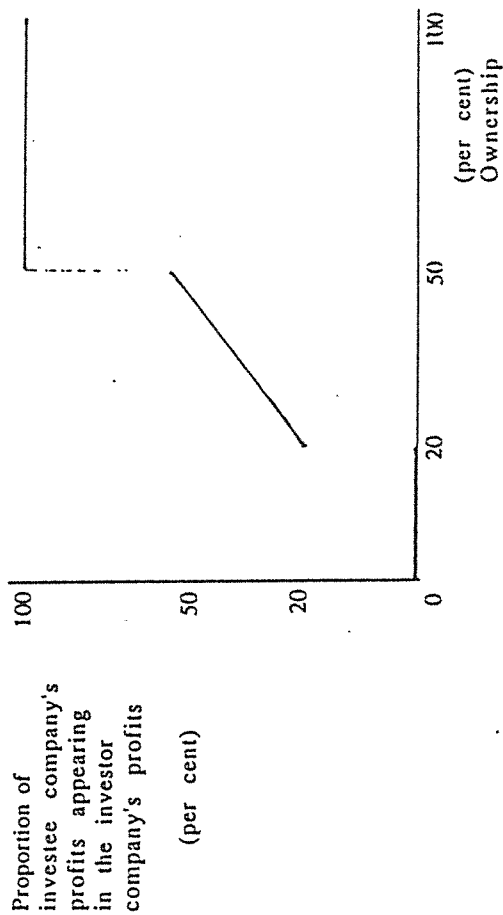


FIGURE 2.2: EQUITY ACCOUNTING

3. THE ORANI INDUSTRIES

The ORANI Industries can be conveniently divided into two groups. The first 8 industries comprise the first group. These are all agricultural industries and are modelled as multi-product industries (i.e., as producing one or more categories of output). The second group consists of the next 104 industries, which are modelled as single-product industries. Both of these groups are discussed in turn.

3.1 The ORANI Agricultural Industries

The ORANI model distinguishes eight industries and ten commodity groups within agriculture. A description of the agricultural industries is contained in Table 3.1. The first three industries, the Pastoral Zone, Wheat-Sheep Zone, and High Rainfall Zone, correspond to the zonal industry classifications adopted by ABARE, formerly the Bureau of Agricultural Economics (hereafter BAE), in its Australian Sheep Industry Surveys; see BAE (1972) and (1976). These three zones constitute the sheep grazing areas of Australia. The Pastoral Zone is the largest in area and includes the arid and most of the semi-arid parts of Australia which support a sheep population; see Figure 3.1. The Wheat-Sheep Zone carries the largest number of sheep of the zones and has variable rainfall sufficient for cereals production. The High Rainfall Zone is situated adjacent to the coastal strips of Australia. Rainfall in this zone is higher on average and, as in the Wheat-Sheep Zone, properties tend to be quite diversified. The fourth industry, Northern Beef, is a specialist beef industry located in northern

TABLE 3.1 : AGRICULTURAL INDUSTRIES IN ORANI^a

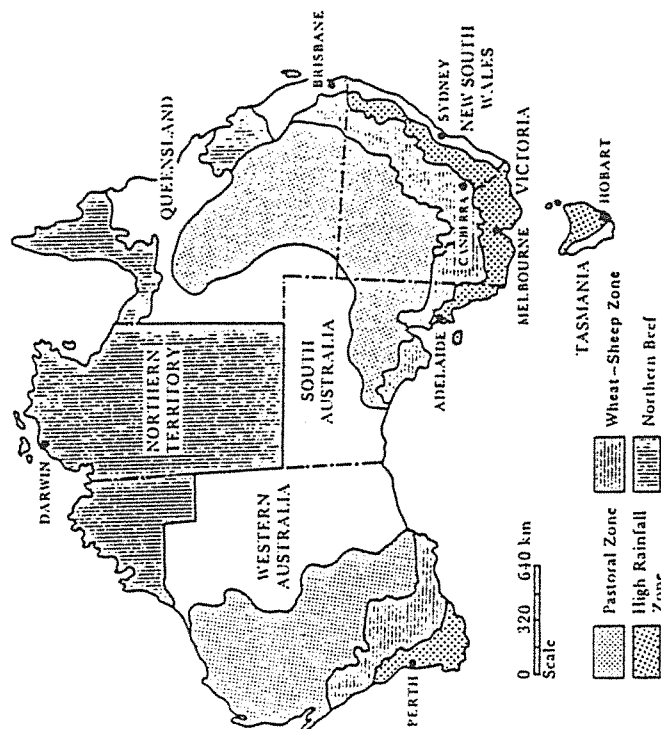
Number	ORANI Industry	Description (a)
1	Pastoral Zone	Properties in the Pastoral Zone of the BAE Australian Sheep Industry Survey. It includes the arid and most of the semi-arid parts of Australia which support a sheep population. Apart from some fringe areas, cropping is not feasible due to inadequate and unreliable rainfall. Livestock are generally grazed on natural vegetation. Sheep are grazed almost entirely for their wool, then sold for their meat when aged. This meat production occurs essentially in fixed proportions with that of wool.
2	Wheat-Sheep Zone	Properties in the Wheat-Sheep Zone of the BAE Australian Sheep Industry Survey. It is the largest of the BAE zones in terms of sheep numbers and sheep properties. Rainfall is generally sufficient for crop production, and nearly all dry land cropping of cereals is carried out in this zone. The zone has become an important source of cattle output. The climate, topography, and soil type characteristics of the zone are such that opportunities for diversification into various cropping and livestock activities are large.
3	High Rainfall Zone	Properties in the High Rainfall Zone of the BAE Australian Sheep Industry Survey. Sheep concentration is highest in this zone and they are often grazed in association with beef cattle. To a lesser extent, livestock are grazed in rotation with crop production. As in the Wheat-Sheep Zone, a large proportion of properties combine wool growing with prime lamb production.
4	Northern Beef	All properties located in the Kimberley region in Western Australia, the Northern Territory, and the Peninsular Gulf and Coastal Central regions of Queensland. The principal agricultural industry in this region is beef cattle, with characteristics significantly different from beef grazing in each of the previous three industries. Most of the product from this industry is exported as lower quality manufacturing beef. Except in some fringe areas of the Queensland Coastal Central region, climate and biological factors are such that there is virtually no alternative commodity to beef cattle.
5	Milk Cattle and Pigs(b)	Farms that produce Milk Cattle and Pigs but do not carry more than 200 sheep. Milk Cattle and Pigs are assumed to be produced in fixed proportions.
6	Other Farming (Sugar Cane, Fruit, & Nuts)(b)	Farms that produce the commodity Other Farming (Sugar Cane, Fruit, and Nuts) but do not carry more than 200 sheep.
7	Other Farming (Vegetables, Cotton, Oilseeds, and Tobacco)(b)	Farms that produce the commodity Other Farming (Vegetables, Cotton, Oilseeds, and Tobacco) but do not carry more than 200 sheep.
8	Poultry	Poultry farms.

^a Source: Higgs (1986, Table 1.1).

(a) For a geographic definition of the BAE zones, see Figure 3.1.

(b) In the ORANI data base, the very small amounts of wool and sheep produced on these farms is ignored.

FIGURE 3.1: GEOGRAPHICAL LOCATION OF THE ORANI PASTORAL ZONE, WHEAT-SHEEP ZONE, HIGH RAINFALL ZONE, AND NORTHERN BEEF INDUSTRIES*



* Source: Higgs (1986, Figure 1.1). The zonal industries are based on the Australian Sheep Industry Survey zones; see BAE (1972) and (1976). The Northern Beef industry consists of properties located in the Kimberley region, in Western Australia, the Northern Territory (see BAE (1974a)), and the Peninsular Gulf and Central Coastal regions of Queensland; see BAE (1974b).

Australia; see Figure 3.1. The beef from these northern regions is produced using a technology distinctly different from that used by the above zonal industries. An extensive description of the ten agricultural commodities distinguished in ORANI is contained in Table 3.2.

3.2 The ORANI Non-Agricultural Industries

The non-agricultural industries in the ORANI model correspond, with the exception of the non-competing imports industry, to the input-output classifications of the ABS. The input-output categories can in turn be mapped to the Australian Standard Industrial Classification (hereafter ASIC). The concordance between the ORANI non-agricultural industries, the input-output categories, and the ASIC is given in Table 3.3. This table is particularly helpful when constructing our data base as the ASIC system provides extensive detail (see ABS (1985a,b)) which is invaluable for allocating corporate data across industries.

There are a number of background conventions pertaining to the ASIC system. These conventions are important as they describe the procedures used to collect the data which define the non-agricultural industries of the ORANI model. The ASIC system is best summarized by the following paragraph from ABS (1985a, p. 1):

2. The Australian Standard Industrial Classification (ASIC) has been designed primarily as a system for classifying establishments, e.g. individual mines, factories, shops, etc., by industry. An 'industry' i.e. an individual class or group, etc., in the ASIC, consists of the establishments which have been classified to it.

TABLE 3.2 : AGRICULTURAL COMMODITIES IN ORANI*

Number	ORANI Commodity	Description
A1	Wool	Shorn greasy wool, wool on skins, and dead and fellmongered wool.
A2	Sheep	Sheep sold for slaughter.
A3	Wheat	Wheat.
A4	Barley	Barley.
A5	Other Cereal Grains	Maize, Millet, Oats, Panicum, Rice, Rye, Setaria and Sorghum.
A6	Meat Cattle	Cattle kept or intended mainly for production of meat and sold for slaughter.
A7	Milk Cattle and Pigs	Milk for manufacturing or market; and pigs sold for slaughter. Cattle kept or intended mainly for the production of manufacturing or market milk but sold for slaughter.
A8	Other Farming (Sugar Cane, Fruit, and Nuts)	Vegetables for retail market manufacturing: Almonds, Apples, Apricots, Avocados, Bananas, Berry Fruit, Cape Gooseberries, Cashew Nuts, Cherries, Chestnuts, Citrus Fruit, Coconuts, Currants, Currants, Custard Apples, Figs, Gooseberries, Granadillas, Grapefruit, Lemons, Limes, Loganberries, Loquats, Macadamia Nuts, Mandarins, Mangoes, Mulberries, Nectarines, Oranges, Passion Fruit, Papaws, Peaches, Pears, Pecan Nuts, Persimmons, Pineapples, Plums, Raspberries, Strawberries, Tree Nuts, and Walnuts. Sugar Cane growing.
A9	Other Farming (Vegetables, Cotton, Oilseeds, and Tobacco)	Vegetables for retail market manufacturing: Aniseeds, Artichokes, Asparagus, Beans, Beetroots, Blue Peas, Broccoli, Brussel Sprouts, Cabbages, Cantaloupes, Carrots, Cauliflowers, Celery, Chives, Chokoes, Cucumbers, Egg Fruit, Endive, French Beans, Garlic, Gourds, Grammas, Green Peas, Grey Peas, Herbs, Horse Beans, Horseradish, Leeks, Lettuce, Marrows, Melons, Mint, Mushrooms, Onions, Parsley, Parsnips, Peas, Peppers, Pumpkins, Radishes, Rhubarb, Rockmelons, Shallots, Silver Beet, Soya Beans, Spinach, Squashes, Svedes, Sweet Potatoes, Tomatoes, Turnips, and Watermelons. Tobacco growing and Tobacco leaf drying. Cotton growing. Other commodities: Beeswax, Arrowroot, Bamboo, Birds (breeding: except poultry), Broom Millet, Canary Seed, Cats (breeding), Chicory, Coffee, Dogs (breeding), Flax, Flowers, Crops for Fodder, Fruit Trees, Fur Skins, Ginger, Goat Hair, Goat Milk, Goat Meat and Live Goats, Hay, Hops, Horses (breeding), Lavender, Linseed, Lucerne, Mustard, Peanuts, Rabbits, Pet Breeding, Hamie, Safflower, Seed, Crops for Silage, Snake Farming, Stud Farm (horses), Sudan Grass, and Sunflowers.
A10	Poultry	Broiler, Chicken, Duck, Goose, and Turkey farming for meat production. Chicken and Poultry farming for egg production and poultry hatchery (egg breeds).

* Source: Higgs (1986, Table 1.2).

TABLE 3.3: NON-AGRICULTURAL ORANI INDUSTRIES IN TERMS OF THE NATIONAL INPUT-OUTPUT CLASSIFICATIONS AND THE AUSTRALIAN STANDARD INDUSTRY CLASSIFICATION*

ORANI Industry		(a)		(b)	
Number	Description	Code	Description	Code	Description
9	Agricultural Services	02.00	Services to Agriculture	0204-6	Services to Agriculture
10	Forestry and Logging	03.00	Forestry and Logging	0303-4	Forestry and Logging
11	Fishing and Hunting	04.00	Fishing and Hunting	0431-4	Fishing
				0440	Hunting and Trapping
12	Ferrous Metal Ores	11.01	Ferrous Metal Ores	1111-2	Ferrous Metal Ores
13	Nonferrous Metal Ores	11.02	Nonferrous Metal Ores	1121-9	Nonferrous Metal Ores
14	Black Coal	12.00	Coal: Oil and Gas (part)	1201	Black Coal
15	Oil, Gas, and Brown Coal	12.00	Coal: Oil and Gas (part)	1202	Brown Coal
				1300	Oil and Gas
16	Other Minerals	14.00	Other Minerals	1401-4	Construction Materials
				1501-5	Other Non-metallic Minerals
17	Services to Mining	16.00	Services to Mining n.e.c.	1611-2	Mineral Exploration (Own Account)
				1620	Mining and Exploration Services n.e.c.
18	Meat Products	21.01	Meat Products	2115-7	Meat Products
19	Milk Products	21.02	Milk Products	2121-5	Milk Products
20	Fruit and Vegetables	21.03	Fruit and Vegetable Products	2131-2	Fruit and Vegetable Products

* Footnotes appear at the end of the table.

... Continued

26

denizli --

ORANI Industry		Input-Output Industry Classification		Australian Standard Industry Classification (ASIC)	
Number	Description	Code	Description	Code	Description
21	Margarine, Oils, and Fats 21.04		Margarine and Oils and Fats n.e.c.	2140	Margarine and Oils and Fats n.e.c.
22	Flour and Cereal Products 21.05		Flour Mill and Cereal Food Products	2151-3	Flour Mill and Cereal Food Products
23	Bread, Cakes, & Biscuits 21.06		Bread, Cakes, and Biscuits	2161-3	Bread, Cakes, and Biscuits
24	Confectionery and Cocoa 21.07		Confectionery and Cocoa Products	2173	Confectionery and Cocoa Products
25	Other Food Products 21.08		Other Food Products	2171	Raw Sugar
				2174	Processed Seafoods
				2175	Prepared Animal and Bird Foods
				2176	Food Products n.e.c.
26	Soft Drinks and Cordials 21.09		Soft Drinks, Cordials, and Syrups	2185	Soft Drinks, Cordials, and Syrups
27	Beer and Malt 21.10		Beer and Malt	2186	Beer
				2187	Malt
28	Other Alcoholic Drinks 21.11		Other Alcoholic Beverages	2188	Wine and Brandy
				2189	Alcoholic Beverages n.e.c.
29	Tobacco Products 22.01		Tobacco Products	2190	Tobacco Products
	Textile, Clothing, and Footwear				
30	Cotton Ginning, etc 23.01		Cotton Ginning, Wool Scouring, and Top Making	2341	Cotton Ginning
31	Man-Made Fibres, Yarns 23.02		Man-Made Fibres, Yarns, and Broadwoven Fabrics	2343	Man-Made Fibres and Yarns
				2344	Man-Made Fibre Broadwoven Fabrics
32	Cotton Yarns and Fabrics 23.03		Cotton Yarns, Broadwoven Fabrics, Narrow Woven, Elastic and Household Textiles	2345	Cotton Yarns and Broadwoven Fabrics
				2346	Narrow Woven and Elastic Textiles
				2351	Household Textiles
33	Worsted and Woolien Yarns 23.04		Worsted and Woolien Yarns and Broadwoven Fabrics	2347	Worsted Yarns and Broadwoven Fabrics

TABLE 3.3 Continued

Number	ORANI Industry		Input-Output Industry Classification (a)		Australian Standard Industry Classification (b) (ASIC)	
	Description	Code	Description	Code	Description	Code
45	Bags, Fibreboard Boxes	26.02	Bags, Fibreboard Containers	26.32	Paper Bags (Including Textile Bags)	26.32
				26.33	Solid Fibreboard Containers	26.33
				26.34	Corrugated Fibreboard Containers	26.34
46	Paper Products n.e.c.	26.03	Paper Products n.e.c.	26.35	Paper Products n.e.c.	26.35
47	Newspapers and Books	26.04	Publishing; Printing and Publishing	26.41	Publishing	26.41
48	Commercial Printing	26.05	Paper Stationery; Printing & Book-binding; Printing Trade Services nec	26.43	Paper Stationery	26.43
				26.44	Printing and Bookbinding	26.44
				26.45	Printing Trade Services n.e.c.	26.45
Chemical, Petroleum, and Coal Products						
49	Chemical Fertilisers	27.01	Chemical Fertilisers	27.51	Chemical Fertilisers	27.51
50	Other Basic Chemicals	27.02	Other Basic Chemicals	27.52	Industrial Gases	27.52
				27.53	Synthetic Resins and Rubber	27.53
				27.54	Organic Industrial Chemicals n.e.c.	27.54
				27.55	Inorganic Industrial Chemicals n.e.c.	27.55
51	Paints, Varnishes	27.03	Paints	27.62	Paints	27.62
52	Pharmaceutical Goods	27.04	Pharmaceutical and Veterinary Products; Pesticides	27.63	Pharmaceutical and Veterinary Products	27.63
				27.64	Pesticides	27.64
53	Soap and Detergents	27.05	Soap and Other Detergents	27.65	Soap and Other Detergents	27.65
54	Cosmetics and Toilettries	27.06	Cosmetics and Toilet Preparations	27.66	Cosmetics and Toilet Preparations	27.66
55	Other Chemical Goods	27.07	Other Chemical Products	27.67	Inks	27.67
				27.68	Chemical Products n.e.c.	27.68
... Continued						

TABLE 3.3 Continued

Number	ORANI Industry		Input-Output Industry Classification (a)		Australian Standard Industry Classification (b) (ASIC)	
	Description	Code	Description	Code	Description	Code
56	Petrol and Coal Products	27.08	Petroleum and Coal Products	27.70	Petroleum Refining	27.70
				27.80	Petroleum and Coal Products n.e.c.	27.80
Non-Metallic Mineral Products						
57	Glass and Glass Products	28.01	Glass and Glass Products	28.50	Glass and Glass Products	28.50
58	Clay Products, Refractories and Refractories	28.02	Clay Products and Refractories	28.61-4	Clay Products and Refractories	28.61-4
59	Cement	28.03	Cement	28.71	Cement	28.71
60	Ready Mixed Concrete	28.04	Ready Mixed Concrete	28.72	Ready Mixed Concrete	28.72
61	Concrete Products	28.05	Concrete Products	28.73	Concrete Pipes and Box Culverts	28.73
				28.74	Concrete Products n.e.c.	28.74
62	Non-Metallic Ore Goods	28.06	Other Non-Metallic Mineral Products	28.81-4	Other Non-Metallic Mineral Products	28.81-4
63	Basic Iron and Steel	29.01	Basic Iron and Steel	29.41-5	Basic Iron and Steel	29.41-5
64	Other Basic Metals	29.02	Basic Non-Ferrous Metals and Products	29.51-7	Basic Non-Ferrous Metals	29.51-7
65	Structural Metal Goods	31.01	Structural Metal Products	31.41-3	Non-Ferrous Metal Basic Products	31.41-3
66	Sheet Metal Products	31.02	Sheet Metal Products	31.51-3	Sheet Metal Products	31.51-3
67	Other Metal Products	31.03	Other Metal Products	31.61-8	Other Fabricated Metal Products	31.61-8
68	Motor Vehicles and Parts	32.01	Motor Vehicles and Parts and Transport Equipment n.e.c.	32.31-4	Motor Vehicles and Parts	32.31-4
				32.45	Transport Equipment n.e.c.	32.45
... Continued						

ORANI Industry		Input-Output Industry Classification (a)		Australian Standard Industry Classification (b) (ASIC)	
Number	Description	Code	Description	Code	Description
Miscellaneous Manufacturing					
79	Leather Products	34.01	Leather Products	3451.2	Leather and Leather Products
80	Rubber Products	34.02	Rubber Products	3461.2	Rubber Products
81	Plastic Products, etc	34.03	Plastic and Related Products	3471.4	Plastic and Related Products
82	Signs, Writing Equipment	34.04	Signs and Advertising Displays; Writing and Marking Equipment	3484	Signs and Advertising Displays
83	Other Manufacturing	34.05	Other Manufacturing	3481	Optical and Allied
				3482	Jewellery and Silverware
				3483	Brooms and Brushes
				3485	Sporting Equipment
				3487	Manufacturing n.e.c.
ELECTRICITY, GAS, AND WATER					
84	Electricity	36.01	Electricity	3610	Electricity
85	Gas	36.02	Gas	3620	Gas
86	Water, Sewerage, & Drains	37.01	Water, Sewerage, and Drainage	3701.2	Water, Sewerage, and Drainage
CONSTRUCTION					
87	Residential Building	41.01	Residential Building Construction	4111	Housing Construction
				4112	Residential Building Construction n.e.c.
				4231-49(part)	Special Trade Construction
88	Other Construction	41.02	Other Construction	4113	Non-Residential Building Construction
				421.2	Non-Building Construction
				4231-49(part)	Special Trade Construction

... Continued

ORANI Industry		Input-Output Industry Classification (a)		Australian Standard Industry Classification (b) (ASIC)	
Number	Description	Code	Description	Code	Description
69	Ships and Boats	32.02	Ships and Boats	3241	Ships
				3242	Boats
70	Locomotives	32.03	Railway Rolling Stock and Locomotives	3243	Railway Rolling Stock and Locomotives
71	Aircraft	32.04	Aircraft	3244	Aircraft
Other Machinery and Equipment					
72	Scientific Equipment	33.01	Photographic, Professional and Scientific Equipment	3341-3	Photographic, Professional and Scientific Equipment
73	Electronic Equipment	33.02	Electronic Equipment	3351	Radio and T.V. Receivers; Audio Equipment
				3352	Electronic Equipment n.e.c.
74	Household Appliances	33.03	Refrigerators, Household Appliances and Water Heating Systems	3353	Refrigerators and Household Appliances
				3354	Water Heating Systems
75	Other Electrical Goods	33.04	Other Electrical Equipment	3355	Electric and Telephone Cable and Wire
				3356	Batteries
				3357	Electric Machinery and Equipment n.e.c.
76	Agricultural Machinery	33.05	Agricultural Machinery	3361	Agricultural Machinery
77	Construction Machinery	33.06	Construction Machinery and Materials Handling Equipment	3362	Construction Machinery
				3363	Materials Handling Equipment
78	Other Machinery and Plant	33.07	Other Machinery and Equipment	3364	Wood and Metal Working Machinery
				3365	Pumps and Compressors
				3366	Commercial Space Heating and Cooling Equipment
				3367	Dies, Saw Blades, and Machine Tool Accessories
				3368	Food Processing Machinery
				3369	Industrial Machinery and Equipment n.e.c.

TABLE 3.3 Continued

(a)

(b)

TABLE 3.3 Continued

TABLE 3.3 Continued							
(a)				(b)			
Input-Output Industry Classification				Australian Standard Industry Classification (ASIC)			
ORANI Industry		Description		Code		Description	
WHOLESALE AND RETAIL TRADE							
89	Wholesale Trade	47.01	Wholesale Trade	4710-96(part)	Wholesale Trade		
90	Retail Trade	48.01	Retail Trade	4814-97(part)	Retail Trade		
91	Mechanical Repairs	49.01	Mechanical Repairs	4731(part)	Farm and Construction Machinery		
				4860(part)	Motor Vehicle Dealers; Petrol and Tyre Retailers		
92	Other Repairs	49.02	Other Repairs	4734(part)	Business Machines Wholesalers		
				4710-96(part)	Wholesale Trade (other than 4734)		
				4857	Electric Appliance Repairers n.e.c.		
				4814-97(part)	Retail Trade (other than 4857)		
TRANSPORT AND STORAGE							
93	Road Transport	51.01	Road Transport	5105-8	Road Transport		
94	Rail and Other Transport	52.01	Railway Transport, Other Transport, and Storage	5200	Railway Transport		
				5513-26	Other Transport and Storage		
95	Water Transport	53.01	Water Transport	5304-6	Water Transport		
96	Air Transport	54.01	Air Transport	5403.4	Air Transport		
COMMUNICATION							
97	Communication	56.01	Communication	5600	Communication		
FINANCE, PROPERTY AND BUSINESS SERVICES							
98	Banking	61.01	Banking	6141-4	Banking		

TABLE 3.3 Continued

ORANI Industry		Input-Output Industry Classification		Australian Standard Industry Classification (ASIC)	
Number	Description	Code	Description	Code	Description
99	Non-Banking Finance	61.02	Non-Bank Finance	6151-6	Non-Bank Finance
100	Investment and Services	61.03	Investment and Services to Finance and Investment	6161-3	Investment Services to Finance and Investment
101	Insurance and Services	61.04	Insurance and Services to Insurance	6231-4	Insurance Services to Insurance
102	Other Business Services	61.05	Other Business Services	6310	Real Estate Agents
				6321(part)	Residential Property Operators
				6322	Property Operators & Developers n.e.c.
				6334-6	Technical Services
				6371.2	Legal and Accounting Services
				6381-9	Other Business Services
				6390	Plant Hire and Leasing n.e.c.
103	Ownership of Dwellings	61.06	Ownership of Dwellings	6321(part)	Residential Property Operators
PUBLIC ADMINISTRATION AND DEFENCE					
104	Public Administration	71.01	Public Administration	7111-30	Public Administration
105	Defence	72.01	Defence	7200	Defence
COMMUNITY SERVICES					
106	Health	81.01	Health	8141-60	Health
107	Education, Libraries	82.01	Education, Museum, and Library Services	8231-52	Education, Museum, and Library Services
108	Welfare and Religion	83.01	Welfare and Religious Institutions and Other Community Services	8304-6	Welfare and Religious Institutions
				8461-95	Other Community Services

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Fertilizers (102)				
Incitec	ICT	0.20	100	na
		<u>0.20</u>		
Chemical, Fertilizers, Paints (103)				
I.C.I.	ICI	1.29	50	C275
		<u>1.29</u>		
Industrial Gases (104)				
C.I.G.	CIG	0.38	100	C275
		<u>0.38</u>		
Salt, Horticulture (105)				
(No companies in All Ordinaries Index)				
TOTAL CHEMICALS (10)				
		<u>2.03</u>		
ENGINEERING (11)				
Heavy Engineering (111)				
Aust National Ind	ANI	0.49	50	C336
Clyde Industries	CLY	0.08		C336
Evans Deakin	EDI	0.01		C336
Ical Ltd	ICA	0.05		C336
Palmer Tube Mills	PTH	0.14		C294
Tubemakers	TMA	0.32	100	C294
		<u>1.09</u>		
Steel Merchant & Agent (112)				
(No companies in All Ordinaries Index)				

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Machinery Manufacturer & Distributor (113)				
(No companies in All Ordinaries Index)				
Engineering Contractor (114)				
(No companies in All Ordinaries Index)				
Light Engineering (115)				
Crane	CRG	0.04		na
Ralph McKay	MKR	0.02		C336
National Cons	NCL	0.30	100	C310
Siddons Ind	SID	0.09		C316
		<u>0.45</u>		
Aircraft (116)				
Hawker De Hav	HDI	0.06		C324
		<u>0.06</u>		
TOTAL ENGINEERING (11)				
		<u>1.61</u>		
PAPER & PACKAGING (12)				
Packaging, Building Materials (121)				
ACI International	ACI	-(r)	50	N990
O.V.S. Invs	OVS	0.12		na
		<u>0.12</u>		
Forest Products, Packaging, Trading (122)				
Amcor	AMC	1.12	50	C263
		<u>1.12</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Forest Products, Paper, Packaging (123)				
N.Z. Forest Prod	NZF	0.08		C253
Paper Merchant, Converter (124)		<u>0.08</u>		
Edwards Dunlop	EDL	0.05		C263
		<u>0.05</u>		
Can Manufacturer (125)				
National Can Ind	NCI	0.04		C315
		<u>0.04</u>		
Plastic Bottles (126)				
(No companies in All Ordinaries Index)				
TOTAL PAPER & PACKAGING (12)		<u>1.40</u>		
RETAIL (13)				
Retail (131)				
Brash Holdings	BSH	0.05		F485
Coles Myer	COL	2.36	20	F480
Mathers Enter	MHR	0.04		F484
Woolworths	WLW	0.48	50	F481
		<u>2.93</u>		
Wholesaler, Retailer (132)				
(No companies in All Ordinaries Index)				
Manufacturing, Retailer (133)				
(No companies in All Ordinaries Index)				

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Retail, Investment (134)				
Charles Davis	DAV	0.06		F480
Govling Bros	GOW	0.04		na
David Jones	JOD	0.70	100	F481
Vox Adeon Holdings	VOX	0.03		F485
		<u>0.83</u>		
Chemist, Investor (135)				
(No companies in All Ordinaries Index)				
TOTAL RETAIL (13)		<u>3.77</u>		
TRANSPORT (14)				
Transport (141)				
(No companies in All Ordinaries Index)				
International Transport (142)				
T.N.T.	TNT	1.35	20	G511
		<u>1.35</u>		
Transport, Other Services (143)				
Brambles	BIL	1.12	50	G511
		<u>1.12</u>		
Transport & Security Services (144)				
Mayne Nicklaus	MAY	0.72	100	na
		<u>0.72</u>		
TOTAL TRANSPORT (14)		<u>3.18</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
MEDIA (15)				
Diversified Media (151)				
Bond Media Ent Ltd	BOM	0.23	100	N990
Fairfax (John) Ltd	ENT	0.09	(g)	na
News Corporation	FFX	2.20	50	C264
Northern Star Hldgs	NCP	0.33	20	C264
Qinter Australia	NSR	0.17	100	L913
	QAL	<u>3.02</u>		N990
Publishers (152)				
(No companies in All Ordinaries Index)				
Television (153)				
Assoc Broadcast Serv	ABS	0.06		L913
Country TV	CIT	0.03		na
Telecasters Nth Qld	TCT	0.05		L913
Total West Trans	TWH	0.04		G574
		<u>0.18</u>		
Radio (154)				
Wesgo	WEO	0.04		L913
		<u>0.04</u>		
Advertising, Marketing (155)				
(No companies in All Ordinaries Index)				
TOTAL MEDIA (15)		<u>3.23</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
BANKS & FINANCE (16)				
Bank (161)				
Advance Bank	ABA	0.17		I614
ANZ Bank	ANZ	2.50	20	I614
Bank of Queensland	BQD	0.04		I614
Bank of Singapore	BOS	0.03		na
Challenge Bank	CLB	0.11		I614
National Australia Bank	NAB	2.65	20	I614
Westpac	WBC	3.33	20	I614
		<u>8.83</u>		
Finance Company (162)				
HDFI Ltd	HDF	0.01		I615
Standard Chart Bank	SCB	0.03		I614
		<u>0.04</u>		
TOTAL BANKS & FINANCE (16)		<u>8.88</u>		
INSURANCE (17)				
Insurance Company (171)				
CIC Holdings	CIC	0.12		I623
FAI Insurance	FAI	0.69	50	I623
Nat Comm Union	NCU	0.17	100	I623
NZI Corporation	NZI	0.27	100	I616
QBE Insurance	QBE	0.19	100	I623
		<u>1.44</u>		
Insurance Broker (172)				
Lumley Corp	LME	0.08		I624
		<u>0.08</u>		
TOTAL INSURANCE (17)		<u>1.52</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (a)
ENTREPRENEURIAL INVESTORS (18)				
Entrepreneurial Investor (181)				
Acmex	ACX	0.07	50	na
Adelaide Steamship	AST	0.72	100	N990
AFP Invest Corp	AFP	0.30	50	I616
Ariadne	ARA	0.12	50	N990
Equiticorp	EQN	0.11	20	I616
Industrial Equity	IEL	0.95		N990
Inter Pacific Equities	IPE	0.05		na
Taylor J.N.	TJN	0.02		na
Western Capital	WFC	0.03		na
Westfield Capital	WFC	0.20	100	na
Westmex	WMX	0.08		na
		<u>2.65</u>		
HZ Entrepreneur (182)				
Arterly Investments	BRV	0.14		I616
Chase Corp	CHC	0.05		na
		<u>0.19</u>		
Brewing, Media, Property (183)				
Bond Corp	BON	0.63	50	N990
		<u>0.63</u>		
Brewing, Finance, Merchant (185)				
Elders IXL	EXL	3.18	20	N990
		<u>3.18</u>		
Media, Resources, Investment (186)				
Bell Group	BLL	0.49	20	N990
		<u>0.49</u>		
TOTAL ENTREPRENEURIAL INVESTORS (18)				
		<u>7.13</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
INVESTMENT & FINANCIAL SERVICES (19)				
Investment Trust (191)				
Armstrong	ARJ	0.03		na
		<u>0.03</u>		
Equity Investor (192)				
Argo	ARG	0.17		na
Aspermont	AMT	0.02		I615
Auswide	AWI	0.01		na
Aust Found Inv Co	AFI	0.25	100	I616
Battery GP	AOI	0.03		na
Bisley Invest	BGL	0.08		na
Carlton Invest	BIS	0.01		I615
Cumberland	CIN	0.04		na
Equitilink Ltd	CBC	0.13		na
Greater Pacific	EQK	0.05		na
Hudson Con	GPI	0.02		na
Hilton Corp	HCO	0.16		I623
Qintex	HLT	0.03		na
Quatro	QNT	0.04		na
Washington H. Soul Pat	QUO	0.14		N990
Wardley Trust	SOL	0.16		I616
	WAI	0.03		F489
		<u>1.37</u>		I615
Property Investor (193)				
(No companies in All Ordinaries Index)				
Trustee Company (194)				
Perm Trustees	PMT	0.03		na
Perpetual Trustees	PPT	0.10		I616
		<u>0.13</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Miscellaneous Financial Services (195)				
Clayton Robard Ltd	CYB	0.05		I616
First Invest	FIS	0.01		na
Helm corp	HCL	0.07		na
McIntosh	MSL	0.08		na
Rothwells	RWL	0.04		I615
		<u>0.25</u>		
Investment, Food, Property (196)				
Tooth & Co	TTH	0.11		L920
		<u>0.11</u>		
TOTAL INVESTMENT & FINANCIAL SERVICES (19) 1.90				
PROPERTY TRUSTS (20)				
Property Trust (201)				
Austore Prop	ASP	0.06		na
City Aust Prop	CAP	0.07		na
Capcount	CPY	0.09		na
Capital Prop	CPL	0.08		na
Capitaprime	CPF	0.06		na
General Prop Tr	GPT	0.85	50	I616
Gpt Split	GST	0.13		na
Hocker P.T.	HPT	0.07	50	I632
Kern Prop	KPF	0.13		I632
Macquarie Prop	MQP	0.06		na
National Mutual Pt	NMP	0.21	100	I624
Schroders Prop Fund	SCH	0.41	100	I616
Westfield Trust	WFT	0.61	100	I632
		<u>2.83</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Property Trust & Developer (202)				
Aust-Wide Trust	AWT	0.05		na
International Income Prop	IIP	0.03		na
Stockland	SCP	0.35	100	I616
		<u>0.43</u>		
TOTAL PROPERTY TRUSTS (20) 3.24				
MISCELLANEOUS SERVICES (21)				
Merchants & Agents (211)				
Steamships Trad Co	SST	0.05		na
		<u>0.05</u>		
Accommodation, Tourism, Leisure (212)				
Ballarat Brewing	BAB	0.06		na
Burswood Prop Trust	BSD	0.08		L914
Jupiters Trust	JPT	0.06		L914
Mirage Resorts	MIR	0.15		na
Seaworld	SWD	0.10		na
		<u>0.45</u>		
Petroleum Products (213)				
Ampol Limited	AMP	0.85	100	C277
Caltex	CTX	0.24	100	C277
		<u>1.09</u>		
Industrial Services (214)				
Group Property Serv	GPS	0.03		E424
Hastings Deering C	HDC	0.04		C336
Spotless Group	SPT	0.07		I616
Spotless Services	SPS	0.08		L900
		<u>0.22</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Computing & Office Services (215)				
Computer Power	CPW	0.10		na
Computer Resources	CRE	0.04		C264
		<u>0.14</u>		
Waste Disposal (216)				
(No companies in All Ordinaries Index)				
Medical Services (217)				
F.H. Faulding Hospitals	FHF HOA	0.15 0.05		C276 na
		<u>0.20</u>		
Other Personal Services (218)				
OPSM	OPS	0.24	100	K815
		<u>0.24</u>		
Miscellaneous Services (219)				
Feltex Int	FTI	0.07		na
GWA	GWA	0.12		C200
		<u>0.19</u>		
TOTAL MISCELLANEOUS SERVICES (21)				
		<u>2.58</u>		
MISCELLANEOUS INDUSTRIES (22)				
Miscellaneous (221)				
Airship	AHI	0.03		na
Arrowfield	ARF	0.05		na
Hanlimex	HMX	0.12		C334
Pro-Image Studios	PIH	0.08		L913
		<u>0.28</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
Automotive (Distributor, Parts, Tyres) (222)				
G.U.D. Holdings	GUD	0.04		C323
		<u>0.04</u>		
Textiles (223)				
(No companies in All Ordinaries Index)				
Household Durables (White Goods, Furniture) (224)				
Email	EHL	0.50	100	C335
		<u>0.50</u>		
High Technology (225)				
Barrack Tech	BKT	0.04		na
Exicom	EXI	0.06		na
Hemtec	HET	0.10		na
Sarich Tech	STT	0.51	100	na
		<u>0.71</u>		
Sugar (226)				
Bundaberg Sugar	BBS	0.15		A019
		<u>0.15</u>		
Pastoral, Agricultural (227)				
Aust Agric Co	AAG	0.08		A018
		<u>0.08</u>		
Electrical, Electronics (228)				
(No companies in All Ordinaries Index)				
TOTAL MISCELLANEOUS INDUSTRIES (22)				
		<u>1.76</u>		

... Continued

Table 4.1 Continued

ASX Industry Classification/ Company Name	ASX Code	Percentage of All Ordinaries Index (a)	20, 50, and 100 Leaders (b)	ASIC Code (c)
DIVERSIFIED INDUSTRIALS (23)				
Diversified Industrial (231)				
Apex Pac	APX	0.02		L923
BTR Nyllex	BTR	2.10	50	C200
Burns Philip	BPC	0.65	50	N990
Coventry Group	CYG	0.06		F473
Girvan Corp	GVN	0.19		E411
McPhersons	MCP	0.13		C200
Metal Mfg's	MHF	0.41	100	C295
Pacific Dunlop	PDP	1.74	50	N990
Parbury Henty	PHH	0.03		F471
Parry Corp	PCL	0.02		na
Petersville Sleigh	PSL	0.34	100	C210
Reil Corp	RLC	0.04	100	I616
Wesfarmers	WES	0.33	100	F475
Wormald	WOI	0.24	100	C335
		<u>6.30</u>		
Sugar, Building Materials, Coal (232)				
CSR	CSR	1.97	20	C200
		<u>1.97</u>		
Forest Products, Building (233)				
Fletcher Challenge	FLC	0.68	100	I616
		<u>0.68</u>		
Electronics, Media (234)				
AWA	AWA	0.22	100	C335
		<u>0.22</u>		
Media, Textiles (235)				
Linter Group	LNG	0.13		L913
		<u>0.13</u>		
TOTAL DIVERSIFIED INDUSTRIALS (23)		<u>9.30</u>		

A listing of the companies and their weights in the All Ordinaries Index as at the 31st May 1988 is given in Stock Exchange Research (1988b). These companies were allocated across the stock exchange industry classifications on the basis of Stock Exchange Research (1987b) which gives the industry classification of all listed companies.

- (a) Source: Stock Exchange Research (1988b). The percentages are calculated using aggregate market values as at the 31st May 1988.
- (b) The 20 and 50 leaders are obtained from Stock Exchange Research (1987a) groups 26 and 31, respectively. The 100 leaders are obtained from the list of the 100 top companies as a percentage of the All Ordinaries Index on the 31st May 1988; see Stock Exchange Research (1988a). Note that the 100 leaders account for over 80 per cent of the market capitalisation of the All Ordinaries Index.
- (c) The top 1000 Australian companies (based on revenue) have been matched to ASIC codes in a survey conducted by Australian Business and IBIS and sponsored by Deloitte, Haskins, and Sells; see Australian Business (1988a, b). Note that to establish the concordance between the ASIC codes listed here with those of Table 3.3 simply ignore the alphabetical characters.
- (d) Not available from Australian Business (1988a, b). That is, these companies are not in the top 1000 Australian companies ranked on revenue earned.
- (e) Note that although BHP Gold Mines is in the 20 leaders group it is not in the 50 leaders group. However, it is in the 100 leaders group.
- (f) Note that although ACI International is in the 50 leaders it is not in the All Ordinaries Index.
- (g) Note that although Fairfax Ltd. is in the 50 leaders it is not in the All Ordinaries Index.

Ten corporations were initially selected for mapping across ORANI Industries; see Table 4.2. They comprise in total only about 9 per cent of the market capitalisation of the All Ordinaries Index. However, they meet the requirements of the four criteria set out above and they cover a wide range of economic activities including the production of: alcohol, banking services, bauxite, coal, concrete, electrical goods, engineering services, food, household durables, houses, petroleum products, and sugar.

An additional five corporations were included in this study, even though they did not meet the above selection criteria; see Table 4.2. These corporations were included as they are either subsidiary or associate companies of the initial ten corporations selected. Furthermore, they all meet selection criteria (i) and (ii). That is, they have a market capitalisation of at least \$100 million and the value of the average monthly sales of their shares over the last year is at least \$1 million. It is explained in section 5 why it was necessary to include these additional five corporations. Note that the fifteen corporations in total comprise 11.23 per cent of the All Ordinaries Index.

TABLE 4.2: CORPORATIONS SELECTED FOR MAPPING ACROSS ORANI INDUSTRIES

Company Name	ASX Code	ASX Industry Classification	ASIC Code (a)	Percentage of All Ordinaries Index (b)	Number of Shares Issued (c)	Share Price 31 May 1988 (c)	Market Capitalisation 31 May 1988 (d)	Average Monthly Share Sales over the Period June 1987 to May 1988 (e)
1 * Amalgamated Wireless	AWA	Electronics, Media (23)	C335	0.22	114,903,390	2.70	310.2	1,096
2 Ampol	APF	Petroleum Products (21)	C277	0.85	328,277,829	3.65	1,198.2	512
3 Ampol Exploration	APX	Oil/Gas Producer (04)	B130	0.10	117,481,807	3.15	370.1	3,129
4 Arncliffe	ARN	Miller, Baker, Food (09)	C216	0.49	139,224,753	4.94	687.8	1,025
5 Australian National Industries	ANI	Heavy Engineering (11)	C336	0.49	370,822,114	1.85	686.0	6,775
6 Bundaberg Sugar	BBS	Sugar (22)	A019	0.15	67,390,579	3.10	208.9	1,094
7 Coal & Allied Industries	CMA	Coal (03)	B120	0.08	31,536,777	4.30	135.6	262
8 Comalco	CNC	Bauxite (02)	C295	1.72	560,613,045	4.30	2,410.6	10,533
9 Enall	EHL	Household Durables (White Goods, Furniture) (22)	C335	0.50	174,176,176	4.00	696.7	2,675
10 Giant Resources	GTR	Gold, Investment (01)	-	0.23	270,311,290	1.20	324.4	11,217
11 Jennings Industries JEN	JEN	Building Contractor (06)	E411	0.23	126,291,771	2.52	318.3	2,678
12 Oil Search	OSH	Oil/Gas Explorer (04)	-	0.19	191,298,610	1.36	260.2	4,070
13 Pioneer Concrete	PNC	Concrete, Petroleum (07)	E410	1.44	632,130,266	3.20	2,022.8	19,678
14 Howard Smith	SHI	Coal, Sugar, Transport (03)	N990	0.24	108,190,698	3.05	330.0	794
15 Westpac	WBC	Bank (16)	1614	3.33	620,950,709	7.54	4,682.0	27,434

(a) This company meets the four selection criteria set out in section 4.
 (b) ASIC codes as reported in a survey conducted by Australian Business and IBIS and sponsored by Deloitte, Haskins, and Sells (Australian Business (1988a,b)); see Table 4.1.
 (c) Source: Personal Investment Research (1988b). The percentages are calculated using aggregate market values as at the 31st May 1988.
 (d) Estimated by multiplying the number of issued shares by the share price as at the 31st May 1988.
 (e) Estimated by multiplying the volume of shares traded by the share price as at the 31st May 1988.

5. THE MAPPING

In this section we estimate for the 15 corporations listed in Table 4.2 a mapping of their revenue, costs, and assets across the ORANI Industries. The objective is to base the mapping on data derived from "ownership accounting" methods; see Figure 5.1. This mapping is estimated using the most recent data available. A preliminary mapping from the Australian Stock Exchange industry classifications to the ORANI industry classifications is presented in Table 5.1. This mapping provides a starting point for the mapping of corporations to ORANI Industries. Each corporation will be discussed in turn. However, first a comprehensive strategy for estimating the mapping is given in Figure 5.2. This strategy includes how to cope with complications such as subsidiary companies and reciprocal holdings of companies. Both of these complications occur in the set of corporations listed in Table 4.2. For example, Pioneer Concrete has investments in Ampol and Oil Search. Ampol, in turn, has significant investments in Ampol Exploration and Giant Resources. Finally, reciprocal holdings are observed between the companies Coal and Allied Industries and Howard Smith.

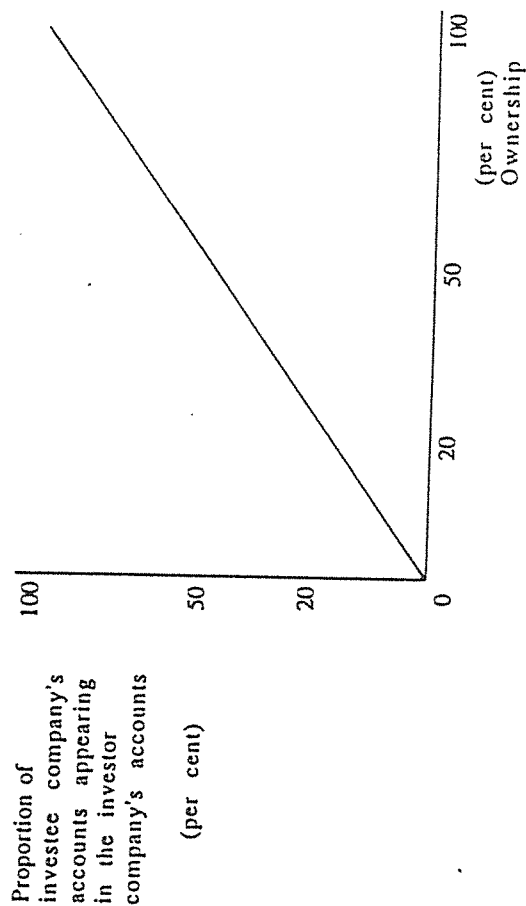


FIGURE 5.1: OWNERSHIP ACCOUNTING

TABLE 5.1: A PRELIMINARY MAPPING FROM THE AUSTRALIAN STOCK EXCHANGE INDUSTRY CLASSIFICATIONS TO THE ORANI INDUSTRY CLASSIFICATIONS *

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
GOLD		
011 Gold Producer	(a)	13 Non-Ferrous Metal Ores 17 Services to Mining
012 Gold Explorer	(b)	13 Non-Ferrous Metal Ores 17 Services to Mining
013 Gold, Other Mining	(b)	13 Non-Ferrous Metal Ores 64 Other Basic Metals
014 Gold, Oil	(c)	13 Non-Ferrous Metal Ores 15 Oil, Gas, and Brown Coal
015 Gold, Copper	(a)	13 Non-Ferrous Metal Ores
016 Gold, Investment	(c)	13 Non-Ferrous Metal Ores
OTHER METALS		
021 Diversified Mining	(b)	12 Ferrous Metal Ores 13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal 16 Other Minerals 17 Services to Mining 64 Other Basic Metals
022 Base Metals	(d)	13 Non-Ferrous Metal Ores
023 Mineral Sands	(a)	13 Non-Ferrous Metal Ores 16 Other Minerals
024 Bauxite (Aluminium)	(b)	13 Non-Ferrous Metal Ores 64 Other Basic Metals

* Footnotes appear at the end of the table.

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
025 Diamonds	(a)	16 Other Minerals
026 Mining (Producer)	(a)	13 Non-Ferrous Metal Ores
027 Mineral (Explorer)	(d)	17 Services to Mining
028 Mining Investment	(c)	12 Ferrous Metal Ores 13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal 16 Other Minerals 17 Services to Mining
SOLID FUELS		
031 Diversified Fuels	(c)	13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal
032 Coal	(b)	14 Black Coal 15 Oil, Gas, and Brown Coal
033 Uranium	(d)	13 Non-Ferrous Metal Ores
034 Coal, Sugar, Transport	(c)	6 Other Farming (Sugar Cane, Fruit, and Nuts) 14 Black Coal 15 Oil, Gas, and Brown Coal 93 Road Transport
035 Coal, Gold	(c)	13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal
036 Coal, Oil	(c)	14 Black Coal 15 Oil, Gas, and Brown Coal
OIL & GAS		
041 Oil/Gas Producer	(a)	13 Non-Ferrous Metal Ores 15 Oil, Gas, and Brown Coal 17 Services to Mining 56 Petrol and Coal Products

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
042 Oil/Gas Explorer	(d)	15 Oil, Gas, and Brown Coal
043 Oil/Gas Investor	(d)	15 Oil, Gas, and Brown Coal
044 Gas Distributor, Pipelines	(a)	85 Gas
DIVERSIFIED RESOURCES		
051 Diversified Resources	(c)	12 Ferrous Metal Ores 13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal 16 Other Minerals 17 Services to Mining
052 Oil, Steel, Mining	(c)	12 Ferrous Metal Ores 15 Oil, Gas, and Brown Coal 63 Basic Iron and Steel
053 Mining, Smelting, Paper	(c)	12 Ferrous Metal Ores 13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal 16 Other Minerals 17 Services to Mining 44 Pulp, Paper, & Paperboard 64 Other Basic Metals
054 Fuels, Metals, Industrial	(c)	12 Ferrous Metal Ores 13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal 17 Services to Mining 78 Other Machinery and Plant 89 Wholesale Trade
055 Coal, Gold, Uranium, Oil	(b)	13 Non-Ferrous Metal Ores 14 Black Coal 15 Oil, Gas, and Brown Coal
056 Oil, Gold, Investment	(c)	13 Non-Ferrous Metal Ores 15 Oil, Gas, and Brown Coal

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
DEVELOPERS & CONTRACTORS		
061 Building Contractor	(b)	87 Residential Building 88 Other Construction 102 Other Business Services
062 Property Developer/Manager	(a)	102 Other Business Services
063 Residential Land Developer	(a)	102 Other Business Services
064 Developer, Retail	(a)	102 Other Business Services
065 Developer, Financial Services	(d)	102 Other Business Services
BUILDING MATERIALS		
071 Building Materials	(b)	41 Veneers and Boards 42 Joinery and Wood n.e.c. 44 Pulp, Paper, & Paperboard 45 Bags, Fibreboard Boxes 46 Paper Products n.e.c. 47 Newspapers and Books 51 Paints, Varnishes 88 Other Construction 89 Wholesale Trade
072 Cement	(a)	59 Cement
073 Bricks, Pipes, Tiles	(a)	58 Clay Prods., Refractories 59 Cement
074 Timber & Board	(b)	40 Sawmill Products 41 Veneers and Boards 42 Joinery and Wood n.e.c.
075 Concrete, Petroleum ALCOHOL & TOBACCO	(d)	60 Ready Mixed Concrete
081 Brewer	(d)	27 Beer and Malt
082 Vinter	(d)	28 Other Alcoholic Drinks

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
083 Tobacco	(a)	29 Tobacco Products
084 Tobacco & Food	(b)	18 Meat Products 25 Other Food Products 26 Soft Drinks and Cordials 29 Tobacco Products 102 Other Business Services
FOOD & HOUSEHOLD		
091 Food	(b)	18 Meat Products 19 Milk Products 22 Flour and Cereal Products 23 Bread, Cakes & Biscuits 25 Other Food Products
092 Flour Miller, Bakeries	(a)	22 Flour and Cereal Products
093 Miller, Baker, Food	(a)	22 Flour and Cereal Products 23 Bread, Cakes & Biscuits
094 Soft Drinks/Confectionery	(e)	24 Confectionery and Cocoa 26 Soft Drinks and Cordials
095 Non-Food Household Goods	(c)	81 Plastic Products, etc
096 Household Goods, Chemicals	(c)	75 Other Electrical Goods
CHEMICALS		
101 Chemicals	(a)	50 Other Basic Chemicals
102 Fertilizers	(d)	49 Chemical Fertilizers
103 Chemical, Fertilizers, Paints	(b)	49 Chemical Fertilizers 50 Other Basic Chemicals
104 Industrial Gases	(b)	50 Other Basic Chemicals
105 Salt, Horticulture	(c)	49 Chemical Fertilizers 50 Other Basic Chemicals

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
ENGINEERING		
111 Heavy Engineering	(b)	63 Basic Iron and Steel 76 Agricultural Machinery 77 Construction Machinery 78 Other Machinery and Plant
112 Steel Merchant & Agent	(d)	89 Wholesale Trade
113 Machinery Manufacturer & Distributor	(e)	76 Agricultural Machinery 77 Construction Machinery 78 Other Machinery and Plant 91 Mechanical Repairs 92 Other Repairs
114 Engineering Contractor	(c)	102 Other Business Services
115 Light Engineering	(b)	65 Structural Metal Goods 66 Sheet Metal Products 67 Other Metal Products 76 Agricultural Machinery 77 Construction Machinery 78 Other Machinery and Plant
116 Aircraft	(a)	71 Aircraft
PAPER & PACKAGING		
121 Packaging, Building Materials	(d)	57 Glass and Glass Products
122 Forest Products, Packaging, Trading	(b)	44 Pulp, Paper & Paperboard 45 Bags, Fibreboard Boxes 46 Paper Products n.e.c.
123 Forest Products, Paper, Packaging	(b)	40 Sawmill Products 41 Veneers and Boards 42 Joinery and Wood n.e.c.
124 Paper Merchant, Converter	(b)	44 Pulp, Paper & Paperboard 45 Bags, Fibreboard Boxes 46 Paper Products n.e.c.
125 Can Manufacturer	(a)	66 Sheet Metal Products

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
126 Plastic Bottles	(d)	81 Plastic Products, etc
RETAIL		
131 Retail	(b)	90 Retail Trade
132 Wholesaler, Retailer	(c)	89 Wholesale Trade 90 Retail Trade
133 Manufacturing, Retailer	(d)	90 Retail Trade
134 Retail, Investment	(b)	90 Retail Trade
135 Chemist, Investor	(d)	90 Retail Trade
TRANSPORT		
141 Transport	(c)	93 Road Transport 94 Rail and Other Transport 95 Water Transport 96 Air Transport
142 International Transport	(d)	93 Road Transport
143 Transport, Other Services	(d)	96 Air Transport
144 Transport & Security Services	(c)	93 Road Transport 102 Other Business Services
MEDIA		
151 Diversified Media	(b)	47 Newspapers and Books 48 Commercial Printing 109 Entertainment, Leisure
152 Publishers	(c)	47 Newspapers and Books 48 Commercial Printing
153 Television	(a)	109 Entertainment, Leisure
154 Radio	(a)	109 Entertainment, Leisure

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
155 Advertising, Marketing	(d)	102 Other Business Services
BANKS & FINANCE		
161 Bank	(a)	98 Banking
162 Finance Company	(a)	98 Banking 99 Non-Bank Finance
INSURANCE		
171 Insurance Company	(a)	100 Investment and Services 101 Insurance and Services
172 Insurance Broker	(a)	101 Insurance and Services
ENTREPRENEURIAL INVESTORS		
181 Entrepreneurial Investor	(b)	100 Investment and Services
182 NZ Entrepreneur	(a)	100 Investment and Services
183 Brewing, Media, Property	(c)	27 Beer and Malt 47 Newspapers and Books 102 Other Business Services 109 Entertainment, Leisure
185 Brewing, Finance, Merchant	(c)	27 Beer and Malt 100 Investment and Services 102 Other Business Services
186 Media, Resources, Investment	(c)	14 Black Coal 15 Oil, Gas, and Brown Coal 47 Newspapers and Books 100 Investment and Services 109 Entertainment, Leisure
INVESTMENT & FINANCIAL SERVICES		
191 Investment Trust	(d)	100 Investment and Services

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
192 Equity Investor	(b)	90 Retail Trade 99 Non-Banking Finance 100 Investment and Services 101 Insurance and Services
193 Property Investor	(d)	100 Investment and Services
194 Trustee Company	(a)	100 Investment and Services
195 Miscellaneous Financial Services	(a)	99 Non-Banking Finance 100 Investment and Services
196 Investment, Food, Property	(b)	110 Restaurants, Hotels
PROPERTY TRUSTS		
201 Property Trust	(a)	100 Investment and Services 101 Insurance and Services 102 Other Business Services
202 Property Trust & Developer	(a)	100 Investment and Services
MISCELLANEOUS SERVICES		
211 Merchants & Agents	(c)	89 Wholesale Trade
212 Accommodation, Tourism, Leisure	(a)	109 Entertainment, Leisure
213 Petroleum Products	(a)	56 Petrol and Coal Products
214 Industrial Services	(b)	76 Agricultural Machinery 77 Construction Machinery 78 Other Machinery and Plant 88 Other Construction 100 Investment and Services 111 Personal Services
215 Computing & Office Services	(a)	48 Commercial Printing
216 Waste Disposal	(c)	108 Welfare and Religion
217 Medical Services	(a)	52 Pharmaceutical Goods

... Continued

Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
218 Other Personal Services	(a)	106 Health
219 Miscellaneous Services	(c)	58 Clay Products, Refractories 68 Motor Vehicles and Parts 89 Wholesale Trade 100 Investment and Services
MISCELLANEOUS INDUSTRIES		
221 Miscellaneous	(a)	72 Scientific Equipment 109 Entertainment, Leisure
222 Automotive (Distributor, Parts, Tyres)	(a)	68 Motor Vehicles and Parts
223 Textiles	(c)	30 Cotton Ginning, etc 31 Man-Made Fibres, Yarns 32 Cotton Yarns and Fabrics 33 Worsted and Woolien Yarns 34 Textile Finishing 35 Textile Floor Overlays 36 Other Textile Products
224 Household Durables (White Goods, Furniture)	(d)	43 Furniture and Mattresses 73 Electronic Equipment
225 High Technology	(c)	68 Motor Vehicles and Parts 97 Communication
226 Sugar	(b)	6 Other Farming (Sugar Cane, Fruit, and Nuts)
227 Pastoral, Agricultural	(b)	1 Pastoral Zone 2 Wheat-Sheep Zone 3 High Rainfall Zone
228 Electrical, Electronics	(d)	73 Electronic Equipment

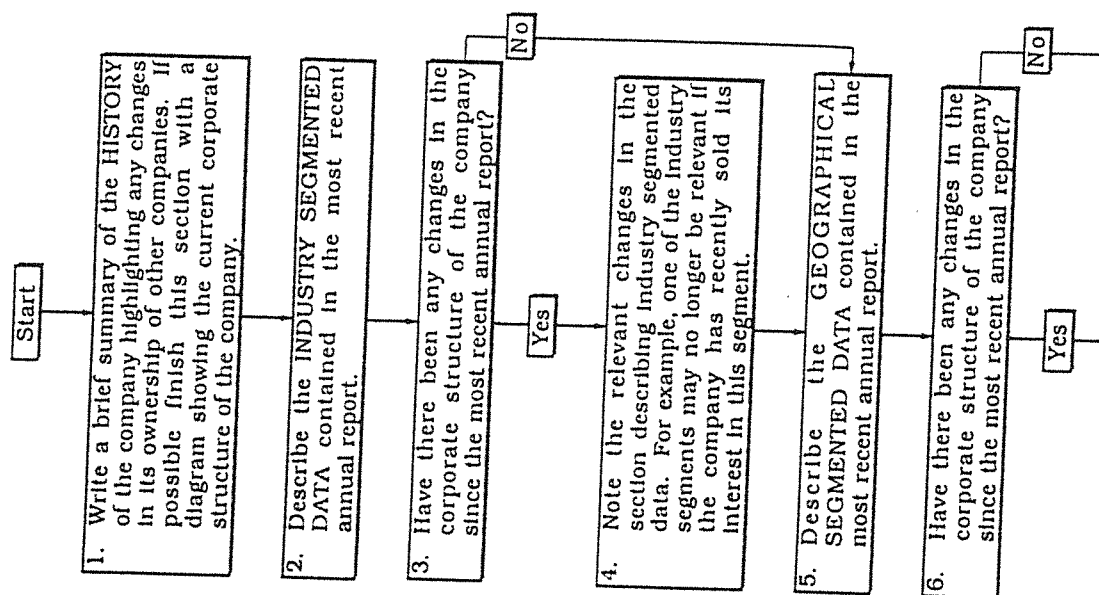
... Continued

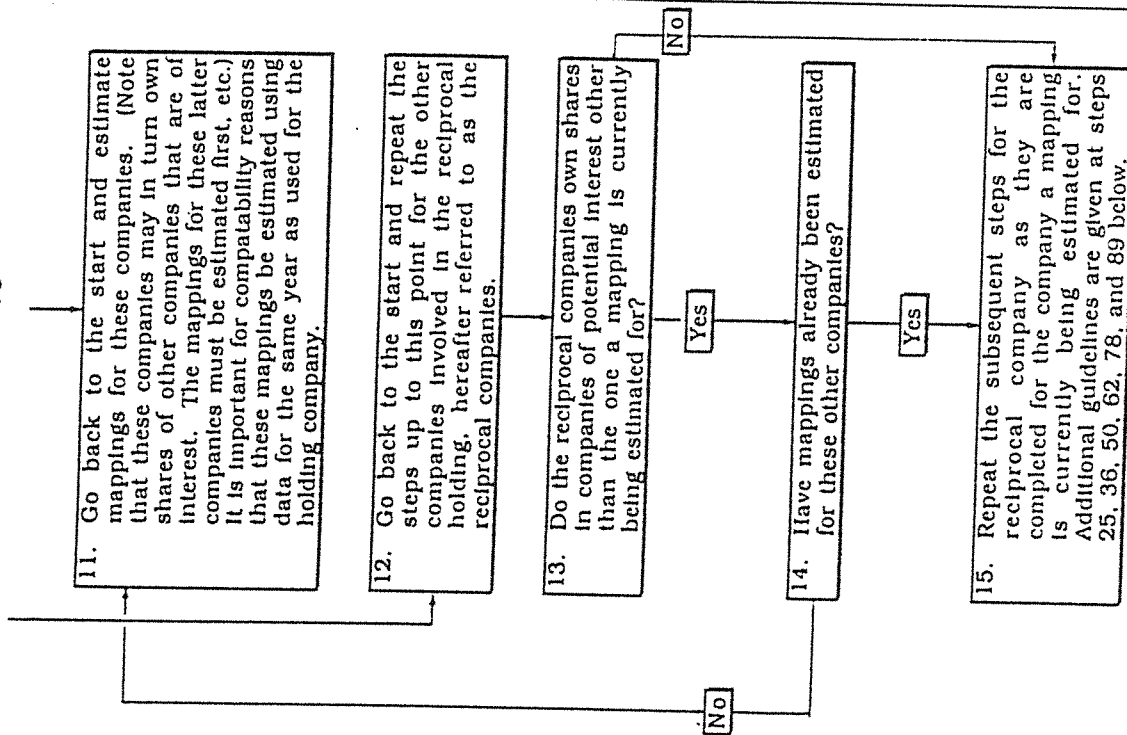
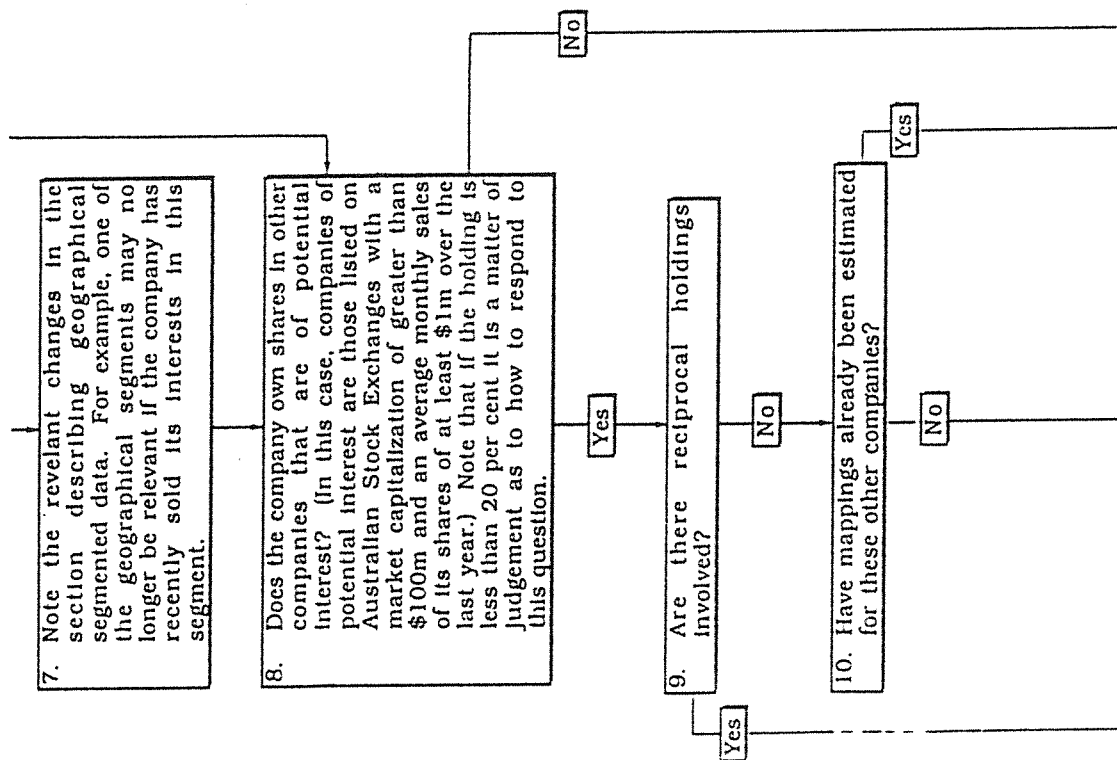
Table 5.1 Continued

ASX Industry Classification	Basis for Mapping	ORANI Industry Classification
DIVERSIFIED INDUSTRIALS		
231 Diversified Industrial	(b)	25 Other Food Products 40 Sawmill Products 64 Other Basic Metals 73 Electronic Equipment 74 Household Appliances 75 Other Electrical Goods 81 Plastic Products, etc 87 Residential Building 88 Other Construction 89 Wholesale Trade 92 Other Repairs 100 Investment and Services 110 Restaurants, Hotels
232 Sugar, Building Materials, Coal	(c)	14 Black Coal 25 Other Food Products 41 Veneers and Boards 60 Ready Mixed Concrete
233 Forest Products, Building	(a)	100 Investment and Services
234 Electronics, Media	(a)	74 Electronic Equipment
235 Media, Textiles	(a)	109 Entertainment, Leisure

- (a) ASIC codes as reported in a survey conducted by Australian Business and IBIS and sponsored by Deloitte, Haskins, and Sells (Australian Business (1988a,b)); see Table 4.1.
- (b) Method (a) above supplemented with references to ABS (1985a,b).
- (c) References to ABS (1985a,b).
- (d) de Valence (1988).
- (e) de Valence (1988) supplemented with references to ABS (1985a,b).

FIGURE 5.2: STRATEGY FOR ESTIMATING A MAPPING OF THE ACTIVITIES OF A CORPORATION ACROSS ORANI INDUSTRIES





16. Estimate the contributions to consolidated revenue, pre-tax profit, and assets from the other companies of interest. These contributions must be broken down by industry and geographical segments. Note that for the subsidiary companies of interest, 100 per cent of their revenue, pre-tax profits, and assets need to be distinguished even if the degree of ownership of the subsidiary is less than 100 per cent. In the case of associate companies of interest: the contribution to consolidated revenue may include dividends (unless the revenue is only sales revenue); the contribution to consolidated pre-tax profit will also include dividends (note, if these were franked then the dividend tax paid by the associate company should be added back); and the contribution to consolidated assets will usually be the book value of the investment in the associate company.

17. Estimate a mapping of the geographical segments across the industry segments. Then estimate a mapping of the industry segments across ORANI industries. (If shares are owned in other companies of interest, note their mapping separately.) If possible, the industry segments should each map to just one ORANI industry.

18. Begin estimation of REVENUE SHARES.

19. Estimate the mapping of total revenue (i.e., domestic and foreign revenue) across ORANI industries, see steps 20 to 27 below.

20. Does the company own shares in other companies that are of potential interest?

Yes

No

21. Use the mapping estimated at step 17 to allocate total revenue across ORANI industries.

22. Convert the total revenue data that were derived from consolidated accounts into data that reflect ownership rather than control, see steps 23 to 28 below.

23. Subtract from consolidated total revenue the contributions (by industry and geographical segments) from these companies (see step 16).

24. Use the mapping estimated at step 17 to allocate total revenue (net of the contributions from the other companies of interest) across ORANI industries.

25. Are there reciprocal holdings involved?

Yes

No

26. Estimate the ownership by the holding company of the total revenue of the subsidiary and associate companies mapped across ORANI Industries. Note that this should simply involve taking an appropriate percentage of the existing total revenue mappings for the subsidiary and associate companies.

27. Estimate the mapping of total revenue across ORANI Industries by adding across the results calculated at steps 24 and 26.

28. Follow the procedure set out in Appendix A.1 to estimate the mapping of total revenue across ORANI Industries.

29. Estimate the mapping of foreign and domestic revenue across ORANI Industries, see steps 30 to 41 below.

30. Does the company own shares in other companies that are of potential interest?

Yes

No

31. Use the mapping estimated at step 17 to allocate foreign revenue across ORANI Industries.

32. Subtract the foreign revenue figures (see step 30) from the total revenue figures (see step 21) to estimate a mapping of domestic revenue across ORANI Industries.

33. Convert the foreign and domestic revenue data that was derived from consolidated accounts into data that reflect ownership rather than control, see steps 34 to 41 below.

34. Subtract from consolidated foreign revenue the foreign contributions (by industry) from these companies (see step 16).

35. Use the mapping estimated at step 17 to allocate foreign revenue (net of the contributions from other companies of interest) across ORANI Industries.

36. Are there reciprocal holdings involved?

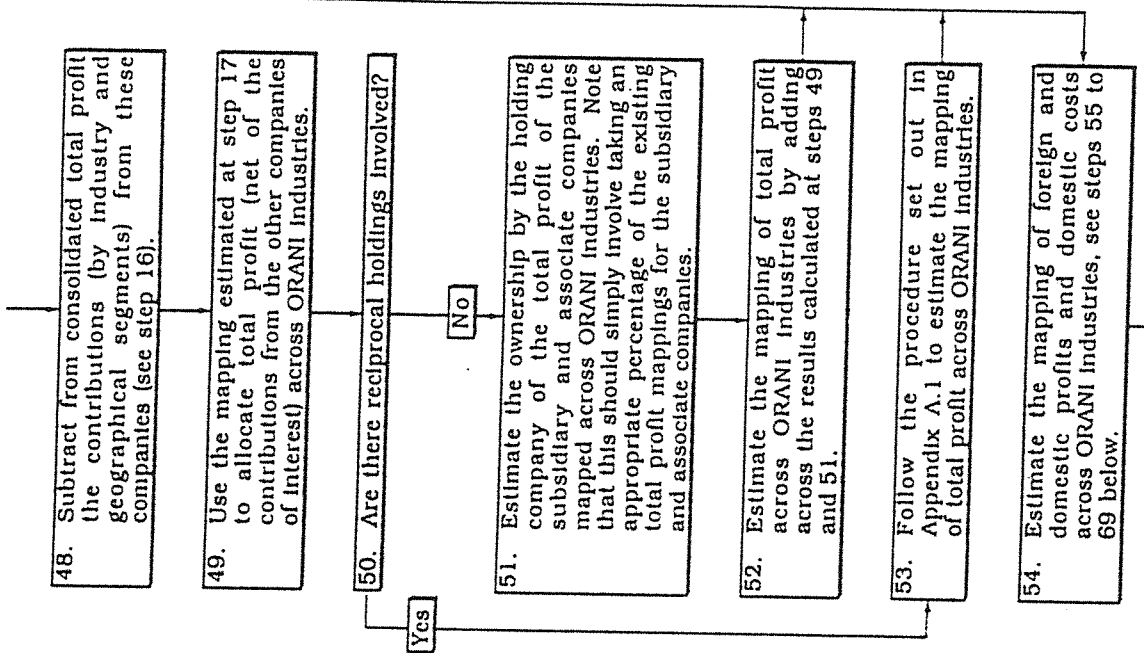
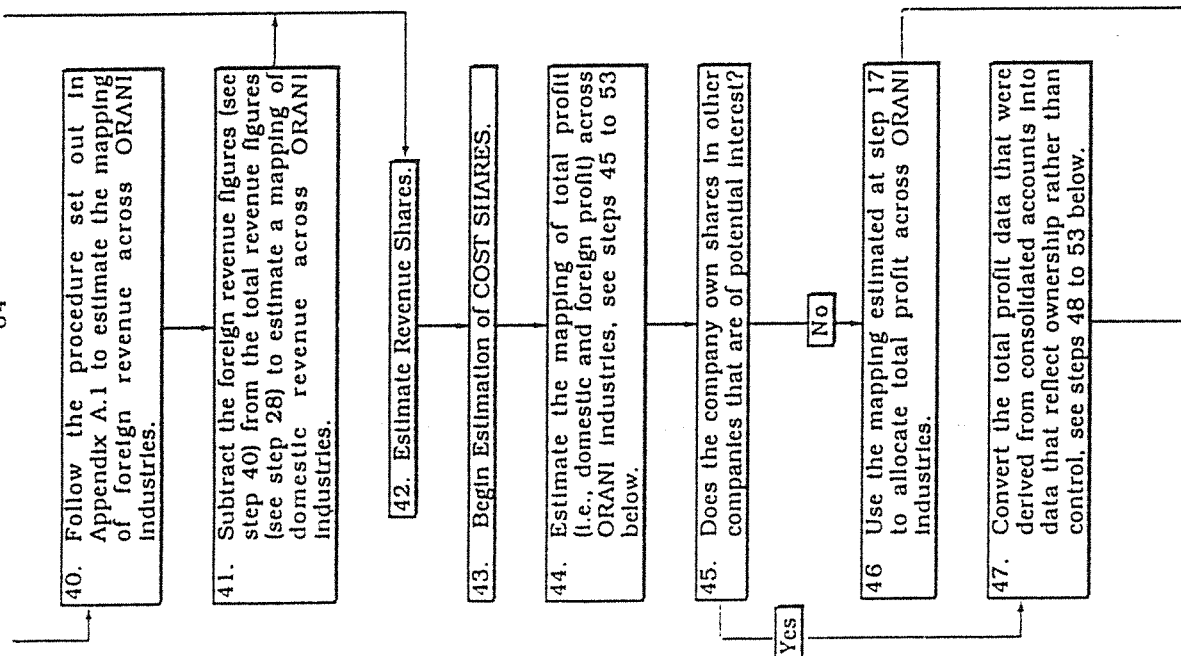
Yes

No

37. Estimate the ownership by the holding company of the foreign revenue of the subsidiary and associate companies mapped across ORANI Industries. Note that this should simply involve taking an appropriate percentage of the existing foreign revenue mappings for the subsidiary and associate companies.

38. Estimate the mapping of foreign revenue across ORANI Industries by adding across the results calculated at steps 33 and 35.

39. Subtract the foreign revenue figures (see step 38) from the total revenue figures (see step 27) to estimate a mapping of domestic revenue across ORANI Industries.



55. Does the company own shares in other companies that are of potential interest?

Yes

No

56. Use the mapping estimated at step 17 to allocate foreign profits across ORANI industries.

57. Convert the foreign profit figures (see step 56) from the total profit figures (see step 46) to estimate a mapping of domestic profits across ORANI industries.

58. Subtract the domestic profit figures (see step 57) from the domestic revenue figures (see step 32) to estimate a mapping of domestic costs across ORANI industries.

59. Convert the foreign and domestic profit and domestic cost data that were derived from consolidated accounts into data that reflect ownership rather than control, see steps 60 to 69 below.

60. Subtract from consolidated foreign profit the foreign contributions (by industry) from these companies (see step 16).

61. Use the mapping estimated at step 17 to allocate foreign profit (net of the contributions from other companies of interest) across ORANI industries.

62. Are there reciprocal holdings involved?

Yes

No

63. Estimate the ownership by the holding company of the foreign profit of the subsidiary and associate companies mapped across ORANI industries. Note that this should simply involve taking an appropriate percentage of the existing foreign profit mappings for the subsidiary and associate companies.

64. Estimate the mapping of foreign profit across ORANI industries by adding across the results calculated at steps 61 and 63.

65. Subtract the foreign profit figures (see step 64) from the total profit figures (see step 52) to estimate a mapping of domestic profit across ORANI industries.

66. Subtract the domestic profit figures (see step 65) from the domestic revenue figures (see step 39) to estimate a mapping of domestic costs across ORANI industries.

67. Follow the procedure set out in Appendix A.1 to estimate the mapping of foreign profit across ORANI industries.

68. Subtract the foreign profit figures (see step 67) from the total profit figures (see step 53) to estimate a mapping of domestic profits across ORANI Industries.

69. Subtract the domestic profit figures (see step 68) from the domestic revenue figures (see step 41) to estimate a mapping of domestic costs across ORANI Industries.

70. Estimate Cost Shares.

71. Begin estimation of ASSET SHARES.

72. Estimate the mapping of total assets (i.e., domestic and foreign assets) across ORANI Industries, see steps 73 to 81 below. If possible, revalue assets at current costs.

73. Does the company own shares in other companies that are of potential interest?

Yes

No

74. Use the mapping estimated at step 17 to allocate total assets across ORANI Industries.

75. Convert the total asset data that were derived from consolidated accounts into data that reflect ownership rather than control, see steps 76 to 81 below.

76. Subtract from consolidated total assets the contributions (by industry and geographical segments) from these companies (see step 16).

77. Use the mapping estimated at step 17 to allocate total assets (net of the contributions from the other companies of interest) across ORANI Industries.

78. Are there reciprocal holdings involved?

Yes

No

79. Estimate the ownership by the holding company of the total assets of the subsidiary and associate companies mapped across ORANI Industries. Note that this should simply involve taking an appropriate percentage of the existing total assets mappings for the subsidiary and associate companies.

80. Estimate the mapping of total assets across ORANI Industries by adding across the results calculated at steps 77 and 79.

81. Follow the procedure set out in Appendix A.1 to estimate the mapping of total assets across ORANI Industries.

82. Calculate the mapping of foreign and domestic assets across ORANI Industries, see steps 83 to 94 below.

83. Does the company own shares in other companies that are of potential interest?

Yes

No

84. Use the mapping estimated at step 17 to allocate foreign assets across ORANI Industries.

85. Subtract the foreign asset figures (see step 84) from the total asset figures (see step 74) to estimate a mapping of domestic assets across ORANI Industries.

86. Convert the foreign and domestic asset data that was derived from consolidated accounts into data that reflect ownership rather than control, see steps 87 to 94 below.

87. Subtract from consolidated foreign assets the foreign contributions (by industry) from these companies (see step 16).

88. Use the mapping estimated at step 17 to allocate foreign assets (net of the contributions from other companies of interest) across ORANI Industries.

89. Are there reciprocal holdings involved?

Yes

No

90. Estimate the ownership by the holding company of the foreign assets of the subsidiary and associate companies mapped across ORANI Industries. Note that this should simply involve taking an appropriate percentage of the existing foreign asset mappings for the subsidiary and associate companies.

91. Estimate the mapping of foreign assets across ORANI Industries by adding across the results calculated at steps 88 and 90.

92. Subtract the foreign asset figures (see step 91) from the total asset figures (see step 80) to estimate a mapping of domestic assets across ORANI Industries.

93. Follow the procedure set out in Appendix A.1 to estimate the mapping of foreign assets across ORANI Industries.

94. Subtract the foreign asset figures (see step 93) from the total asset figures (see step 81) to estimate a mapping of domestic assets across ORANI Industries.

95. Estimate Asset Shares.

Finish

5.1 Amalgamated Wireless (AWA)

5.1.1 History

According to Hilton (1988), AWA was formed in 1913 to take over from the Australian Wireless Company Ltd and the Australian branch of Marconi's Wireless Telegraph Company Ltd, London. By 1927, AWA was operating 30 radio stations and was producing a variety of radio consumer goods and radio valves. In the 1930's, AWA expanded into telephone equipment as a supplier to the public sector monopoly now called Telecom. During the Second World War, AWA was involved in defence production. AWA has continued to maintain extensive business interests in support of Australia's defence needs. Since the War, AWA has further diversified into general electrical services (largely to electrical utilities), computers, microelectronics, electronic betting equipment for race tracks, traffic lights and controls, and into general consumer electronics. Finally, in 1988 AWA sold its radio broadcasting interests; see Crawford (1988).

5.1.2 Industry Segments

According to note 19 of the 1987 annual report (see Amalgamated Wireless (1987, p. 29)), the AWA group operates in three industries: (1) manufacturing, importing and merchandising of electronic and electrical equipment; (2) the installation, servicing and operation of electronic equipment and electrical and plumbing installation and service; and (3) the operation of radio broadcasting stations. The

operating profit (before taxation), turnover, and total assets for 1986-87 in these three segments and a fourth segment covering group services and investments were:

	Profit (\$'000)	Turnover (\$'000)	Assets (\$'000)
(1) Electronic and Electrical Equipment	19,153	371,236	240,201
(2) Contracting and Service	5,808	113,111	59,562
(3) Radio Broadcasting	1,615	23,208	10,952
(4) Group Services and Investments	(52,903)	707	89,582
	<u>(26,327)</u>	<u>508,262</u>	<u>400,297</u>

Two points should be noted about the above figures. The first is that the loss of about \$50m in group services and investments was due to a foreign exchange trading loss. The second point is that AWA no longer operates in radio broadcasting, as was mentioned above. Thus, the results for the radio broadcasting segment are not relevant for estimates covering the period 1987-88.

As an aside, note that Hilton (1988, p. 5) estimates that AWA's sales pattern for 1988-89 will be: Aerospace \$12m, Defence \$68m, Distribution \$121m, Computing \$32m, Communications \$184m, and High Technology Services \$122m.

5.1.3 Geographical Segments

According to note 19 of the 1987 annual report (see Amalgamated Wireless (1987, p. 29)), AWA operates predominately in Australia. Thus, AWA's revenue, operating profit or loss and assets within Australia each constitute more than 90 per cent of the related totals for all geographical segments; see section 2.1. As a result AWA

will be treated as if all of its operations are located within Australia. (However, it does own a number of subsidiary corporations in New Zealand, Hong Kong, Thailand, U.K., and U.S.A.; see Amalgamated Wireless (1987, pp. 30-31)).

5.1.4 Revenue Share Estimates

The first step is to allocate AWA's total revenue across the ORANI Industries. Recall from the preliminary mapping in Table 5.1 that AWA with its ASX industry classification of Electronics, Media (234) maps to just one ORANI industry classification, namely, Electronic Equipment (73). However, the contracting and servicing activities of AWA most probably correspond to the activity of the ORANI industry Wholesale Trade (89); see Table 5.1.1. Using the above industry-segmented revenue estimates we will assume that \$371.236m of AWA's revenue is from operations in the Electronic Equipment industry and \$113.111m is from operations in the Wholesale Trade industry; see Table 5.1.2, column [I]. Recall from section 5.1.3 that it is assumed that all of AWA's revenue originates from domestic operations; see Table 5.1.2, columns [II] and [III].

The next step involves converting the results derived from consolidated accounts into results that reflect ownership rather than control. The minority interests in the subsidiaries controlled by AWA are insignificant. For example, only \$7,000 of profit is credited to minority interests (see AWA (1987, p. 18)). AWA does own shares in corporations other than its subsidiaries however, as is evident from the

TABLE 5.1.1: A MAPPING OF AWA'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Electronic and Electrical Equipment	100	73	Electronic Equipment
Contracting and Service	100	89	Wholesale Trade

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

TABLE 5.1.2: A MAPPING OF AWA'S REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue(a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
73 Electronic Equipment	371,236	-	371,236	73.04
89 Wholesale Trade	113,111	-	113,111	22.25
Group Services and Investments(b)	23,915	-	23,915	4.71
	<u>508,262</u>	<u>-</u>	<u>508,262</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

(b) Note that the revenue derived from radio broadcasting activities, which were recently sold, has been aggregated with group services and investments.

\$1.208m received in 'dividends from other corporations' in 1986-87; see AWA (1987, p. 22). Unfortunately, it was not possible to identify the unrealized revenue (in excess of dividends) earned in these corporations. Thus the revenue share estimates for AWA are based on the consolidated figures; see column [IV] of Table 5.1.2.

5.1.5 Cost Share Estimates

The first step is to allocate AWA's profit across the ORANI Industries using the industry-segmented profit figures given in section 5.1.2. Thus \$19.153m of AWA's profit is from the Electronic Equipment Industry and \$5.808m is from the Wholesale Trade Industry; see Table 5.1.3, column [I]. Next, it is assumed that all of AWA's profit originates from domestic operations; see Table 5.1.3, columns [II] and [III]. Domestic profits are then subtracted from domestic revenue to estimate AWA's domestic costs; see Table 5.1.4. The final estimated cost shares are given in column [IV] of Table 5.1.4 and, similar to above, they are based on consolidated figures.

5.1.6 Asset Share Estimates

The first step is to allocate AWA's assets across ORANI Industries using the industry-segmented asset figures given in section 5.1.2. Thus \$240.201m of AWA's assets are located in the Electronic Equipment Industry and \$59.562m are located in the Wholesale Trade

TABLE 5.1.3: A MAPPING OF AWA'S PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit (a) \$'000 [III]
73 Electronic Equipment	19,153	-	19,153
89 Wholesale Trade	5,808	-	5,808
Group Services and Investments (b)	(51,288)	-	(51,288)
	<u>(26,327)</u>	<u>-</u>	<u>(26,327)</u>

(a) That is, column [I] - column [II].

(b) Note that the profit derived from radio broadcasting activities, which were recently sold, has been aggregated with group services and investments.

TABLE 5.1.4: A MAPPING OF AWA'S COSTS ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000 [I]	Domestic Pre-Tax Profit (b) \$'000 [II]	Domestic Costs (c) \$'000 [III]	Share of Domestic Costs in Total Costs (d) (percentage) [IV]
73 Electronic Equipment	371,236	19,153	352,083	65.86
89 Wholesale Trade	113,111	5,808	107,303	20.67
Group Services and Investments	23,915	(51,288)	75,203	14.07
	<u>508,262</u>	<u>(26,327)</u>	<u>534,589</u>	<u>100.00</u>

(a) Source: Table 5.1.2, column [III].

(b) Source: Table 5.1.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.1.3) from total revenue (see total of column [I], Table 5.1.2).

Industry; see Table 5.1.5, column [I]. Next, it is assumed that all of AWA's assets are located in Australia; see Table 5.1.5, columns [II] and [III]. The final estimated asset shares for AWA are based on consolidated figures and they are given in column [IV] of Table 5.1.5.

TABLE 5.1.5: A MAPPING OF AWA'S ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets(a) \$'000 [III]	Share of Domestic Revenue in Total Assets (percentage) [IV]
73 Electronic Equipment	240,201	-	240,201	60.01
89 Wholesale Trade	59,562	-	59,562	14.88
Group Services and Investments(b)	100,534	-	100,534	25.11
	<u>400,297</u>	<u>-</u>	<u>400,297</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

(b) Note that the assets of the radio broadcasting activities, which were recently sold, have been aggregated with group services and investments.

5.2 Ampol

5.2.1 History

Following Archibald (1987, p. 14), Ampol originally commenced operations in N.S.W. in March 1936 as the Australian Motorists Petrol Company. The company later merged in 1945 with the Victorian retailer Alta Petroleum Company of Australia Pty Ltd. In 1946 the name Ampol was adopted as a national brand name, and in February 1949, the company's name was changed to Ampol Petroleum Limited, then to Ampol Limited in 1981.

According to the 1988 annual report, the principal activities of the Ampol Limited Group and associated companies are: oil and gas exploration and production; refining, shipping, distribution, and marketing of petroleum products; resource development and investment; uranium refining and marketing; property development; and computer services. The corporate structure of Ampol is depicted in Figure 5.2.1. Note that Ampol owns 49.17 per cent of Ampol Exploration and 40.96 per cent of Giant Resources; see Ampol (1988, p. 46). Furthermore, Pioneer Concrete holds 100 per cent of Ampol; see Knapton (1987) and Pioneer Concrete (1988).

5.2.2 Industry Segments

According to note 31 of the 1988 annual report (see Ampol (1988, p. 48)), the Ampol group operates in two broad areas, namely, petroleum and minerals. The total revenue, operating profit (before

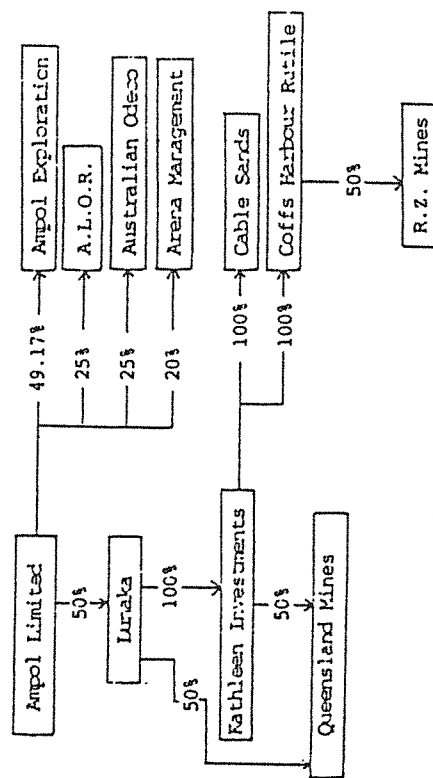


FIGURE 5.2.1: AMPOL CORPORATE STRUCTURE*

* Source: Archibald (1987).

taxation and equity accounting), and assets for 1987-88 in these two segments are as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Petroleum	1,865,218	122,627	1,154,180
Minerals	107,240	50,428	209,236
	<u>1,972,458</u>	<u>173,055</u>	<u>1,363,416</u>

As Ampol has significant investments in two other companies that are of interest to this study, the first step is to recognize the contributions of these other companies in the above consolidated data; see Table 5.2.1. The next step is to disaggregate the consolidated data, net of these contributions, to a level such that they can be mapped to the ORANI Industries. Note 29 of the 1988 annual report (see Ampol (1988, pp. 46-47)) gives a description of the major activities of Ampol's subsidiary and associated companies. A slightly modified version of this note appears in Table 5.2.2. On the basis of the data in Table 5.2.2, estimates of the revenue, profit, and assets of Ampol's economic activities are given in Table 5.2.3. These economic activities are then mapped to ORANI Industries in Table 5.2.4.

5.2.3 Geographical Segments

According to Ampol (1988, p. 48) the group operates principally in one geographical segment, namely Australia. Furthermore the places of incorporation of all of Ampol's subsidiary and associated companies are in Australia (see Ampol (1988, p. 46)).

TABLE 5.2.1: CONTRIBUTIONS TO THE CONSOLIDATED ACCOUNTS OF AMPOL FROM ITS HOLDINGS IN AMPOL EXPLORATION AND GIANT RESOURCES

Associate Company	Revenue \$'000 [I]	Profit \$'000 [II]	Assets \$'000 [III]
Ampol Exploration	-(a)	-(b)	124,368(c)
Giant Resources	-(a)	65(d)	160,098(c)
Other	1,972,458	172,990	1,079,040
	<u>1,972,458</u>	<u>173,055</u>	<u>1,363,416</u>

(a) Note that revenue is from sales only and does not include dividends received; see Ampol (1988, pp. 33 and 48).

(b) No dividends were paid by Ampol Exploration; see Ampol Exploration (1988, p. 49).

(c) See Ampol (1988, p. 38).

(d) See Ampol (1988, p. 33).

TABLE 5.2.2: ESTIMATES OF THE BOOK VALUES AND CONTRIBUTIONS TO NET PROFITS OF AMPOL'S SUBSIDIARY AND ASSOCIATE COMPANIES GROUPED ACCORDING TO THEIR ECONOMIC ACTIVITIES*

Economic Activity/Subsidiary and Associate Companies	Percentage of Company Owned by Ampol Ltd [I]	Book Value of Investment (a) \$'000 [II]	Contribution to Net Profit (b) \$'000 [III]
<u>Petroleum and Lubricant Marketing</u>			
Ampol Limited			22,516
Ampol Petroleum (Victoria) Pty Ltd	100	394	2,712
Ampol Petroleum (Qld) Pty Ltd	100	-	101
Ampol Property (Holdings) Ltd (100) Ampol Tracy Pty Ltd (100) Ampol Gippsland Pty Ltd	100	53,014 233 250	29,410 318 93
Ampol Refineries (Natraville) Ltd	100	37,054	2,825
B & S Distributors Pty Ltd	100	1,830	982
Talcor Pty Ltd	75	15	(135)
Teraco Pty Ltd	50	4,500	16
Western Fuel Distributors Pty Ltd (100) Stadco Pty Ltd	100	4,225	1,394 (165)
Circle Petroleum (Q'land)	50	4,250	(58)
		<u>105,375</u>	<u>60,009</u>
<u>Oil Refining</u>			
Ampol Refineries Ltd	100	15,400	2,904
Australian Lubricating Oil Refinery Ltd	25	1,375	158
		<u>16,775</u>	<u>3,062</u>
<u>Oil Exploration and Production</u>			
Ampol Exploration Ltd	49.17	124,368	14,653
<u>Resource Development</u>			
Giant Resources Ltd	40.96	256,219	8,227

... Continued

Table 5.2.2 (Continued)

107

Economic Activity/Subsidiary and Associate Companies	Percentage of Company Owned by Ampol Ltd [I]	Book Value of Investment (a) \$'000 [II]	Contribution to Net Profit \$'000 [III]
<u>Mineral Exploration and Production</u>			
Ampol Mining Pty Ltd	100	1,052	2,592
Lunaka Pty Ltd	50	17,323	12,134
		<u>18,375</u>	<u>14,726</u>
<u>Uranium Exploration and Production</u>			
(Owned by Lunaka Pty Ltd) (100) Queensland Mines Ltd		203,312	10,365
<u>Mineral Sands Mining</u>			
(Owned by Queensland Mines Ltd) (100) Kathleen Investments (Australia) Ltd (95.6) Coffs Harbour Rutile		129,048 1,095	(66) 1,937
		<u>130,143</u>	<u>1,871</u>
<u>Computer Services</u>			
Security Computer Services Pty Ltd	100	6	1,266
<u>Entertainment</u>			
Arena Management Pty Ltd	25	464	407
<u>Property</u>			
Ampol Property Development Pty Ltd (100) Ampol Realty Pty Ltd (100) Pacific Partioning Properties Pty Ltd	100	4 4 20	- 622 -
Hyworth Pty Ltd	100	-	21
Southern Cross Service Pty Ltd	100	31	1,034
		<u>59</u>	<u>1,677</u>
		<u>855,096</u>	<u>116,266</u>

* Source: Ampol (1988, pp. 46-47). Note that some minor activities have been excluded.

(a) Note that book values of investment do not reflect current values but rather the value at cost.

(b) Note that net profit includes dividends and has been calculated using equity accounting methods.

TABLE 5.2.3: ESTIMATES OF THE CONTRIBUTIONS TO THE CONSOLIDATED ACCOUNTS OF AMPOL FROM ITS ECONOMIC ACTIVITIES (NET OF ITS HOLDINGS IN AMPOL EXPLORATION AND GIANT RESOURCES)

Economic Activity	Percentage of Economic Activity in Ampol (a) [I]	Revenue (b) \$'000 [II]	Profit (b) \$'000 [III]	Assets (b) \$'000 [IV]
Petroleum and Lubricant Marketing	64.25	1,267,304	111,145	693,282
Oil Refining	3.28	64,697	5,674	35,393
Mineral Exploration and Production	15.77	311,057	27,281	170,165
Uranium Exploration and Production	11.10	218,943	19,202	119,773
Mineral Sands Mining	2.00	39,449	3,460	21,581
Computer Services	1.36	26,825	2,353	14,675
Entertainment	0.44	8,679	761	4,748
Property	1.80	35,504	3,114	19,423
	<u>100.00</u>	<u>1,972,458</u>	<u>172,990</u>	<u>1,079,040</u>

(a) Estimated from the corresponding contribution to net profit figures given in column [III] of Table 5.2.2.

(b) The figures in this column were estimated by multiplying the shares in column [I] by the appropriate contribution to consolidated accounts for "other" as reported in Table 5.2.1.

TABLE 5.2.4: A MAPPING OF AMPOL'S AREAS OF ECONOMIC ACTIVITY (NET OF ITS HOLDINGS IN AMPOL EXPLORATION AND GIANT RESOURCES) TO THE ORANI INDUSTRIES^a

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Petroleum and Lubricant Marketing(a)	70	89	Wholesale Trade
	30	90	Retail Trade
Oil Refining	100	56	Petrol and Coal Products
Mineral Exploration and Production	100	13	Non-Ferrous Metal Ores
Uranium Exploration and Production	100	13	Non-Ferrous Metal Ores
Mineral Sands Mining	100	13	Non-Ferrous Metal Ores
Computer Services	100	102	Other Business Services
Entertainment	100	109	Entertainment, Leisure
Property	100	88	Other Construction

^a The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

The percentages describing the mapping of Petroleum and Lubricant Marketing across ORANI industries were estimated as follows. In the ORANI data base, \$1,347m of the commodity Oil and Coal Products was sold to intermediate users (excluding own use by the Oil and Coal Products industry) and \$648m was sold to households; see Blamplie (1985, pp. 9 and 73). Thus, approximately 70 per cent (i.e., 100 x \$1,347m / (\$1,347m + \$648m)) must have been sold via wholesale trade and 30 per cent via retail trade.

5.2.4 Revenue Share Estimates

The first task is to allocate Ampol's total revenue across ORANI Industries. Recall from section 5.2.1 that Ampol owns 49.17 per cent of Ampol Exploration and 40.96 per cent of Giant Resources. The unrealized contributions to Ampol's total revenue from these investments are estimated in columns [I] and [II], respectively, of Table 5.2.5. Next the mapping in Table 5.2.4 is applied to the revenue figures in Table 5.2.3 to produce estimates of Ampol's realized revenue across ORANI Industries; see column [III] of Table 5.2.5. Finally, estimates of Ampol's total revenue mapped across ORANI Industries are given in column [IV] of Table 5.2.5.

The next task is to allocate Ampol's revenue earned from overseas operations across ORANI Industries. The unrealized contributions to Ampol's foreign revenue from its investments in Ampol Exploration and Giant Resources are given in columns [I] and [II], respectively, of Table 5.2.6. Recall from section 5.2.3 that it is assumed that all of Ampol's operations are located in Australia. Thus there are no realized contributions to Ampol's foreign revenue; see column [III] of Table 5.2.6. Finally, estimates of Ampol's foreign revenue mapped across ORANI Industries are given in column [IV] of Table 5.2.6.

The final task is to subtract the foreign revenue figures from the total revenue figures to estimate the domestic revenue figures; see

TABLE 5.2.5: A MAPPING OF AMPOL'S TOTAL REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration (a) \$'000 [I]	Contribution from Giant Resources (b) \$'000 [II]	Other (c) \$'000 [III]	Total Revenue (d) \$'000 [IV]
13 Non-Ferrous Metal Ores	-	30,398	569,449	599,847
14 Black Coal	-	15,163	-	15,163
15 Oil, Gas, and Brown Coal	14,711	-	-	14,711
17 Services to Mining	18,070	30,398	-	48,468
56 Petrol and Coal Products	-	-	64,697	64,697
88 Other Construction	-	-	35,504	35,504
89 Wholesale Trade	-	-	887,113	887,113
90 Retail Trade	-	-	380,191	380,191
102 Other Business Services	-	-	26,825	26,825
109 Entertainment, Leisure	-	-	8,679	8,679
Investments	6,433	50,842	-	57,275
	<u>39,214</u>	<u>126,801</u>	<u>1,972,458</u>	<u>2,138,473</u>

(a) Estimated by taking 49.17 per cent of column [I] of Table 5.3.3.
 (b) Estimated by taking 40.96 per cent of column [I] of Table 5.10.3.
 (c) Estimated by applying the mapping in Table 5.2.4 to column [II] of Table 5.2.3.
 (d) That is, columns [I] + [II] + [III].

TABLE 5.2.6: A MAPPING OF AMPOL'S FOREIGN REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration(a) \$'000 [I]	Contribution from Giant Resources(b) \$'000 [II]	Other(c) \$'000 [III]	Foreign Revenue(d) \$'000 [IV]
13 Non-Ferrous Metal Ores	-	15,415	-	15,415
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	1,697	-	-	1,697
17 Services to Mining	2,085	15,415	-	17,500
56 Petrol and Coal Products	-	-	-	-
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	-	24,315	-	24,315
	<u>3,782</u>	<u>55,145</u>	<u>-</u>	<u>58,927</u>

(a) Estimated by taking 49.17 per cent of column [II] of Table 5.3.3.
 (b) Estimated by taking 40.96 per cent of column [II] of Table 5.10.3.
 (c) Note that Ampol operates principally in Australia: see section 5.2.3.
 (d) That is, columns [I] + [II] + [III].

Table 5.2.7. The shares of domestic revenue in total revenue mapped across ORANI Industries are given in column [IV] of Table 5.2.7.

5.2.5 Cost Share Estimates

The first task is to allocate Ampol's total profit across ORANI Industries. The unrealized contributions to Ampol's profit from its investments in Ampol Exploration and Giant Resources are estimated in columns [I] and [II], respectively, of Table 5.2.8. Next the mapping in Table 5.2.4 is applied to the profit figures in Table 5.2.3 to produce estimates of Ampol's realized profits across ORANI Industries; see column [III] of Table 5.2.8. Finally, estimates of Ampol's total profits mapped across ORANI Industries are given in column [IV] of Table 5.2.8.

The next task is to allocate Ampol's profit earned from overseas operations across ORANI Industries. The unrealized contributions to Ampol's foreign profit from its investments in Ampol Exploration and Giant Resources are given in columns [I] and [II], respectively, of Table 5.2.9. Recall from section 5.2.3 that it is assumed that all of Ampol's operations are located in Australia. Thus there are no realized contributions to Ampol's foreign profit; see column [III] of Table 5.2.9. Finally, estimates of Ampol's foreign profit mapped across ORANI Industries are given in column [IV] of Table 5.2.9.

TABLE 5.2.7: A MAPPING OF ANPOL'S DOMESTIC REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000 [I]	Foreign Revenue (b) \$'000 [II]	Domestic Revenue (c) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
13 Non-Ferrous Metal Ores	599,847	15,415	584,432	27.33
14 Black Coal	15,163	-	15,163	0.71
15 Oil, Gas, and Brown Coal	14,711	1,697	13,014	0.61
17 Services to Mining	48,468	17,500	30,968	1.45
56 Petrol and Coal Products	64,697	-	64,697	3.03
88 Other Construction	35,504	-	35,504	1.66
89 Wholesale Trade	887,113	-	887,113	41.47
90 Retail Trade	380,191	-	380,191	17.78
102 Other Business Services	26,825	-	26,825	1.25
109 Entertainment, Leisure	8,679	-	8,679	0.41
Investments	57,275	24,315	32,960	1.54
	<u>2,138,473</u>	<u>58,927</u>	<u>2,079,546</u>	<u>97.24</u>

(a) See Table 5.2.5, column [IV].
 (b) See Table 5.2.6, column [IV].
 (c) That is, column [I] - column [II].

TABLE 5.2.8: A MAPPING OF ANPOL'S TOTAL PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration (a) \$'000 [I]	Contribution from Grant Resources (b) \$'000 [II]	Other (c) \$'000 [III]	Total Profit (d) \$'000 [IV]
13 Non-Ferrous Metal Ores	-	1,735	49,943	51,678
14 Black Coal	-	5,716	-	5,716
15 Oil, Gas, and Brown Coal	8,208	-	-	8,208
17 Services to Mining	-	1,733	-	1,733
56 Petrol and Coal Products	-	-	5,674	5,674
88 Other Construction	-	-	3,114	3,114
89 Wholesale Trade	-	-	77,802	77,802
90 Retail Trade	-	-	33,343	33,343
102 Other Business Services	-	-	2,353	2,353
109 Entertainment, Leisure	-	-	761	761
Investments	6,433	(1,862)	-	4,571
	<u>14,641</u>	<u>7,322</u>	<u>172,990</u>	<u>194,953</u>

(a) Estimated by taking 49.17 per cent of column [I] of Table 5.3.4.
 (b) Estimated by taking 40.96 per cent of column [I] of Table 5.10.4.
 (c) Estimated by applying the mapping in Table 5.2.4 to column [III] of Table 5.2.3.
 (d) That is, columns [I] + [II] + [III].

TABLE 5.2.9: A MAPPING OF AMPOL'S FOREIGN PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration(a) \$'000 [I]	Contribution from Giant Resources(b) \$'000 [II]	Other(c) \$'000 [III]	Foreign Profit(d) \$'000 [IV]
13 Non-Ferrous Metal Ores	-	1,645	-	1,645
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	359	-	-	359
17 Services to Mining	-	1,644	-	1,644
56 Petrol and Coal Products	-	-	-	-
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	359	2,622	-	2,981
	-	(667)	-	(667)

(a) Estimated by taking 49.17 per cent of column [II] of Table 5.3.4.
 (b) Note that Ampol operates principally in Australia; see section 5.2.3.
 (c) Estimated by taking 40.96 per cent of column [II] of Table 5.10.4.
 (d) That is, columns [I] + [II] + [III].

The estimates of Ampol's foreign profit are then subtracted from Ampol's total profit to give estimates of Ampol's domestic profit mapped across ORANI Industries; see Table 5.2.10. These domestic profits are then subtracted from Ampol's domestic revenue (see column [III] of Table 5.2.7) to generate estimates of Ampol's domestic costs across ORANI Industries; see Table 5.2.11. The final estimated cost shares are given in column [IV] of Table 5.2.11.

5.2.6 Asset Share Estimates

The first task is to allocate Ampol's total assets across ORANI Industries. The unrealized contributions to Ampol's assets from its investments in Ampol Exploration and Giant Resources are estimated in columns [I] and [II], respectively of Table 5.2.12. Next the mapping in Table 5.2.4 is applied to the asset figures in Table 5.2.3 to produce estimates of Ampol's realized assets across ORANI Industries; see column [III] of Table 5.2.12. Finally, estimates of Ampol's total assets mapped across ORANI Industries are given in column [IV] of Table 5.2.12.

The next task is to allocate Ampol's assets located overseas across ORANI Industries. The unrealized contributions to Ampol's foreign assets from its investments in Ampol Exploration and Giant Resources are given in columns [I] and [II], respectively, of Table 5.2.13. Recall from section 5.2.3 that it is assumed that all of Ampol's operations are located in Australia. Thus there are no realized contributions to Ampol's foreign assets; see column [III] of Table

TABLE 5.2.10: A MAPPING OF AMPOL'S DOMESTIC PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Profit(a) \$'000 [I]	Foreign Profit(b) \$'000 [II]	Domestic Profit(c) \$'000 [III]
13 Non-Ferrous Metal Ores	51,687	1,645	50,033
14 Black Coal	5,716	-	5,716
15 Oil, Gas, and Brown Coal	8,208	359	7,849
17 Services to Mining	1,733	1,644	89
56 Petrol and Coal Products	5,674	-	5,674
88 Other Construction	3,114	-	3,114
89 Wholesale Trade	77,802	-	77,802
90 Retail Trade	33,343	-	33,343
102 Other Business Services	2,353	-	2,353
109 Entertainment, Leisure	761	-	761
Investments	4,571	(667)	5,238
	<u>194,953</u>	<u>2,981</u>	<u>191,972</u>

(a) See Table 5.2.8, column [IV].

(b) See Table 5.2.9, column [IV].

(c) That is, column [I] - column [II].

TABLE 5.2.11: A MAPPING OF AMPOL'S DOMESTIC COSTS ACROSS
ORANI INDUSTRIES

ORANI Industry	Domestic Revenue(a) \$'000 [I]	Domestic Profit(b) \$'000 [II]	Domestic Costs(c) \$'000 [III]	Share of Domestic Costs in Total Costs(d) (percentage) [IV]
13 Non-Ferrous Metal Ores	584,432	50,033	534,399	27.49
14 Black Coal	15,163	5,716	9,447	0.49
15 Oil, Gas, and Brown Coal	13,014	7,849	5,165	0.27
17 Services to Mining	30,968	89	30,879	1.59
56 Petrol and Coal Products	64,697	5,674	59,023	3.04
88 Other Construction	35,504	3,114	32,390	1.67
89 Wholesale Trade	887,113	77,802	809,311	41.63
90 Retail Trade	380,191	33,343	346,848	17.84
102 Other Business Services	26,825	2,353	24,472	1.26
109 Entertainment, Leisure	8,679	761	7,918	0.41
Investments	32,960	5,238	27,722	1.43
	<u>2,079,546</u>	<u>191,972</u>	<u>1,887,574</u>	<u>97.12</u>

(a) See Table 5.2.7, column [III].

(b) See Table 5.2.10, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [IV], Table 5.2.8) from total revenue (see total of column [I], Table 5.2.7).

TABLE 5.2.12: A MAPPING OF AMPOL'S TOTAL ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration(a) \$'000	Contribution from Grant Resources(b) \$'000	Other(c) \$'000	Total Assets(d) \$'000
13 Non-Ferrous Metal Ores	-	77,196	311,519	388,715
14 Black Coal	-	36,035	-	36,035
15 Oil, Gas, and Brown Coal	62,364	-	-	62,364
17 Services to Mining	235,792	77,196	-	312,988
56 Petrol and Coal Products	-	-	35,393	35,393
88 Other Construction	-	-	19,423	19,423
89 Wholesale Trade	-	-	485,297	485,297
90 Retail Trade	-	-	207,985	207,985
102 Other Business Services	-	-	14,675	14,675
109 Entertainment, Leisure	-	-	4,748	4,748
Investments	20,197	107,174	-	127,371
	<u>318,353</u>	<u>297,601</u>	<u>1,079,040</u>	<u>1,694,994</u>

(a) Estimated by taking 49.17 per cent of column [I] of Table 5.3.6.
 (b) Estimated by taking 40.96 per cent of column [I] of Table 5.10.6.
 (c) Estimated by applying the mapping in Table 5.2.4 to column [IV] of Table 5.2.3.
 (d) That is, columns [I] + [II] + [III].

TABLE 5.2.13: A MAPPING OF AMPOL'S FOREIGN ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol Exploration(a) \$'000	Contribution from Grant Resources(b) \$'000	Other(c) \$'000	Foreign Assets(d) \$'000
13 Non-Ferrous Metal Ores	-	54,132	-	54,132
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	28,312	-	-	28,312
17 Services to Mining	184,483	54,131	-	238,614
56 Petrol and Coal Products	-	-	-	-
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	-	60,931	-	60,931
	<u>212,795</u>	<u>169,194</u>	<u>-</u>	<u>381,989</u>

(a) Estimated by taking 49.17 per cent of column [II] of Table 5.3.6.
 (b) Note that Ampol operates principally in Australia; see section 5.2.3.
 (c) That is, columns [I] + [II] + [III].

5.2.13. Finally, estimates of Ampol's foreign assets mapped across ORANI Industries are given in column [IV] of Table 5.2.13.

The last step is to subtract the above estimates of foreign assets from total assets to give estimates of Ampol's domestic assets across ORANI Industries; see Table 5.2.14. The final estimated asset shares are given in column [IV] of Table 5.2.14.

TABLE 5.2.14: A MAPPING OF AMPOL'S DOMESTIC ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets(a) \$'000 [I]	Foreign Assets(b) \$'000 [II]	Domestic Assets(c) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
13 Non-Ferrous Metal Ores	388,715	54,132	334,583	19.74
14 Black Coal	36,035	-	36,035	2.13
15 Oil, Gas, and Brown Coal	62,364	28,312	34,052	2.01
17 Services to Mining	312,988	238,614	74,374	4.39
56 Petrol and Coal Products	35,393	-	35,393	2.09
88 Other Construction	19,423	-	19,423	1.15
89 Wholesale Trade	485,297	-	485,297	28.63
90 Retail Trade	207,985	-	207,985	12.27
102 Other Business Services	14,675	-	14,675	0.87
109 Entertainment, Leisure	4,748	-	4,748	0.28
Investments	127,371	60,931	66,440	3.92
	<u>1,694,994</u>	<u>381,989</u>	<u>1,313,005</u>	<u>77.46</u>

(a) See Table 5.2.12, column [IV].

(b) See Table 5.2.13, column [IV].

(c) That is, column [I] - column [II].

5.3 Ampol Exploration

5.3.1 History

Following Datex (1987, p. 19), Ampol Exploration was formed as a holding company in 1953 to acquire the 20 per cent interest in West Australian Petroleum (WAPET) held by Ampol. The company is the 4th largest oil company listed in Australia. The Barrow Island oil field, the company's major source of revenue to date, should maintain current production rates until around 1989 and thereafter decline through to the year 2000. Note that approximately 50 per cent of Ampol Exploration is owned by Ampol, which in turn is controlled by Pioneer Concrete. The company has recently purchased Pioneer's direct oil and gas interests in PNG and the USA; see Ampol Exploration (1988, p. 6).

5.3.2 Industry Segments

According to note 23 of the 1988 annual report (see Ampol Exploration (1988, p. 47)), Ampol Exploration operates predominantly in the oil and gas industry. However, using information from the annual report, it is possible to deduce results for the exploration segment separate to the results for the oil and gas production segment. These estimates are given in Table 5.3.1.

TABLE 5.3.1: ESTIMATED INDUSTRY SEGMENTED DATA FOR AMPOL EXPLORATION

Economic Activity	Total Revenue \$'000 [I]	Total Profit \$'000 [II]	Total Costs \$'000 [III]	Total Assets \$'000 [IV]
Exploration	36,750(a)	-(b)	36,750(c)	479,546(d)
Oil and Gas Production	29,918(e)	16,693(e)	13,225(f)	126,833(g)
Investments	13,084(h)	13,084(h)	-	41,075(e)
	<u>79,752(i)</u>	<u>29,777(i)</u>	<u>49,975(f)</u>	<u>647,454(j)</u>

- (a) This revenue was estimated by assuming that zero profits were imputed for exploration on own account.
 (b) By assumption, see footnote (a) above.
 (c) See Ampol Exploration (1988, p. 37).
 (d) See Ampol Exploration (1988, p. 44). Note that \$104.351m is located within Australia and \$375.195m is located overseas.
 (e) Estimated as a residual.
 (f) That is, column [I] - column [II].
 (g) See Ampol Exploration (1988, p. 44).
 (h) See Ampol Exploration (1988, p. 26).
 (i) See Ampol Exploration (1988, p. 35).
 (j) See Ampol Exploration (1988, p. 47).

5.3.3 Geographical Segments

According to note 23 of the 1988 annual report (see Ampol Exploration (1988, p. 47)), the group operates in seven geographical areas. The revenue (from sales of oil and gas and related products outside the group), profits (prior to income tax expenses and extraordinary items), and assets in these segments are as follows:

	Revenue \$'000	Profit \$'000	Assets \$'000
United States of America	7,693	142	58,822
Europe	-	(188)	56
Papua New Guinea	-	925	363,094
China	-	-	9,549
Netherlands Antilles	-	(11)	241
New Zealand/Oceania	-	(138)	1,013
	<u>7,693</u>	<u>730</u>	<u>432,775</u>
Australia	58,975	29,047	214,679
	<u>66,668</u>	<u>29,777</u>	<u>647,454</u>

5.3.4 Revenue Share Estimates

The first task is to allocate Ampol Exploration's total revenue across the ORANI Industries. Recall from the preliminary mapping in Table 5.1 that Ampol Exploration with its ASX industry classification of Oil/Gas Producer (041) maps to a number of ORANI Industries. Estimates of the extent to which Ampol Exploration maps to these Industries are given in Table 5.3.2. This mapping is then used in conjunction with the revenue figures given in column [1] of Table 5.3.1 to produce estimates of Ampol Exploration's revenue across ORANI Industries; see Table 5.3.3, column [1].

TABLE 5.3.2: A MAPPING OF AMPOL EXPLORATION'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Exploration	100	17	Services to Mining
Oil and Gas Production	100	15	Oil, Gas, and Brown Coal

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

TABLE 5.3.3: A MAPPING OF AMPOL EXPLORATION'S REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
15 Oil, Gas, and Brown Coal	29,918	3,452	26,466	33.19
17 Services to Mining	36,750	4,241	32,509	40.76
Investments	13,084	-	13,084	16.41
	<u>79,752</u>	<u>7,693</u>	<u>72,059</u>	<u>90.36</u>

(a) That is, column [I] - column [II].

The next step is to subtract from the above total revenue figures the components due to Ampol Exploration's overseas operations. It is known from section 5.3.3 that \$7.693m of Ampol Exploration's revenue is derived from its overseas operations. It is assumed that this revenue is earned in proportion to the total revenue earned by the activities exploration and oil and gas production. Thus \$3.452m (i.e., $\$7.693m \times \$29,918m / (\$29,918m + \$36,750m)$) is due to overseas oil and gas production activities and \$4.241m is due to overseas exploration activities. The resulting estimates of the domestic revenue figures and shares for Ampol Exploration by ORANI Industries are given in columns [III] and [IV], respectively, of Table 5.3.3.

5.3.5 Cost Share Estimates

The first task is to allocate Ampol Exploration's total profit across the ORANI Industries. Similar to above, the profit figures listed in column [II] of Table 5.3.1 are used in conjunction with the mapping in Table 5.3.2 to generate the estimates presented in column [I] of Table 5.3.4. It is known from section 5.3.3 that \$0.730m of Ampol Exploration's profit is derived from its overseas operations. It is assumed that this profit is all earned by oil and gas production. The resulting estimates of domestic profits by ORANI Industries are given in column [III] of Table 5.3.4. Domestic profits are then subtracted from domestic revenue to estimate Ampol Exploration's domestic costs; see Table 5.3.5. The final estimated cost shares are given in column [IV] of Table 5.3.5.

TABLE 5.3.4: A MAPPING OF AMPOL EXPLORATION'S
PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit (a) \$'000 [III]
15 Oil, Gas, and Brown Coal	16,693	730	15,963
17 Services to Mining	-	-	-
Investments	13,084	-	13,084
	<u>29,777</u>	<u>730</u>	<u>29,047</u>

(a) That is, column [I] - column [II].

TABLE 5.3.5: A MAPPING OF AMPOL EXPLORATION'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000 [I]	Domestic Pre-Tax Profit (b) \$'000 [II]	Domestic Costs (c) \$'000 [III]	Share of Domestic Costs in Total Costs (d) (percentage) [IV]
15 Oil, Gas, and Brown Coal	26,466	15,963	10,503	21.02
17 Services to Mining	32,509	-	32,509	65.05
Investments	13,084	13,084	-	-
	<u>72,059</u>	<u>29,047</u>	<u>43,012</u>	<u>86.07</u>

(a) Source: Table 5.3.2, column [III].

(b) Source: Table 5.3.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.3.3) from total revenue (see total of column [I], Table 5.3.2).

5.3.6 Asset Share Estimates

The first step is to allocate Ampol Exploration's total assets across the ORANI Industries. The asset figures given in column [IV] of Table 5.3.1 are used in conjunction with the mapping in Table 5.3.2 to generate the estimates presented in column [I] of Table 5.3.6. Next we note that \$432.775m of Ampol Exploration's assets are located overseas; see section 5.3.3. Furthermore, \$375.195m of these assets are engaged in exploration activities; see Ampol Exploration (1988, p. 44). The foreign assets are then subtracted from total assets to produce estimates of domestic assets; see Table 5.3.6, column [III]. Finally, the domestic asset shares are listed in column [IV] of Table 5.3.6.

TABLE 5.3.6: A MAPPING OF AMPOL EXPLORATION'S ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets(a) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
15 Oil, Gas, and Brown Coal	126,833	57,580	69,253	10.70
17 Services to Mining	479,546	375,195	104,351	16.12
Investments	41,075	-	41,075	6.34
	<u>647,454</u>	<u>432,775</u>	<u>214,679</u>	<u>33.16</u>

(a) That is, column [I] - column [II].

5.4 Arnotts

5.4.1 History

According to Johnson (1988), Arnotts was publicly listed in 1970, over one hundred years after it began as a family company manufacturing biscuits in Newcastle. In 1965 six family biscuit companies were merged with Arnotts, namely Brockhoff, Guest, Menz, Millsand Ware, Morrow and Motteram. Soon after the merger Swallow and Arfell Ltd was acquired. Then in 1975 Peak Frean (Australia) Pty Ltd was added, further strengthening Arnotts dominance of the Australian biscuit market.

Arnotts has diversified in a number of areas. In 1965 it acquired the snack food manufacturer Colvan Potato Products Pty Ltd; see Stock Exchange Research (1986, p. 9). Then in December 1982, Arnotts and Pepsi-Cola Company of Australia Pty Ltd formed a partnership to carry on the business of Arnotts' snack food division.

Arnotts has also diversified its activities into other food related areas such as the acquisition in 1978 of the flour milling and stock feed business of McCorquodale Holdings Pty Ltd. A further operational arm was added in 1981 when pet food manufacturer Trusty Dog was acquired from Henry Jones. Petfood interests were expanded in 1982 with the purchase of Robert Harper from Ralston Purina followed by the Quaker group's Luv petfood business in 1985.

Finally, in 1985 Arnotts emerged a major shareholder in Allied Mills after acquiring the stake IEL had assembled as a result of an unsuccessful bid. Simultaneously, Bond Corporation launched a bid for Arnotts. This was dropped, however, when the Campbell Soup Company of the U.S. took up 20 per cent equity in Arnotts. The following year, Allied Mills sold its stake in Arnotts after merging with Goodman Fielder for an extraordinary profit of \$74.8m.

5.4.2 Industry Segments

According to note 21 of the 1987 annual report (see Arnotts (1987, p. 22)), Arnotts operates predominately in the Australian food industry. The principal activity of the group is the manufacture and distribution of food products with activities ancillary to that function. No industry-segmented data are given in the 1987 annual report. However, Johnson (1988, p. 3) has estimated the following industry-segmented data:

	Pre-Tax Profit (percentage)	Sales (percentage)
Biscuits	76.8	70.5
Snack Foods	3.0	11.2
Nuts	5.0	2.0
Pet Foods	4.2	9.3
Packaging and Other	7.0	7.0
Interest	4.0	-
	<u>100.0</u>	<u>100.0</u>

Note that the pre-tax profit figures are forecasts for 1987-88 and the sales figures are based on actual data for 1986-87.

5.4.3 Geographical Segments

According to note 21 of the 1987 annual report (see Arnotts (1987, p. 22)), Arnotts' activities can be geographically defined:

	Australia (\$'000)	Pacific Basin (\$'000)	Total (\$'000)
Profits	55,674	9,989	65,663
Sales	552,100	89,900	642,000
Assets	351,889	86,531	438,420

Thus 15 per cent of the profits (before interest, income tax, and extraordinary items), 14 per cent of the sales, and 20 per cent of the assets of Arnotts are attributable to its overseas operations.

Overseas operations include biscuit manufacturing in New Zealand; see Johnson (1988, p. 6). In December 1986 Arnotts acquired CSR's macadamia nut business in Hawaii and Queensland. Since then it has acquired additional plantations in Hawaii and Costa Rica; see Johnson (1988, p. 7).

5.4.4 Revenue Share Estimates

The first task is to allocate Arnotts' total revenue across the ORANI Industries based on the revenue shares given in section 5.4.2. The first step is to develop a mapping of the economic activity headings in section 5.4.2 to the ORANI Industries. Recall from the preliminary mapping in Table 5.1 that Arnotts with its ASX industry classification

of Miller, Baker, Food (093) maps to just two ORANI Industries, namely, Flour and Cereal Products (22) and Bread, Cakes, and Biscuits (23). However, some of the activities of Arnotts such as the manufacturing of snack food and pet food correspond to other ORANI Industries. A revised mapping is presented in Table 5.4.1. This mapping is then used in conjunction with the revenue shares given in section 5.4.2 to produce estimates of Arnotts' revenue across ORANI Industries; see Table 5.4.2, column [I].

The next step is to subtract from the above total revenue figures the components due to Arnotts' overseas operations. It is known from the geographical segments that \$89.9m of Arnotts' revenue is derived from its overseas operations; see section 5.4.3. It is assumed that this revenue is earned in proportion to the total revenue earned by the activities Biscuits and Nuts; see sections 5.4.2 and 5.4.3. Thus \$75.723m (i.e., $\$89.9m \times \$450.758m / \$535.155m$) is due to overseas biscuit operations and \$14.177m is due to overseas nut operations. The resulting estimates of the domestic revenue figures and shares for Arnotts by ORANI Industries are given in columns [III] and [IV], respectively, of Table 5.4.2. Note that due to the lack of data concerning ownership, the above revenue shares are based on information derived from consolidated accounts.

5.4.5 Cost Share Estimates

The first task is to allocate Arnotts' total profit across the ORANI Industries. Similar to above, the profit shares listed in section

TABLE 5.4.1: A MAPPING OF ARNOTTS' AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Biscuits	100	23	Bread, Cakes, and Biscuits
Snack Foods	100	24	Confectionery and Cocoa
Nuts (a)	50	6	Other Farming (Sugarcane, Fruit, and Nuts)
	50	24	Confectionery and Cocoa
Pet Foods	100	25	Other Food Products
Packaging and Other (b)	8	20	Fruit and Vegetables
	89	22	Flour and Cereal Products
	3	89	Wholesale Trade

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

(a) No information was available to estimate the percentages describing the mapping of Nuts across the ORANI Industries. As a result, a default setting of equal percentages was used.

(b) The percentages describing the mapping of Packaging and Other across ORANI Industries were estimated as follows. From section 5.4.2 it is estimated that 7 per cent of total pre-tax profit will be derived from Packaging and Other activities. Next we note that total group profit was \$114,239m; see Arnotts (1987, p. 21). Thus, approximately \$8m (i.e., $0.07 \times \$114,239m$) was the total profit earned by Packaging and Other. Of this, \$0.266m was earned by Cathene Pty Ltd; see Arnotts (1987, p. 20). Thus, roughly 3 per cent (i.e., $100 \times \$0.266m/\$8m$) of Packaging and Other is represented by packaging activities (i.e., ORANI Industry Wholesale Trade). The remaining 97 per cent was allocated as follows. Unfortunately no data were available on the flour milling activities of White Rose Flour Mills (which correspond to ORANI Industry Flour and Cereal Products) or the jam manufacturing of Illawara Jam Company (which correspond to ORANI Fruit and Vegetables). However, in the ORANI data base, \$10m of Fruit and Vegetables and \$123m of Flour Mill and Cereal Products were used by the Bread, Cakes, and Biscuits industry; see Blampland (1985, p. 65). Thus of the 97 per cent to be allocated roughly 8 percentage points (i.e., $97 \times \$10m/(\$10m + \$123m)$) correspond to the ORANI Industry Fruit and Vegetables, and 89 percentage points correspond to the ORANI Industry Flour and Cereal Products.

TABLE 5.4.2: A MAPPING OF ARNOTTS' REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000 [I]	Foreign Revenue (b) \$'000 [II]	Domestic Revenue (c) \$'000 [III]	Share of Domestic Total Revenue (percentage) [IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	6,393	1,070	5,323	0.83
20 Fruit and Vegetables	3,580	-	3,580	0.56
22 Flour and Cereal Products	39,833	-	39,833	6.20
23 Bread, Cakes, and Biscuits	450,758	75,723	375,035	58.42
24 Confectionery and Cocoa	78,004	13,107	64,897	10.11
25 Other Food Products	59,462	-	59,462	9.26
89 Wholesale Trade	1,343	-	1,343	0.21
Investment (d)	2,627	-	2,627	0.41
	<u>642,000</u>	<u>89,900</u>	<u>552,100</u>	<u>86.00</u>

(a) The total revenue figures were estimated by first multiplying the sales percentage given in section 5.4.2 by total revenue net of interest payments (i.e., \$642m \$2.627m); see section 5.4.3 and footnote (d) below. These figures were then mapped to ORANI Industries using Table 5.4.1.

(b) It is assumed that the \$89.9m of revenue from foreign activities (see section 5.4.3) is earned in proportion to the total revenue earned by the activities Biscuits and Nuts.

(c) That is, column [I] - column [III].

(d) The interest earned from cash holdings was estimated by multiplying the percentage it represented of pre-tax profit (see section 5.4.2) by the total of pre-tax profit (see section 5.4.3). That is, $0.04 \times \$65.663m = \$2.627m$.

TABLE 5.4.3: A MAPPING OF ANNOTTS' PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit(a) \$'000 [I]	Foreign Pre-Tax Profit(b) \$'000 [II]	Domestic Pre-Tax Profit(c) \$'000 [III]
6 Other Farming (Sugarcane, Fruit, and Nuts)	1,641	295	1,346
20 Fruit and Vegetables	368	-	368
22 Flour and Cereal Products	4,090	-	4,090
23 Bread, Cakes, and Biscuits	50,428	9,046	41,382
24 Confectionery and Cocoa	3,612	648	2,964
25 Other Food Products	2,758	-	2,758
89 Wholesale Trade	139	-	139
Investments	2,627	-	2,627
	<u>65,663</u>	<u>9,989</u>	<u>55,674</u>

- (a) The total pre-tax profit figures were estimated by first multiplying the pre-tax profit percentages given in section 5.4.2 by total pre-tax profits of \$65.663m; see section 5.4.3. These figures were then mapped to ORANI Industries using Table 5.4.1.
- (b) It is assumed that the \$9.989m of profit from foreign activities (see section 5.4.3) is earned in proportion to the total profit earned by the activities Biscuits and Nuts.
- (c) That is, column [I] - column [II].

TABLE 5.4.4: A MAPPING OF ANNOTTS' COSTS ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue(a) \$'000 [I]	Domestic Pre-Tax Profit(b) \$'000 [II]	Domestic Costs(c) \$'000 [III]	Share of Domestic Costs in Total Costs(d) (percentage) [IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	5,323	1,346	3,977	0.69
20 Fruit and Vegetables	3,580	368	3,212	0.56
22 Flour and Cereal Products	39,833	4,090	35,743	6.20
23 Bread, Cakes, and Biscuits	375,035	41,382	333,653	57.88
24 Confectionery and Cocoa	64,897	2,964	61,933	10.75
25 Other Food Products	59,462	2,758	56,704	9.84
89 Wholesale Trade	1,343	139	1,204	0.21
Investments	2,627	2,627	-	-
	<u>552,100</u>	<u>55,674</u>	<u>496,426</u>	<u>36.13</u>

- (a) Source: Table 5.4.2, column [III].
- (b) Source: Table 5.4.3, column [III].
- (c) That is, column [I] - column [II].
- (d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.4.3) from total revenue (see total of column [I], Table 5.4.2).

5.4.2 are used in conjunction with the mapping in Table 5.4.1 to generate the estimates presented in column [I] of Table 5.4.3. The next step is to subtract from the profit figures the components due to Arnotts' overseas operations. It is known from the geographical segments that \$9.989m of Arnotts' profit is derived from its overseas operations (see section 5.4.3). It is assumed that this profit is generated in proportion to the total profit generated by the activities Biscuits and Nuts (see sections 5.4.2 and 5.4.3). Thus \$9.046m (i.e., $\$9.989m \times \$50.428 / \$55.681m$) is earned from overseas biscuit operations and \$0.943m is earned from overseas nut operations. The resulting estimates of the domestic profit figures for Arnotts by ORANI Industries are given in column [III] of Table 5.4.3. Domestic profits are then subtracted from domestic revenue to estimate Arnotts' domestic costs; see Table 5.4.4. The final estimated cost shares are given in column [IV] of Table 5.4.4 and, similar to above, they are based on consolidated figures.

5.4.6 Asset Share Estimates

The first step is to allocate Arnotts' total assets across ORANI Industries. Unfortunately no industry-segmented data were available on assets. Instead, the profit shares listed in section 5.4.2 were used to estimate a rough mapping of assets across activities. Then from Table 5.4.1 it is possible to generate a mapping, albeit a very rough one, of assets across ORANI Industries; see Table 5.4.5, column [I]. The next step is to subtract the \$86.531m of assets belonging to Arnotts' overseas operations; see section 5.4.3. It is assumed that

these assets are located in proportion to the total assets of the activities Biscuits and Nuts. The resulting estimates of the domestic assets and asset shares are given in columns [III] and [IV], respectively, of Table 5.4.5. Note that these estimates are based on consolidated figures.

TABLE 5.4.5: A MAPPING OF ARNOTTS' ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets (a) \$'000 [I]	Foreign Assets (b) \$'000 [II]	Domestic Assets (c) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	10,960	2,553	8,407	1.92
20 Fruit and Vegetables	2,455	-	2,455	0.56
22 Flour and Cereal Products	27,313	-	27,313	6.23
23 Bread, Cakes, and Biscuits	336,706	78,362	258,344	58.92
24 Confectionery and Cocoa	24,114	5,616	18,498	4.22
25 Other Food Products	18,414	-	18,414	4.20
89 Wholesale Trade	921	-	921	0.21
Investments	17,537	-	17,537	4.00
	<u>438,420</u>	<u>86,531</u>	<u>351,889</u>	<u>80.26</u>

(a) The total asset figures were estimated by first multiplying the pre-tax profit percentages given in section 5.4.2 by total assets of \$438,420m; see section 5.4.3. These figures were then mapped to ORANI Industries using Table 5.4.1.

(b) It is assumed that the \$86.531m of foreign assets (see section 5.4.3) are located in proportion to the total assets of the activities Biscuits and Nuts.

(c) That is, column [I] - column [II].

5.5 Australian National Industries (ANI)

5.5.1 History

Following Stock Exchange Research (1986), ANI was initially involved in the assembly and distribution of motor vehicles. The company then expanded its operations through an active policy of takeovers, which included: Austral Steel Holdings Ltd and Sargeants Engineering Ltd (both in 1970); Coats and Co. Ltd (1972); Steelmark Ltd (1973); Capital Motors Ltd (1977); Container-Care Ltd of Hong Kong (1978); Bundeng Ltd (1981); Bradken Consolidated Ltd, Comeng Holdings Ltd, and O'Donnell Griffin (all in 1982); and Consteel (1986). Note that ANI also actively disposes of investments. For example, in 1986-87 ANI sold its interests in South Africa, a rental company in the USA, and Container-Care Ltd of Hong Kong; see ANI (1987, pp. 4-5). ANI's current activities cover four broad areas, namely, contracting, distribution, manufacturing, and services.

5.5.2 Industry Segments

According to note 20 of the 1987 annual report (see ANI (1987, pp. 44-45)), ANI operates in five segments. The operating profit (before tax), revenue, and assets for 1986-87 in these segments are as follows:

	Profit (\$'000)	Revenue (\$'000)	Assets (\$'000)
Contracting	32,846	545,272	182,765
Distribution	32,247	538,905	226,808
Manufacturing	27,205	316,900	252,464
Service	8,929	103,542	81,536
Investments	3,034	1,847	36,017
Unallocated	-	-	13,243
	<u>104,261</u>	<u>1,506,466</u>	<u>792,833</u>

As the above industry-segmented data are too aggregated for mapping to ORANI Industries, an attempt must be made to disaggregate them. Note 22 of the 1987 annual report (see ANI (1987, pp. 45-47)) gives a description of the major activities of ANI's subsidiary companies. A modified version of this note which includes the areas of economic activity that the key subsidiary companies, associated companies, and business names operate in is given in Table 5.5.1.

5.5.3 Geographical Segments

According to note 20 of the 1987 annual report (see ANI (1987, p. 44)), "over 90 per cent of all revenues and profits before tax are generated from within Australia and less than 10 per cent of total assets of subsidiaries are located outside of Australia; intersegment revenues are not material and have been excluded." The overseas operations include a 6 per cent stake in William Cook Plc and 22 per cent of Aurora Plc; see Gliddon (1988, p. 6). Both of these companies are associated with the U.K. foundry industry. Other overseas activities include boiler manufacturing and the distribution of castings in Malaysia.

TABLE 5.5.1: A BREAKDOWN OF AUSTRALIAN NATIONAL INDUSTRIES' NET PROFIT AND REVENUE GROUPED ACCORDING TO ECONOMIC ACTIVITIES

Economic Activity/Subsidiary and Associated Companies, and Business Names	Percentage of Company Owned by ANI Group [I]	Contribution to Net Profit (a) \$'000 [II]	Contribution to Revenue \$'000 [III]
<u>CONTRACTING</u>			
<u>Railway Rolling Stock</u>			
Comeng Holdings Ltd	100	-	80,000(b)
<u>Electrical, Instrumentation, and Fire Protection Activities</u>			
O'Donnell Griffin Constructions Pty Ltd	100	6,186(c)	150,000(d)
<u>Engineering Services</u>			
ANI Engineering	na(e)	na	na
Kleen Fabrication Products	na	na	na
Bundaberg Foundry	na	na	na
ANI Hoskins	na	na	na
ANI Keogh Pty Ltd	na	751	na
<u>Submarine Construction</u>			
Cookatoo Dockyard Pty Ltd	100	2,953	76,179(f)
		<u>21,137(g)</u>	<u>545,272</u>
<u>DISTRIBUTION</u>			
<u>Metal Distribution</u>			
Steelmark	na	na	na
<u>Earthmoving Equipment Distribution</u>			
ANI Komatsu	na	na	na
<u>Motor Vehicle Franchises</u>			
Capital Motors (Wholesale) Pty Ltd	100	10	na
<u>Distributor of Scientific Products</u>			
Selby Anax	na	na	na
		<u>20,751(g)</u>	<u>538,905</u>

... Continued

Table 5.5.1 (Continued)

Economic Activity/Subsidiary and Associated Companies, and Business Names	Percentage of Company Owned by ANI Group [I]	Contribution to Net Profit (a) \$'000 [II]	Contribution to Revenue \$'000 [III]
MANUFACTURING			
Steel Foundry			
Bradken	na	na	na
Specialty Steel Products			
Comsteel	100	797	na
Metal Forging			
National Forge	na	na	na
Astra Engineering	na	na	na
ANI Philippines Forge	100	19	na
Heavy Machinery			
ANI Ruwolt	na	-(h)	40,000(l)
Roof Supports			
Titan Mining and Engineering	na	-(j)	6,900(k)
		17,507(g)	316,900
SERVICE			
Coates Hire	na	na	na
Container-Care Ltd	100	-	na
		5,746(g)	103,542
INVESTMENT			
Merchant Banking			
Spedley Holdings Ltd	45	1,952 (g)(1)	1,847 (2)
		67,093	1,506,466

* Source: ANI (1987 pp. 45-47).

(a) Unless otherwise stated, these figures are obtained from note 22 of the 1987 annual report; see ANI (1987, pp. 45-47).

(b) According to Gliddon (1988, p. 3), Comeng has approximately \$20m of work on hand in M.S.W. which should be completed during the next 18 months, and approximately \$20m of work on hand in Victoria which is equivalent to a 3 year base load. Thus, the revenue for Comeng over one year is roughly \$80m (i.e., \$20m/1.5 + \$200m/3).

- (c) Gliddon (1988, p. 5) estimates that O'Donnell Griffin's sales are currently running at the rate of \$150m per annum and that the pre-tax profit to sales margin is 7 per cent. This implies a pre-tax profit for 1987-88 of \$10.5m (i.e., \$150m x 0.07). The ratio of after-tax profit to pre-tax profit for ANI as a whole is \$67,093,000/\$104,261,000 = 0.64; see ANI (1987, pp. 44 and 46). Thus, the after-tax profit for O'Donnell Griffin in 1987-88 is approximately \$6.72m (i.e., \$10.5m x 0.64). As the aggregates in the table refer to the period 1986-87, this must be converted to 1986-87 dollars. According to ABS (1988, p. 45) the seasonally adjusted implicit price deflators for expenditure on GDP were 118.2 and 128.4 for the June quarters of 1986-87 and 1987-88, respectively. Thus, the after-tax profit for O'Donnell Griffin in 1987-88 is \$6.186m (1986-87 prices); i.e., \$6.72m x 118.2/128.4.
- (d) According to Gliddon (1988, p. 5), O'Donnell Griffin's sales are currently running at \$150m per annum.
- (e) Not available. Note that some of these activities refer to business names which are largely subsumed under the listing of The ANI Corporation Limited; see ANI (1987, p. 45).
- (f) No information could be obtained on the revenue generated by Cockatoo Dockyard Pty Ltd. The figure reported was estimated by multiplying total revenue for the contracting segment by the ratio of profit earned by Cockatoo Dockyard to total profit for the contracting segment (i.e., \$545,272m x (\$2.953m/\$21.137m) = \$76.179m).
- (g) The total group profit on the basis of consolidated equity accounts was \$67,093,000 according to note 22 of the 1987 annual report; see ANI (1987, p. 46). This figure was proportioned across the areas of economic activity on the basis of the industry-segmented operating profits (before tax); see section 5.5.2. For example, the total operating profit (before tax) was \$104,261,000, and of this contracting activities were responsible for \$32,846,000. Thus, the contribution to net profit from contracting activities was estimated as \$21,137,000 (i.e., (\$32,846,000/\$104,261,000) x \$67,093,000). According to Gliddon (1988, p. 6) "ANI Ruwolt has experienced a difficult 1987/8 year with ball mill design problems sending the operation into small losses." On the basis of this statement we have attributed a zero profit to this activity.
- (h) According to Gliddon (1988, p. 6) ANI Ruwolt had total sales of \$40m.
- (j) According to the 1987 annual report, Titan Mining and Engineering's "profit in 1986-87 was in line with the previous year"; see ANI (1987, p. 19). Unfortunately, no information could be obtained on the size of the profit earned. As a position had to be taken, the profit was set to the default of zero.
- (k) No information could be obtained on the revenue earned by Titan Mining and Engineering. The figure of \$6.9m was a very rough guess.
- (l) Note that for simplicity the profit and revenue of other associated companies have been included with those of Spedley Holdings Ltd.

5.5.4 Revenue Share Estimates

The first task is to allocate ANI's total revenue across the ORANI Industries. Recall from Table 5.1 that ANI with its ASX industry classification of Heavy Engineering (111) maps to four ORANI industries. A revised version of this mapping is presented in Table 5.5.2. The next step is to apply this mapping to the revenue figures given in section 5.5.2 to produce estimates of ANI's revenue across ORANI industries; see Table 5.5.3, column [I].

The next step is to subtract from the above total revenue figures the components due to ANI's overseas operations. However, it is assumed that all ANI's revenue is derived from domestic operations; see section 5.5.3. The resulting estimates of the domestic revenue figures and shares for ANI by ORANI industries are given in columns [III] and [IV], respectively, of Table 5.5.3.

5.5.5 Cost Share Estimates

The first task is to allocate ANI's total profit across the ORANI Industries. Similar to above, the profit figures listed in section 5.5.2 are used in conjunction with the mapping in Table 5.5.2 to generate the estimates presented in column [I] of Table 5.5.4. The next step is to subtract from the profit figures the components due to ANI's overseas operations. However, it is assumed that all of ANI's profit is derived from domestic operations; see section 5.5.3. The resulting

TABLE 5.5.2: A MAPPING OF AUSTRALIAN NATIONAL INDUSTRIES' AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
<u>CONTRACTING</u>			
Railway Rolling Stock	15	70	Locomotives
Electrical, Instrumentation, and Fire Protection Activities	28	88	Other Construction
Engineering Services	43	102	Other Business Services
Submarine Construction	14	69	Ships and Boats
<u>DISTRIBUTION</u>			
Metal Distribution	100	89	Wholesale Trade
Earthmoving Equipment Distribution			
Motor Vehicle Franchisees Distributor of Scientific Products			
<u>MANUFACTURING</u>			
Steel Foundry	85	63	Basic Iron and Steel
Specialty Steel Products			Steel
Metal Forging			Steel
Heavy Machinery	13	78	Other Machinery and Plant
Roof Supports	2	102	Other Business Services
<u>SERVICE</u>			
	100	102	Other Business Services
<u>INVESTMENT</u>			
Merchant Banking	100	98	Banking

* The mapping is based on the contribution to net revenue figures given in Table 5.5.1. The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b)

TABLE 5.5.3: A MAPPING OF AUSTRALIAN NATIONAL INDUSTRIES' REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000 [I]	Foreign Revenue (b) \$'000 [II]	Domestic Revenue (c) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
63 Basic Iron and Steel	269,365	-	269,365	17.88
69 Ships and boats	76,338	-	76,338	5.07
70 Locomotives	81,791	-	81,791	5.43
78 Other Machinery and Plant	41,197	-	41,197	2.73
88 Other Construction	152,676	-	152,676	10.13
89 Wholesale Trade	538,905	-	538,905	35.78
98 Banking	1,847	-	1,847	0.12
102 Other Business Services	344,347	-	344,347	22.86
	<u>1,506,466</u>	<u>-</u>	<u>1,506,466</u>	<u>100.00</u>

(a) The total revenue figures were estimated by mapping the figures listed in column [III] of Table 5.5.1 to ORANI Industries using Table 5.5.2.

(b) See section 5.5.3.

(c) That is column [I] - column [II].

TABLE 5.5.4: A MAPPING OF AUSTRALIAN NATIONAL INDUSTRIES' PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit (a) \$'000 [III]
63 Basic Iron and Steel	23,124	-	23,124
69 Ships and boats	4,598	-	4,598
70 Locomotives	4,927	-	4,927
78 Other Machinery and Plant	3,537	-	3,537
88 Other Construction	9,197	-	9,197
89 Wholesale Trade	32,247	-	32,247
98 Banking	3,034	-	3,034
102 Other Business Services	23,597	-	23,597
	<u>104,261</u>	<u>-</u>	<u>104,261</u>

(a) That is, column [I] - column [II].

estimates of the domestic profit figures for ANI by ORANI Industries are given in column [III] of Table 5.5.4. Domestic profits are then subtracted from domestic revenue to estimate ANI's domestic costs; see Table 5.5.5. The final estimated cost shares are given in column [IV] of Table 5.5.5.

5.5.6 Assets Share Estimates

The first step is to allocate ANI's total assets across the ORANI Industries. The asset figures given in section 5.5.2 are used in conjunction with the mapping in Table 5.5.2 to generate the estimates listed in column [I] of Table 5.5.6. Next it is assumed that all of ANI's assets are located within Australia; see section 5.5.3. Thus the domestic asset figures in column [III] of Table 5.5.6 are the same as the total asset figures listed in column [I] of that table. Finally, the domestic asset shares are given in column [IV] of Table 5.5.6.

TABLE 5.5.5: A MAPPING OF AUSTRALIAN NATIONAL INDUSTRIES' COSTS ACROSS ORANI INDUSTRIES INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000 [I]	Domestic Pre-tax Profit (b) \$'000 [II]	Domestic Costs (c) \$'000 [III]	Share of Domestic Costs in Total Costs (d) (percentage) [IV]
63 Basic Iron and Steel	269,365	23,124	246,241	17.55
69 Ships and Boats	76,338	4,598	71,740	5.11
70 Locomotives	81,791	4,927	76,864	5.48
78 Other Machinery and Plant	41,197	3,537	37,660	2.68
88 Other Construction	152,676	9,197	143,479	10.22
69 Wholesale Trade	538,905	32,247	506,658	36.10
96 Banking	1,347	3,034	-1,187	0.00(e)
102 Other Business Services	344,347	23,597	320,750	22.86
	<u>1,506,466</u>	<u>104,261</u>	<u>1,402,205</u>	<u>100.00</u>

(a) Source: Table 5.5.3, column [III].

(b) Source: Table 5.5.4, column [III].

(c) That is, column [I] - column [II].

(d) Total costs is given by subtracting total pre-tax profit (see total of column [I], Table 5.5.4) from total revenue (see total of column [I], Table 5.5.3).

(e) The negative cost corresponds with this entry was set to the default of zero. The other shares were then scaled appropriately, i.e., the shares in column [IV] equal domestic costs in column [III] times $100/(\$1,402,205m + \$1.187m)$.

TABLE 5.5.6: A MAPPING OF AUSTRALIAN NATIONAL INDUSTRIES' ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
63 Basic Iron and Steel	214,595	-	214,595	27.07
69 Ships and Boats	25,587	-	25,587	3.23
70 Locomotives	27,415	-	27,415	3.46
78 Other Machinery and Plant	32,820	-	32,820	4.14
88 Other Construction	51,174	-	51,174	6.45
89 Wholesale Trade	226,808	-	226,808	28.61
98 Banking	36,017	-	36,017	4.54
102 Other Business Services	165,174	-	165,174	20.83
Unallocated	13,203	-	13,203	1.67
	<u>792,833</u>	<u>-</u>	<u>792,833</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

5.6 Bundaberg Sugar

5.6.1 History

Following Datex (1987), Bundaberg Sugar arose from the 1972 merger between Fairymead Sugar Co Ltd and Gibson and Howes Ltd. The group was subsequently enlarged by the 1975 acquisition of Millaquin Sugar Co Ltd. This amalgamated all the sugar millers in the Bundaberg district and resulted in a rationalization of their activities; see Hunter (1986, p. 3). Furthermore, on the 1st March 1988 Bundaberg purchased the sugar milling interests of Howard Smith Ltd; see Geddes (1988, p. 15).

In an effort to lessen dependence on the cyclical sugar market, Bundaberg has been active in the coal industry. In 1977 it purchased the Westfalen group of mines at Ipswich in Queensland; see Geddes (1988, p. 22). In 1979 it acquired a 14.7 per cent investment in the Surat Coal Joint-Venture. Finally, in 1981 it obtained a 12.2 per cent interest in the Blair Athol mine. Note that Bundaberg has recently sold its Westfalen coal operations; see Bundaberg Sugar (1988, p. 1).

Other activities of Bundaberg Sugar include the manufacturing of "Bundaberg Rum". In November 1986 a 50 per cent interest in Bundaberg Distilling Company Pty Ltd was sold to Carlton United Breweries Ltd; see Geddes (1988, p. 19). Bundaberg has also maintained several beef cattle grazing properties. However, these were sold in March of 1980; see Geddes (1988, p. 26). Finally, on 31st December 1987, Bundaberg

acquired Hardings Manufactures Pty Ltd, a Brisbane-based wholesale food merchant which packages and distributes a range of food products from raw and refined sugar to dried fruit and nuts; see Geddes (1988, p. 17).

5.6.2 Industry Segments

According to note 33 of the 1988 annual report (see Bundaberg Sugar (1988, p. 34)), Bundaberg operates in four segments. The pre-tax operating profit, revenue, and assets for 1987-88 in these segments are, as follows:

	Profit (\$'000)	Revenue (\$'000)	Assets (\$'000)
Sugar	13,104	132,521	218,510
Coal	8,341	30,483	80,656
Distilled Products	5,137	11,145	31,745
Beef Cattle	2,680	4,888	5,709
Unallocated Items	(11,865)	-	20,617
	<u>17,397</u>	<u>179,037</u>	<u>357,237</u>

Note that the accounts were prepared in accordance with the historical, cost convention and have not been adjusted to take account of the current costs of specific assets or their impact on the operating results except to the extent that they are reflected in the revaluations of certain freehold properties, fixed assets and investments; see Bundaberg Sugar (1988, p. 20).

5.6.3 Geographical Segments

According to note 33 of the 1988 annual report (see Bundaberg Sugar (1988, p. 34)), the Bundaberg group only operates in Australia.

5.6.4 Revenue Share Estimates

The first task is to allocate Bundaberg's total revenue across the ORANI Industries. Recall from Table 5.1 that Bundaberg with its ASA Industry classification of Sugar (226) maps to just one ORANI Industry, namely, Other Farming (Sugarcane, Fruit, and Nuts). A revised version of this mapping is given in Table 5.6.1. The next step is to apply this mapping to the revenue figures given in section 5.6.2 to produce estimates of Bundaberg's revenue across ORANI Industries; see Table 5.6.2, column [I]. Note that all the operations of Bundaberg Sugar are located within Australia; see section 5.6.3. The domestic revenue figures and shares are given in columns [III] and [IV], respectively, of Table 5.6.2.

5.6.5 Cost Share Estimates

The first task is to allocate Bundaberg Sugar's profit across the ORANI Industries. Similar to above, the profit figures listed in section 5.6.2 are used in conjunction with the mapping in Table 5.6.1 to generate the estimates presented in column [I] to Table 5.6.3. The next step is to subtract from the profit figures the components due to Bundaberg's overseas operations. However, it is assumed that all of

TABLE 5.6.1: A MAPPING OF BUNDABERG SUGAR'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Sugar (a)	40	6	Other Farming (Sugarcane, Fruit, and Nuts)
	40	25	Other Food Products
	20	89	Wholesale Trade
Coal	100	14	Black Coal
Distilled Products	100	28	Other Alcoholic Beverages

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Bundaberg Sugar (1988), Table 3.3, and ABS (1985a,b). Note that the Beef Cattle segment is not included as Bundaberg has sold its interests in this area; see section 5.7.1.

(a) No information was available on the split of the economic activity Sugar across the ORANI Industries. Thus the percentages listed are best guesses. Note that the ORANI Industry Other Food Products includes raw sugar manufacturing and sugar refining.

TABLE 5.6.2: A MAPPING OF BUNDABERG SUGAR'S REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	53,008	-	53,008	29.61
14 Black Coal	30,483	-	30,483	17.03
25 Other Food Products	53,009	-	53,009	29.61
28 Other Alcoholic Beverages	11,145	-	11,145	6.22
89 Wholesale Trade	26,504	-	26,504	14.80
Unallocated Items (b)	4,888	-	4,888	2.73
	<u>179,037</u>	<u>-</u>	<u>179,037</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

(b) Note that revenue derived from beef cattle activities, which were recently sold, has been aggregated with unallocated items.

TABLE 5.6.3: A MAPPING OF BUNDABERG SUGAR'S
PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit(a) \$'000 [III]
6 Other Farming (Sugarcane, Fruit, and Nuts)	5,242	-	5,242
14 Black Coal	8,341	-	8,341
25 Other Food Products	5,242	-	5,242
28 Other Alcoholic Beverages	5,137	-	5,137
89 Wholesale Trade	2,620	-	2,620
Unallocated Items(b)	(9,185)	-	(9,185)
	<u>17,397</u>	<u>-</u>	<u>17,397</u>

(a) That is, column [I] - column [II].

(b) Note that profit derived from beef cattle activities, which were recently sold, has been aggregated with unallocated items.

Bundaberg's profit is derived from domestic operations; see section 5.6.3. The resulting estimates of the domestic profit figures by ORANI Industries are given in column [III] of Table 5.6.3. Domestic profits are then subtracted from domestic revenue to estimate Bundaberg's domestic costs; see Table 5.6.4. The final estimated cost shares are given in column [IV] of Table 5.6.4.

5.6.6 Asset Share Estimates

The first step is to allocate Bundaberg Sugar's total assets across the ORANI Industries. The asset figures given in section 5.6.2 are used in conjunction with the mapping in Table 5.6.1 to generate the estimates presented in column [I] of Table 5.6.5. Next it is assumed that all of Bundaberg Sugar's activities are located within Australia; see section 5.6.3. Thus the domestic asset figures in column [III] of Table 5.6.5 are the same as the total asset figures listed in column [I] of that table. Finally, the domestic asset shares are given in column [IV] of Table 5.6.5.

TABLE 5.6.4: A MAPPING OF BUNDABERG SUGAR'S COSTS ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Pre-Tax Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	53,008	5,242	47,766	29.54
14 Black Coal	30,483	8,341	22,142	13.70
25 Other Food Products	53,009	5,242	47,767	29.55
28 Other Alcoholic Beverages	11,145	5,137	6,008	3.72
89 Wholesale Trade	26,504	2,620	23,884	14.78
Unallocated Items (e)	4,888	(9,185)	14,073	8.71
	<u>179,037</u>	<u>17,397</u>	<u>161,640</u>	<u>100.00</u>

(a) Source: Table 5.6.2, column [III].

(b) Source: Table 5.6.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.6.3) from total revenue (see total of column [I], Table 5.6.2).

(e) Note that unallocated items include the activities of beef cattle operations, which were recently sold.

TABLE 5.6.5: A MAPPING OF BUNDABERG SUGAR'S ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000	Foreign Assets \$'000	Domestic Assets (a) \$'000	Share of Domestic Assets in Total Assets (percentage)
	[I]	[II]	[III]	[IV]
6 Other Farming (Sugarcane, Fruit, and Nuts)	87,404	-	87,404	24.47
14 Black Coal	80,656	-	80,656	22.54
25 Other Food Products	87,404	-	87,404	24.47
28 Other Alcoholic Beverages	31,745	-	31,745	8.89
89 Wholesale Trade	43,702	-	43,702	12.23
Unallocated Items (b)	26,326	-	26,326	7.37
	<u>357,237</u>	<u>-</u>	<u>357,237</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

(b) Note that the revenue derived from beef cattle activities, which were recently sold, has been aggregated with unallocated items.

5.7 Coal & Allied Industries

5.7.1 History

Following J.B. Were & Son (1988), Coal and Allied Industries Limited was formed in 1960 to merge the interests of two established coal mining companies, J. & A. Brown & Abermain Seahan Collieries Ltd and Caledonian Collieries Ltd. The company operates coal mines situated around Newcastle, N.S.W., supplying coal to power stations and the general industrial market, and exporting to Asia and Europe. Japan is the major consumer of the company's steaming coal, although new markets in Asia and Europe are being actively pursued. The activities of Coal and Allied Industries are depicted in Figure 5.7.1. Note that Coal and Allied Industries owns 22.8 per cent of Howard Smith, which in turn owns 50 per cent of Coal and Allied Industries.

5.7.2 Industry Segments

According to note 32 of the 1988 annual report (see Coal and Allied Industries (1988, p. 37)), Coal and Allied operates in two segments, namely, coal mining and investments. The pre-tax operating profit, revenue, and assets for 1987-88 in these segments are as follows:

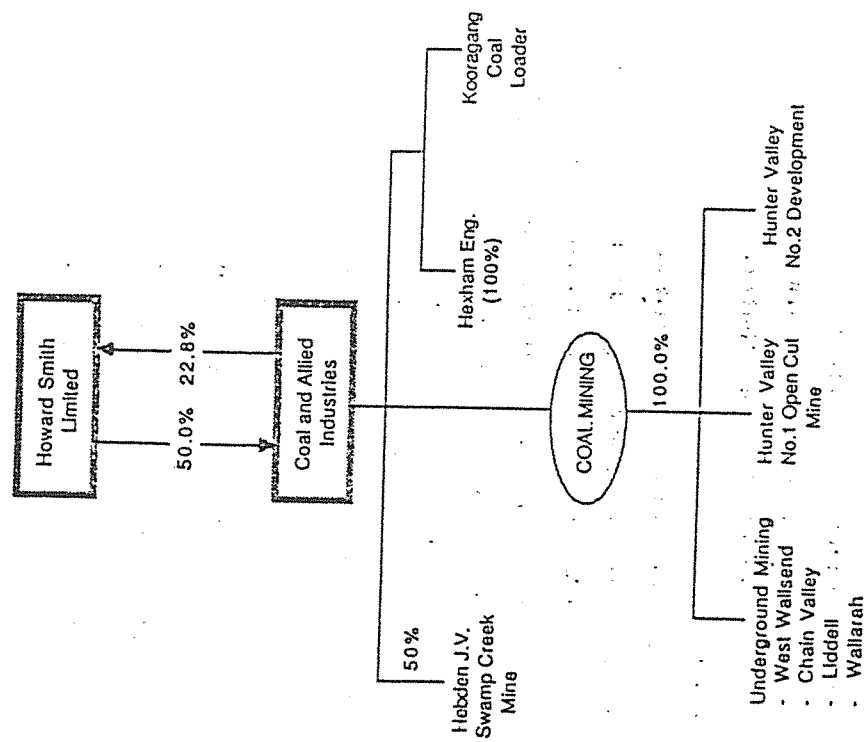


FIGURE 5.7.1: ACTIVITIES OF COAL AND ALLIED INDUSTRIES*

* Source: McCaughan Dyson Capel Cure (1988).

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Coal Mining	469,973	(19,140)	372,338
Investments	6,817	6,199	176,568
Elimination			(121,866)
	<u>476,790</u>	<u>(12,941)</u>	<u>427,040</u>

Note that investment revenue and profit are primarily dividend income from Coal and Allied's substantial investment in Howard Smith.

As Coal and Allied is involved in a reciprocal holding arrangement with Howard Smith, the above industry segmented data must be re-estimated such that it is net of Coal and Allied's investment in Howard Smith. The first correction to make is to subtract the dividend income earned by Coal and Allied from Howard Smith from the investment segment's revenue and profit figures. According to Howard Smith (1988, pp. 1 and 12), \$19.861m of unfranked dividends were paid in 1987-88 by Howard Smith. As Coal and Allied owns 22.8 per cent of Howard Smith, the dividend income that went to Coal and Allied was approximately \$4.528m (i.e., $0.228 \times \$19.861m$). Thus \$4.528m needs to be subtracted from the investment segment's revenue and profit figures. (Note that if the dividends had been franked then the tax paid by Howard Smith on these dividends would also have to be subtracted.) The final step is to subtract from Coal and Allied's assets its investment in Howard Smith. The at cost value of Howard Smith shares owned by Coal and Allied is \$54.220m; see Coal and Allied Industries (1987, p. 36). However, before this is subtracted from the assets of the investment segment, the eliminated assets are allocated across the coal mining and investment

segments: coal mining and investment assets become \$289.673m and \$137.367m, respectively. Thus, the industry segmented data for Coal and Allied, net of its investment in Howard Smith, is as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Coal Mining	469,973	(19,140)	289,673
Investments	2,289	1,671	83,147
	<u>472,262</u>	<u>(17,469)</u>	<u>372,820</u>

5.7.3 Geographical Segments

According to Coal and Allied Industries (1988, p. 37), the group operates predominantly in Australia.

5.7.4 Revenue Share Estimates

The first task is to allocate Coal and Allied's total revenue (net of its holding in Howard Smith) across the ORANI Industries. A mapping of Coal and Allied's areas of economic activity to the ORANI Industries is given in Table 5.7.1. This mapping is then applied to the revenue figures given in section 5.7.2 to produce estimates of Coal and Allied's total revenue (net of its holding in Howard Smith) across ORANI Industries; see Table 5.7.2, column [II]. As Coal and Allied is involved in a reciprocal holding with Howard Smith, the next step is to estimate a mapping of the total revenue of Howard Smith (net of its holding in Coal and Allied) across ORANI Industries; see section 5.14.4 and Table 5.7.2, column [I]. It is now possible, given the above data, to implement the procedure set out in Appendix A.1 for estimating

TABLE 5.7.1: A MAPPING OF COAL AND ALLIED INDUSTRIES' AREAS OF ECONOMIC ACTIVITY (NET OF ITS HOLDING IN HOWARD SMITH) TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Coal Mining	100	14	Black Coal

* The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

TABLE 5.7.2: A MAPPING OF COAL AND ALLIED INDUSTRIES' TOTAL REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Revenue Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Total Revenue Net of its Holding in Howard Smith (b) \$'000 [II]	Total Revenue (c) \$'000 [III]
14 Black Coal	152,704	469,973	195,022
70 Locomotives	323,683	-	101,378
75 Other Electrical Goods	49,797	-	15,596
89 Wholesale Trade	124,494	-	38,992
95 Water Transport	286,829	-	89,835
102 Other Business Services	19,211	-	6,017
Investments	64,365	2,289	20,876
	<u>1,021,083</u>	<u>472,262</u>	<u>467,716</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.228 $\times$ 0.5/[0.5(0.228 + 0.5)]. For more details see Appendix A.1.

mappings involving reciprocal holdings. The final estimates of Coal and Allied's total revenue across ORANI industries are given in column [III] of Table 5.7.2.

The above procedure is then repeated to estimate a mapping of Coal and Allied's foreign revenue across ORANI industries; see Table 5.7.3. Note that even though Coal and Allied does not operate overseas directly (see section 5.7.3), it does indirectly via its investment in Howard Smith. The foreign revenue components are then subtracted from the total revenue to estimate domestic revenue across ORANI industries; see Table 5.7.4. Finally, the shares of domestic revenue in total revenue for Coal and Allied mapped across ORANI industries are given in column [IV] of Table 5.7.4.

5.7.5 Cost Share Estimates

The first task is to allocate Coal and Allied's total profit across ORANI industries. Similar to above, Coal and Allied's profit figures (net of its holding in Howard Smith) listed in section 5.7.2 are used in conjunction with the mapping in Table 5.7.1 to generate the estimates presented in column [II] of Table 5.7.5. The next step is to estimate a mapping of the total profits of Howard Smith (net of its holding in Coal and Allied) across ORANI industries; see section 5.14.5 and Table 5.7.5, column [I]. Following the procedure set out in Appendix A.1, estimates are then made of Coal and Allied's total profit mapped across ORANI industries; see Table 5.7.5, column [III].

TABLE 5.7.3: A MAPPING OF COAL AND ALLIED INDUSTRIES' FOREIGN REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Revenue Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Foreign Revenue Net of its Holding in Howard Smith (b) \$'000 [II]	Foreign Revenue (c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	144,512	-	45,261
102 Other Business Services	-	-	-
Investments	-	-	-
	<u>144,512</u>	<u>-</u>	<u>45,261</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.228 $\times$ 0.5/[0.5(0.228 + 0.5)]. For more details see Appendix A.1.

TABLE 5.7.4: A MAPPING OF COAL AND ALLIED INDUSTRIES' DOMESTIC REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000 [I]	Foreign Revenue (b) \$'000 [II]	Domestic Revenue (c) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
14 Black Coal	195,022	-	195,022	41.70
70 Locomotives	101,378	-	101,378	21.67
75 Other Electrical Goods	15,596	-	15,596	3.33
89 Wholesale Trade	38,992	-	38,992	8.34
95 Water Transport	89,835	45,261	44,574	9.53
102 Other Business Services	6,017	-	6,017	1.29
Investments	20,876	-	20,876	4.46
	<u>167,716</u>	<u>45,261</u>	<u>422,455</u>	<u>90.32</u>

(a) Source: Table 5.7.2, column [III].

(b) Source: Table 5.7.3, column [III].

(c) That is, column [I] - column [II].

TABLE 5.7.5: A MAPPING OF COAL AND ALLIED INDUSTRIES' TOTAL PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Profit Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Total Profit Net of its Holding in Howard Smith (b) \$'000 [II]	Total Pre-Tax Profit (c) \$'000 [III]
14 Black Coal	(2,827)	(19,140)	(6,881)
70 Locomotives	8,103	-	2,538
75 Other Electrical Goods	1,247	-	391
89 Wholesale Trade	3,117	-	976
95 Water Transport	5,034	-	1,577
102 Other Business Services	(8,198)	-	(2,568)
Investments	(1,177)	1,671	155
	<u>5,299</u>	<u>(17,469)</u>	<u>(3,812)</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) × 0.228 × 0.5/[0.5(0.228 + 0.5)]. For more details see Appendix A.1.

The above procedure is then repeated to estimate a mapping of Coal and Allied's foreign profit across ORANI Industries; see Table 5.7.6. The foreign profit components are then subtracted from total profit to estimate domestic profit mapped across ORANI Industries; see Table 5.7.7.

The last step is to subtract domestic profits from domestic revenue to estimate Coal and Allied's domestic costs mapped across ORANI Industries; see Table 5.7.8. The final estimated cost shares are given in column [IV] of Table 5.7.8.

5.7.6 Asset Share Estimates

The first task is to allocate Coal and Allied's total assets across ORANI Industries. Coal and Allied's total asset figures (net of its holding in Howard Smith) listed in section 5.7.2 are used in conjunction with the mapping Table 5.7.1 to generate the estimates presented in column [II] of Table 5.7.9. The next step is to estimate a mapping of the total assets of Howard Smith (net of its holding in Coal and Allied) across ORANI Industries; see section 5.14.6 and Table 5.7.9, column [I]. Following the procedure set out in Appendix A.1, estimates are then made of Coal and Allied's total assets mapped across ORANI Industries; see Table 5.7.9, column [III].

The above procedure is then repeated to estimate a mapping of Coal and Allied's foreign assets across ORANI Industries; see Table 5.7.10. The foreign assets are then subtracted from total assets to

TABLE 5.7.6: A MAPPING OF COAL AND ALLIED INDUSTRIES' FOREIGN PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Profit Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Foreign Profit Net of its Holding in Howard Smith (b) \$'000 [II]	Pre-Tax Foreign Profit (c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	(9,388)	-	(2,940)
102 Other Business Services	-	-	-
Investments	-	-	-
	<u>(9,388)</u>	<u>-</u>	<u>(2,940)</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.228 $\times$ 0.5/[0.5(0.228 + 0.5)]. For more details see Appendix A.1.

TABLE 5.7.7: A MAPPING OF COAL AND ALLIED INDUSTRIES' DOMESTIC PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit (a) \$'000 [I]	Foreign Pre-Tax Profit (b) \$'000 [II]	Domestic Pre-Tax Profit (c) \$'000 [III]
14 Black Coal	(6,881)	-	(6,881)
70 Locomotives	2,538	-	2,538
75 Other Electrical Goods	391	-	391
89 Wholesale Trade	976	-	976
95 Water Transport	1,577	(2,940)	4,517
102 Other Business Services	(2,568)	-	(2,568)
Investments	155	-	155
	<u>(3,812)</u>	<u>(2,940)</u>	<u>(872)</u>

(a) Source: Table 5.7.5, column [III].
 (b) Source: Table 5.7.6, column [III].
 (c) That is, column [I] - column [III].

TABLE 5.7.8: A MAPPING OF COAL AND ALLIED INDUSTRIES' DOMESTIC COSTS ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000 [I]	Domestic Pre-Tax Profit (b) \$'000 [II]	Domestic Costs (c) \$'000 [III]	Share of Domestic Costs in Total Costs (d) (percentage) [IV]
14 Black Coal	195,022	(6,881)	201,903	42.83
70 Locomotives	101,378	2,538	98,840	20.96
75 Other Electrical Goods	15,596	391	15,205	3.22
89 Wholesale Trade	38,992	976	38,016	8.06
95 Water Transport	44,574	4,517	40,057	8.50
102 Other Business Services	6,017	(2,568)	8,585	1.82
Investments	20,876	155	20,721	4.39
	<u>422,455</u>	<u>(872)</u>	<u>423,327</u>	<u>89.78</u>

(a) Source: Table 5.7.4, column [III].
 (b) Source: Table 5.7.7, column [III].
 (c) That is, column [I] - column [III].
 (d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.7.7) from total revenue (see total of column [I], Table 5.7.4).

TABLE 5.7.9: A MAPPING OF COAL AND ALLIED INDUSTRIES' TOTAL ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Assets Net of its Holding in Coal and Allied Industries(a) \$'000 [I]	Coal and Allied Industries' Total Assets Net of its Holding in Howard Smith(b) \$'000 [II]	Total Assets(c) \$'000 [III]
14 Black Coal	268,958	289,673	174,963
70 Locomotives	168,958	-	52,918
75 Other Electrical Goods	25,994	-	8,141
89 Wholesale Trade	64,984	-	20,353
95 Water Transport	186,708	-	58,477
102 Other Business Services	16,970	-	5,315
Investments	84,028	83,147	52,359
	<u>816,600</u>	<u>372,820</u>	<u>372,526</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.228 $\times$ 0.5/(0.5(0.228 + 0.5)). For more details see Appendix A.1.

TABLE 5.7.10: A MAPPING OF COAL AND ALLIED INDUSTRIES' FOREIGN ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Assets Net of its Holding in Coal and Allied Industries(a) \$'000 [I]	Coal and Allied Industries' Foreign Assets Net of its Holding in Howard Smith(b) \$'000 [II]	Foreign Assets(c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	65,320	-	20,458
102 Other Business Services	-	-	-
Investments	-	-	-
	<u>65,320</u>	<u>-</u>	<u>20,458</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.228 $\times$ 0.5/(0.5(0.228 + 0.5)). For more details see Appendix A.1.

estimate domestic assets mapped across ORANI industries; see Table 5.7.11. The final estimated asset shares are given in column [IV] of Table 5.7.11.

TABLE 5.7.11: A MAPPING OF COAL AND ALLIED INDUSTRIES' DOMESTIC ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets(a) \$'000 [I]	Foreign Assets(b) \$'000 [II]	Domestic Assets(c) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
14 Black Coal	174,963	-	174,963	46.96
70 Locomotives	52,918	-	52,918	14.20
75 Other Electrical Goods	8,141	-	8,141	2.19
89 Wholesale Trade	20,353	-	20,353	5.46
95 Water Transport	58,477	20,458	38,019	10.21
102 Other Business Services	5,315	-	5,315	1.43
Investments	52,359	-	52,359	14.06
	<u>372,526</u>	<u>20,458</u>	<u>352,068</u>	<u>94.51</u>

(a) Source: Table 5.7.9, column [III].
 (b) Source: Table 5.7.10, column [III].
 (c) That is, column [I] - column [II].

5.8 Comalco

5.8.1 History

Following Datex (1987), Comalco was listed on the Australian stock exchanges in 1970, when its co-proprietors (CRA and Kaiser) offered a 10 per cent equity to investors. Note that CRA still owns 67 per cent of Comalco. Comalco is not only one of the world's largest bauxite producers, it is also a fully integrated aluminium producer with interests extending to fabrication. The group extended internationally in 1982 to Japan and in 1984 to the USA. However the Japanese investment was sold in 1986 and parts of the USA investment had to be closed.

5.8.2 Industry Segments

According to note 29 of the 1987 annual report (see Comalco (1987, p. 61)), Comalco operates predominantly in one industry. The principal activities of the group comprise the conduct of an integrated aluminium industry (including the mining and marketing of bauxite, production and marketing of alumina, and production and marketing of aluminium in the primary, semi-fabricated and fabricated forms). Using information contained in the annual report and in Gerrard (1988) it is possible to estimate separate results for the economic activities of Comalco. These estimates are given in Table 5.8.1.

TABLE 5.8.1: ESTIMATES OF THE CONTRIBUTIONS TO CONSOLIDATED ACCOUNTS OF COMALCO FROM ITS ECONOMIC ACTIVITIES

Economic Activity	Revenue (a) \$'000 [I]	Profit (b) \$'000 [II]	Assets (c) \$'000 [III]
Bauxite	205,641(d)	27,497	350,709(d)
Alumina	109,711(d)	14,670	187,106(d)
Aluminium	635,492	84,972	963,545
Foundry Products	585,728	78,319	507,474
Rolled Products	242,787	32,464	245,427
Extruded Products	226,441	30,278	133,439
	<u>2,005,800</u>	<u>268,200</u>	<u>2,387,700</u>

(a) Estimated by scaling the revenue figures listed in Colmaco (1987, pp. 27, 30, 33, 35, and 38) such that total revenue matched the amount reported in the consolidated accounts; see Comalco (1988, p. 61).

(b) Total profit was split across economic activities in proportion to the revenue earned by each activity.

(c) Estimated by scaling the asset figures listed in Comalco (1987, pp. 27, 30, 33, 35, and 38) such that total assets matched the amount reported in the consolidated accounts; see Comalco (1988, p. 61).

(d) The aggregate bauxite and alumina figure was split using revenue data given in Gerrard (1988).

5.8.3 Geographical Segments

According to note 29 of the 1987 annual report (see Comalco (1987, p. 61)), the group operates in two geographical regions:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Australia and New Zealand	1,453,400	249,000	1,901,900
USA	562,600	19,200	485,800
	<u>2,005,800</u>	<u>268,200</u>	<u>2,387,700</u>

Unfortunately no data were available that could be used to split the New Zealand contribution from the aggregated Australia-New Zealand figures. The next step is to attribute the above foreign results to specific economic activities. Note that the activities in the USA involve semi-fabricating facilities; see Comalco (1987, p. 3). Estimates of the contributions to the consolidated accounts from Comalco's overseas activities are given in Table 5.8.2.

5.8.4 Revenue Share Estimates

The first task is to allocate Comalco's total revenue across the ORANI industries. Recall from Table 5.1 that Comalco with its ASX industry classification of Bauxite (024) maps to two ORANI industries, namely, non-ferrous metal ores and other basic metals. A revised version of this mapping is presented in Table 5.8.3. The next step is to apply this mapping to the revenue figures given in column [I] of Table 5.8.1 to produce estimates of Comalco's total revenue across ORANI

TABLE 5.8.2: ESTIMATES OF THE CONTRIBUTIONS TO THE CONSOLIDATED ACCOUNTS OF COMALCO FROM ITS FOREIGN ECONOMIC ACTIVITIES

Economic Activity	Revenue (a) \$'000 [I]	Profit (a) \$'000 [II]	Assets (a) \$'000 [III]
Bauxite	-	-	-
Alumina	-	-	-
Aluminium	-	-	-
Foundry Products	312,365	10,660	278,145
Rolled Products	129,476	4,419	134,518
Extruded Products	120,759	4,121	73,137
	<u>562,600</u>	<u>19,200</u>	<u>485,800</u>

(a) Estimated by splitting the aggregate figure given in section 5.8.3 across the fabrication activities in proportion to the corresponding figures listed in Table 5.8.1.

TABLE 5.8.3: A MAPPING OF COMALCO'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES^a

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Bauxite	100	13	Non-Ferrous Metal Orea
Alumina	100	64	Other Basic Metals
Aluminium	100	64	Other Basic Metals
Foundry Products	100	64	Other Basic Metals
Rolled Products	100	64	Other Basic Metals
Extruded Products	100	65	Structural Metal Goods

^a The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Comalco (1987), Table 3.3, and ABS (1985a,b).

industries; see Table 5.8.4, column [I]. Now subtract from the above total revenue figures the components due to Comalco's overseas operations; see Table 5.8.4, column [II]. The domestic revenue figures and shares are given in columns [III] and [IV], respectively, of Table 5.8.4.

5.8.5 Cost Share Estimates

The first task is to allocate Comalco's total profit across the ORANI industries. Similar to above, the profit figures listed in column [II] of Table 5.8.1 are used in conjunction with the mapping in Table 5.8.3 to generate the estimates presented in column [I] to Table 5.8.5. The next step is to subtract from the profit figures the components due to Comalco's overseas operations; see Table 5.8.5, column [II]. The resulting estimates of the domestic profit figures by ORANI industries are given in column [III] of Table 5.8.5. Domestic profits are then subtracted from domestic revenue to estimate Comalco's domestic costs; see Table 5.8.6. The final estimated cost shares are given in column [IV] of Table 5.8.6.

5.8.6 Asset Share Estimates

The first step is to allocate Comalco's total assets across the ORANI industries. The asset figures given in column [III] of Table 5.8.1 are used in conjunction with the mapping in Table 5.8.3 to generate the estimates presented in column [I] of Table 5.8.7. The next step is to subtract from the above total asset figures the components

TABLE 5.8.4: A MAPPING OF COMALCO'S REVENUE
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
13 Non-Ferrous Metal Ores	205,641	-	205,641	10.25
64 Other Basic Metals	1,573,718	441,841	1,131,877	56.43
65 Structural Metal Goods	226,441	120,759	105,682	5.27
	<u>2,005,800</u>	<u>562,600</u>	<u>1,443,200</u>	<u>71.95</u>

(a) That is, column [I] - column [II].

TABLE 5.8.5: A MAPPING OF COMALCO'S PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit (a) \$'000 [III]
13 Non-Ferrous Metal Ores	27,497	-	27,497
64 Other Basic Metals	210,425	15,079	195,346
65 Structural Metal Goods	30,278	4,121	26,157
	<u>268,200</u>	<u>19,200</u>	<u>249,000</u>

(a) That is, column [I] - column [II].

TABLE 5.8.6: A MAPPING OF COMALCO'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Pre-Tax Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
13 Non-Ferrous Metal Ores	205,641	27,497	178,144	10.25
64 Other Basic Metals	1,131,877	195,346	936,531	53.90
65 Structural Metal Goods	105,682	26,157	79,525	4.58
	<u>1,443,200</u>	<u>249,000</u>	<u>1,194,200</u>	<u>68.73</u>

(a) Source: Table 5.8.4, column [III].

(b) Source: Table 5.8.5, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.8.5) from total revenue (see total of column [I], Table 5.8.4).

TABLE 5.8.7: A MAPPING OF COMALCO'S ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000	Foreign Assets \$'000	Domestic Assets (a) \$'000	Share of Domestic Assets in Total Assets (percentage)
	[I]	[II]	[III]	[IV]
13 Non-Ferrous Metal Ores	350,709	-	350,709	14.69
64 Other Basic Metals	1,903,552	412,663	1,490,889	62.43
65 Structural Metal Goods	133,439	73,137	60,302	2.53
	<u>2,387,700</u>	<u>485,800</u>	<u>1,901,900</u>	<u>79.65</u>

(a) That is, column [I] - column [II].

due to Comalco's overseas operations; see Table 5.8.7, column [II]. The domestic asset figures and shares are given in columns [III] and [IV], respectively, of Table 5.8.7.

5.9 Email

5.9.1 History

Following Datex (1987), Email has played a major role in the rationalization of the Australian white goods industry. Recent acquisitions by Email include Kelvinator Australia (1980), McIlwraith Davey (1984), and Simpson (1986). Email is now the dominant Australian manufacturer of whitegoods, air conditioners, meters, and related electronic equipment.

5.9.2 Industry Segments

According to Email (1988, p. 29), the group operates in three industries. The revenue, pre-tax profit, and assets for 1987-88 in these segments are as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Major Appliances	469,965	51,072	184,061
Industrial Products	184,599	8,171	81,670
Building Products	232,860	18,870	94,832
Other	-	5,322	35,893
Investments	-	14,948	142,446
	<u>914,424</u>	<u>98,383</u>	<u>538,902</u>

Note that the category "Other" consists of Email's joint ventures with other companies. These ventures are largely in the area of electrical goods and Email's unrealized revenue from them is approximately \$133m; see Email (1988, p. 29). In addition, the above revenue figures do not

Include \$5.366m of interest received from investments; see Email (1988, p. 24).

5.9.3 Geographical Segments

According to Email (1988, p. 29), the group operates predominantly within Australia.

5.9.4 Revenue Share Estimates

The first task is to allocate Email's total revenue across the ORANI Industries. Recall from Table 5.1 that Email with its ASX Industry classification of Household Durables (White Goods, Furniture) (224) maps to two ORANI Industries. A revised version of this mapping is given in Table 5.9.1. This mapping is then applied to the revenue figures given in section 5.9.2 to generate estimates of Email's total revenue across ORANI Industries; see Table 5.9.2, column [I]. Note that all of the operations of Email are located within Australia; see section 5.9.3. The domestic revenue figures and shares are given in columns [III] and [IV], respectively, of Table 5.9.2.

5.9.5 Cost Share Estimates

The first task is to allocate Email's profit across the ORANI Industries. Similar to above, the profit figures listed in section 5.9.2 are used in conjunction with the mapping Table 5.9.1 to generate the estimates presented in column [I] to Table 5.9.3. The next step is

TABLE 5.9.1: A MAPPING OF EMAIL'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Major Appliances	100	74	Household Appliances
Industrial Products (a)	30	43	Furniture and Mattresses Household
	15	74	Appliances
	55	78	Other Machinery and Plant
Building Products (b)	40	65	Structural Metal Goods
	35	81	Plastic Products, etc
	25	87	Residential Building
Other	100	74	Household Appliances

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Email (1988), Table 3.3, and ABS (1985a,b).

(a) Following Bataakis (1988a, pp. 6 and 7), the furniture division has an annual turnover of approximately \$55m, the commercial equipment division has an annual turnover of approximately \$27.5m, and the air conditioning activities have annual sales of approximately \$65m. Thus the electronic and petroleum division has an annual turnover of roughly \$37.099m (that is, \$184.599m (see section 5.9.2) less \$147.5m (i.e., \$55m + \$27.5m + \$65m)). The furniture division corresponds to ORANI Industry 43 and it accounts for 30 per cent (i.e., 100 * \$55m/\$184.599m) of revenue, the commercial equipment division corresponds to ORANI Industry 74 and it accounts for 15 per cent of revenue, and the air conditioning and electronic and petroleum divisions both correspond to ORANI Industry 78 and together they account for 55 per cent of revenue.

(b) Following Bataakis (1988a, pp. 8 and 9), sales of the plumbing and building divisions are \$80m and \$55m, respectively. Thus the architectural products division has annual sales of roughly \$97.86m (that is, \$232.860m (see section 5.9.2) less \$135m (i.e., \$80m + \$55m)). The architectural products division corresponds to ORANI Industry 65 and it accounts for roughly 40 per cent (i.e., 100 * \$97.86m/\$232.86m) of revenue, the plumbing division corresponds to ORANI Industry 81 and accounts for 35 per cent of revenue, and the building division corresponds to ORANI Industry 87 and accounts for 25 per cent of revenue.

TABLE 5.9.2: A MAPPING OF EMAIL'S REVENUE
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (b) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
43 Furniture and Mattresses	55,380	-	55,380	5.26
65 Structural Metal Goods	93,144	-	93,144	8.85
74 Household Appliances	657,655	-	657,655	62.47
78 Other Machinery and Plant	101,529	-	101,529	9.64
81 Plastic Products, etc	81,501	-	81,501	7.74
87 Residential Building	58,215	-	58,215	5.53
Investments	5,366	-	5,366	0.51
	<u>1,052,790</u>	<u>-</u>	<u>1,052,790</u>	<u>100.00</u>

(a) Note that total revenue includes unrealized revenue from Email's joint ventures and interest received from investments.

(b) That is, column [I] - column [II].

TABLE 5.9.3: A MAPPING OF EMAIL'S PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit (a) \$'000 [III]
43 Furniture and Mattresses	2,451	-	2,451
65 Structural Metal Goods	7,548	-	7,548
74 Household Appliances	57,619	-	57,619
78 Other Machinery and Plant	4,494	-	4,494
81 Plastic Products, etc	6,605	-	6,605
87 Residential Building	4,718	-	4,718
Investments	14,948	-	14,948
	<u>98,383</u>	<u>-</u>	<u>98,383</u>

(a) That is, column [I] - column [II].

to subtract from the profit figures the components due to Email's overseas operations. However, it is assumed that all of Email's profit is derived from domestic operations; see section 5.9.3. The resulting estimates of the domestic profit figures by ORANI Industries are given in column [III] of Table 5.9.3. Domestic profits are then subtracted from domestic revenue to estimate Email's domestic costs; see Table 5.9.4. The final estimated cost shares are given in column [IV] of Table 5.9.5.

5.9.6 Asset Share Estimates

The first step is to allocate Email's total assets across the ORANI Industries. The asset figures given in section 5.9.2 are used in conjunction with the mapping in Table 5.9.1 to generate the estimates presented in column [I] of Table 5.9.5. Next it is assumed that all of Email's activities are located within Australia; see section 5.9.3. Thus the domestic asset figures in column [III] of Table 5.9.5 are the same as the total asset figures listed in column [I] of that table. Finally, the domestic asset shares are given in column [IV] of Table 5.9.5.

TABLE 5.9.4: A MAPPING OF EMAIL'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Pre-Tax Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
43 Furniture and Mattresses	55,380	2,451	52,929	5.49
65 Structural Metal Goods	93,144	7,548	85,596	8.83
74 Household Appliances	657,055	57,619	600,036	62.25
78 Other Machinery and Plant	101,529	4,494	97,035	10.07
81 Plastic Products, etc	81,501	6,605	74,896	7.77
87 Residential Building	58,215	4,710	53,497	5.55
Investments	5,366	14,948	(9,582)	0.00(e)
	<u>1,052,790</u>	<u>98,363</u>	<u>954,407</u>	<u>100.00</u>

(a) Source: Table 5.9.2, column [III].

(b) Source: Table 5.9.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.9.3) from total revenue (see total of column [I], Table 5.9.2).

(e) The negative cost corresponding to this entry was set to the default of zero. The other shares were then scaled appropriately, i.e., the shares in column [IV] equal domestic costs in column [III] times $100/(954,407 + \$9,582m)$.

TABLE 5.9.5: A MAPPING OF EMAIL'S ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets (a) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
43 Furniture and Mattresses	24,501	-	24,501	4.55
65 Structural Metal Goods	37,933	-	37,933	7.04
74 Household Appliances	232,204	-	232,204	43.08
78 Other Machinery and Plant	44,919	-	44,919	8.34
81 Plastic Products, etc	33,191	-	33,191	6.16
87 Residential Building	23,708	-	23,708	4.40
Investments	142,446	-	142,446	26.43
	<u>538,902</u>	<u>-</u>	<u>538,902</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

5.10 Giant Resources

5.10.1 History

Following Giant Resources (1988, p. 5), Giant Resources Limited was "created" as recently as January 1987 from the shell of a small listed company. Under the guidance of its then majority shareholder, Ariadne Australia Limited, the company commenced the acquisition of its initial resource assets and investments. Giant Resources now has a significant number of gold projects and is involved in oil exploration. Giant Resources' interests are located in Australia, New Zealand, Canada, the USA, Papua New Guinea, and Guyana. Note that Ampol (via its wholly owned subsidiary Korbell Pty Ltd) owns 42.25 per cent of Giant Resources; see Giant Resources (1988, p. 61).

5.10.2 Industry Segments

According to note 30 of the 1988 annual report (see Giant Resources (1988, p. 56)), the group operates in two broad areas. The revenue, after-tax profit, and assets in 1987-88 in these segments are as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Mineral, Oil, and Gas Exploration and Production	148,428	5,432	376,934
Investments	133,076	4,404	349,631
	<u>281,504</u>	<u>9,836</u>	<u>726,565</u>

As these segments are highly aggregated for mapping to ORANI Industries an attempt is made to disaggregate the above data; see Table 5.10.1.

5.10.3 Geographical Segments

According to note 30 of the 1988 annual report Giant Resources' activities can be geographically defined:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Australia	146,872	6,313	313,494
USA	-	-	5,113
Canada	134,632	3,523	399,836
Other	-	-	8,122
	<u>281,504</u>	<u>9,836</u>	<u>726,565</u>

Note that estimates of the industrial composition of the geographical regions are given in Table 5.10.1.

5.10.4 Revenue Share Estimates

The first task is to allocate Giant Resources' revenue across the ORANI Industries. Recall from Table 5.1 that Giant Resources with its ASX industry classification of Gold, Investment (016) maps to just one ORANI Industry. A revised version of this mapping is given in Table 5.10.2. This mapping is then applied to the revenue figures given in Table 5.10.1 to produce estimates of Giant Resources' total, foreign, and domestic revenue across ORANI Industries; see Table 5.10.3. The shares of domestic revenue in total revenue are given in column [IV] of Table 5.10.3.

TABLE 5.10.1: A BREAKDOWN OF GIANT RESOURCES' REVENUE, PROFIT, AND ASSETS BY GEOGRAPHICAL REGION AND ECONOMIC ACTIVITY

Geographical Region/ Economic Activity	Revenue \$'000 [I]	After-Tax Profit \$'000 [II]	Pre-Tax Profit(a) \$'000 [III]	Assets \$'000 [IV]
<u>Australia</u>				
Mineral Production	36,580	141	220	56,311
Mineral, Oil, and Gas Exploration	36,580	140	218	56,310
Coal	37,018(b)	8,950	13,953	87,975
Investments	64,762	(2,918)	(2,918)	112,898
	<u>174,940</u>	<u>6,313</u>	<u>11,473</u>	<u>313,494</u>
<u>Rest-of-World</u>				
Mineral Production	37,634	2,576	4,016	132,157
Mineral, Oil, and Gas Exploration	37,634	2,575	4,014	132,156
Investments	59,364	(1,628)	(1,628)	148,758
	<u>134,632</u>	<u>3,523</u>	<u>6,402</u>	<u>413,071</u>
	<u>309,572</u>	<u>9,836</u>	<u>17,875</u>	<u>726,565</u>

* The data reported in this table were estimated as follows. The first step was to note the contribution to Giant Resources from its 11.7 per cent holding in Queensland Coal Trust. The dividend received was \$8,950m and the value of the investment was \$87.975m; see Giant Resources (1988, p. 51). The above dividend figure was subtracted from the revenue and after-tax profit figures for investments as reported in section 5.10.2. The above asset figure was then subtracted from the assets attributable to investments. This left the investment segment with \$124,126m of revenue, a \$4,546m after-tax loss, and \$261,656m of assets. These figures were then split between Australia and the rest-of-world in proportion to the corresponding figures in section 5.10.3. For example, the \$124,126m of revenue was allocated \$64,762m to Australia (i.e., \$124,126m x \$146.872m/\$281.504m) and \$59,364m to rest-of-world. Next the revenue, after-tax

TABLE 5.10.2: A MAPPING OF GIANT RESOURCES' AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Mineral Production	100	13	Non-Ferrous Metal Ores
Mineral, Oil, and Gas Exploration	100	17	Services to Mining
Coal	100	14	Black Coal

* The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Giant Resources (1988), Table 3.3, and ABS (1985a,b).

profit, and asset figures for Australian mineral production and mineral, oil, and gas exploration (as an aggregate) were estimated as a residual by subtracting from the rest-of-world figures for Australia (see section 5.10.3) the corresponding components due to the holding in Queensland Coal Trust and Investments. For example, it is estimated that \$73.160m of revenue is earned by these activities; i.e., \$146.872m - \$8.950m - \$64.762m = \$73.160m. Similarly, the revenue, after-tax profit, and asset figures for the rest-of-world mineral production and mineral, oil, and gas exploration (as an aggregate) were estimated as a residual by subtracting from the total rest-of-world figures (see section 5.10.3) the corresponding components due to rest-of-world investments. For example, it is estimated that \$75.268m of revenue is earned by these activities; i.e., \$134.632m - \$59.364m = \$75.268m. Finally, the aggregate figures for mineral production and mineral, oil, and gas exploration must be split. Unfortunately no information was available to assist in this and as a result they were split in equal proportion.

- (a) The pre-tax profit figures were estimated by adding the \$8.039m of tax paid (see Giant Resources (1988, p. 44)) to the after-tax profit figures as follows. Those economic activities that made losses were assumed to have paid no tax. The \$8.039m was then allocated across the other activities in proportion to their after-tax profit figures.
- (b) The unrealized revenue from Giant Resources' 11.7 per cent holding in Queensland Coal Trust is \$37.018m; i.e., $0.117 \times \$316.394m$, see Giant Resources (1988, p. 40).

TABLE 5.10.3: A MAPPING OF GIANT RESOURCES' REVENUE
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV] = [II] [III]
13 Non-Ferrous Metal Ores	74,214	37,634	36,580	11.48
14 Black Coal	37,018	-	37,018	11.62
17 Services to Mining	74,214	37,634	36,580	11.48
Investments	124,126	59,364	64,762	20.34
	<u>309,572</u>	<u>134,632</u>	<u>174,940</u>	<u>54.92</u>

(a) That is, column [I] - column [II].

5.10.5 Cost Share Estimates

The first task is to allocate Giant Resources' profit across the ORANI Industries. Similar to above, the profit figures listed in Table 5.10.1 are used in conjunction with the mapping in Table 5.10.2 to generate estimates of Giant Resources' total, foreign and domestic profit across ORANI Industries; see Table 5.10.4. Domestic profits are then subtracted from domestic revenue to estimate a mapping of Giant Resources' domestic costs across ORANI Industries; see Table 5.10.5. The final estimates cost shares are given in column [IV] of Table 5.10.5.

5.10.6 Asset Share Estimates

The first step is to allocate Giant Resources' assets across the ORANI Industries. The asset figures given in Table 5.10.1 are used in conjunction with the mapping in Table 5.10.2 to generate estimates of Giant Resources' total, foreign, and domestic assets across ORANI Industries; see Table 5.10.6. The final estimated asset shares are given in column [IV] of Table 5.10.6.

TABLE 5.10.4: A MAPPING OF GIANT RESOURCES' PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit(a) \$'000 [III]
13 Non-Ferrous Metal Ores	4,236	4,016	220
14 Black coal	13,953	-	13,953
17 Services to Mining	4,232	4,014	218
Investments	(4,546)	(1,628)	(2,918)
	<u>17,875</u>	<u>6,402</u>	<u>11,473</u>

(a) That is, column [I] - column [II].

TABLE 5.10.5: A MAPPING OF GIANT RESOURCES' COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue(a) \$'000 [I]	Domestic Pre-Tax Profit(b) \$'000 [II]	Domestic Costs(c) \$'000 [III]	Share of Domestic Costs in Total Costs(d) (percentage) [IV]
13 Non-Ferrous Metal Ores	36,580	220	36,360	12.09
14 Black Coal	37,018	13,953	23,065	7.67
17 Services to Mining	36,580	218	36,362	12.09
Investments	64,762	(2,918)	67,680	22.52
	<u>174,940</u>	<u>11,473</u>	<u>163,467</u>	<u>54.37</u>

(a) Source: Table 5.10.3, column [III].

(b) Source: Table 5.10.4, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.10.4) from total revenue (see total of column [I], Table 5.10.3).

TABLE 5.10.6: A MAPPING OF GIANT RESOURCES' ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets (a) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
13 Non-Ferrous	188,468	132,157	56,311	7.75
14 Black Coal	87,975	-	87,975	12.11
17 Services to Mining	188,466	132,156	56,310	7.75
Investments	261,656	148,758	112,898	15.54
	<u>726,565</u>	<u>413,071</u>	<u>313,494</u>	<u>43.15</u>

(a) That is, column [I] - column [II].

5.11 Jennings Industries

5.11.1 History

Following Datex (1987), Jennings was formed in 1932. Since then it has become Australia's largest home building group holding a 3 per cent market share in an extremely fragmented industry. The group operates in the following fields: general building, housing, investment and development, mining infrastructure, building products, and civil engineering. Recent strategy has been to withdraw from mining and speculative developments, to reduce land holdings and manufacturing operations, and to extend property investment activities. The group expanded into the U.S. with the acquisition of 45 per cent of Californian home builder A-H Homes for \$45m in 1986. Other equity investments include Jennings Properties Limited (58 per cent), Jupiters Trust (10 per cent), and Fletcher Challenge Limited (2.5 per cent with provision to increase to 10 per cent); see Batsakis (1988b, p. 2). Note that Jennings is involved in a reciprocal holding arrangement with Fletcher Challenge. According to Lyon (1988, p. 7), Fletcher Challenge has approximately 39 per cent of Jennings and is regularly increasing its stake using the '3 per cent every six months' rule.

5.11.2 Industry Segments

According to note 27 of the 1988 annual report (see Jennings Industries (1988, p. 49)) the group operates in four segments. The

revenue, pre-tax operating profit, and assets for 1987-88 in these segments are as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Housing	394,983	20,603	205,477
Non-Residential Development and Construction	284,458	17,244	236,344
Other Trading	977	(657)	694
Investment	29,094	31,041	269,870
Unallocated	-	(4,692)	7,020
	<u>709,512</u>	<u>63,539</u>	<u>719,405</u>

5.11.3 Geographical Segments

According to note 27 of the 1988 annual report the group has investments in the U.S. and New Zealand. However, the contribution from each of these geographic segments amounted to less than 10 per cent of group turnover, operating results, and assets in the period ending 30th June 1988.

5.11.4 Revenue Share Estimates

The first task is to allocate Jennings' total revenue across the ORANI Industries. Recall from Table 5.1 that Jennings with its ASX industry classification of Building Contractor (061) maps to three ORANI Industries. A revised version of this mapping is given in Table 5.11.1. The next step is to apply this mapping to the revenue figures given in section 5.11.2 to produce estimates of Jennings' revenue across ORANI Industries; see Table 5.11.2, column [I]. Note that all the operations

TABLE 5.11.1: A MAPPING OF JENNINGS INDUSTRIES' AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Housing	100	87	Residential Building
Non-Residential Development and Construction	100	88	Other Construction
Other Trading (a)	100	88	Other Construction
Investment (b)	100	102	Other Business Services

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Jennings Industries (1988), Table 3.3, and ABS (1985a,b).

(a) No information could be obtained on the activities of this segment. However, it is a relatively small segment and it is assigned a default mapping to Other Construction.

(b) Note that Investment consists of income from an investment portfolio and fees for management of various income producing properties; see Jennings Industries (1988, p. 49).

TABLE 5.11.2: A MAPPING OF JENNINGS INDUSTRIES' REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
87 Residential building	394,963	-	394,963	55.67
36 Other Construction	285,435		285,435	40.23
102 Other Business Services	29,094	-	29,094	4.10
Unallocated	<u>709,512</u>	<u>-</u>	<u>709,512</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

of Jennings are assumed to be located within Australia; see section 5.11.3. The domestic revenue figures and shares are given in columns [III] and [IV], respectively, of Table 5.11.2.

5.11.5 Cost Share Estimates

The first task is to allocate Jennings' profit across the ORANI industries. Similar to above, the profit figures listed in section 5.11.2 are used in conjunction with the mapping in Table 5.11.1 to generate the estimates presented in column [I] of Table 5.11.3. The next step is to subtract from the profit figures the components due to Jennings' overseas operations. However, it is assumed that all of Jennings' profit is derived from domestic operations; see section 5.11.3. The resulting estimates of the domestic profit figures by ORANI industries are given in column [III] of Table 5.11.3. Domestic profits are then subtracted from domestic revenue to estimate Jennings' domestic costs; see Table 5.11.4. The final estimated cost shares are given in column [IV] of Table 5.11.4.

5.11.6 Asset Share Estimates

The first step is to allocate Jennings' total assets across the ORANI industries. The asset figures given in section 5.11.2 are used in conjunction with the mapping in Table 5.11.1 to generate the estimates presented in column [I] of Table 5.11.5. Next it is assumed that all of Jennings' activities are located within Australia; see section 5.11.3. Thus the domestic asset figures in column [III] of

TABLE 5.11.3: A MAPPING OF JENNINGS INDUSTRIES' PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit(a) \$'000 [III]
87 Residential Building	20,603	-	20,603
88 Other Construction	16,587	-	16,587
102 Other Business Services	31,041	-	31,041
Unallocated	(4,692)	-	(4,692)
	<u>63,539</u>	<u>-</u>	<u>63,539</u>

(a) That is, column [I] - column [II].

TABLE 5.11.4: A MAPPING OF JENNINGS INDUSTRIES' COSTS ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue(a) \$'000 [I]	Domestic Pre-Tax Profit(b) \$'000 [II]	Domestic Costs(c) \$'000 [III]	Share of Domestic Costs in Total Costs(d) (percentage) [IV]
87 Residential Building	394,983	20,603	374,380	57.78
88 Other Construction	285,435	16,587	268,848	41.49
102 Other Business Services	29,094	31,041	(1,947)	0.00(e)
Unallocated	-	(4,692)	4,692	0.73
	<u>709,512</u>	<u>63,539</u>	<u>645,973</u>	<u>100.00</u>

(a) Source: Table 5.11.2, column [III].

(b) Source: Table 5.11.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.11.3) from total revenue (see total of column [I], Table 5.11.2).

(e) The negative cost corresponding to this entry was set to the default of zero. The other shares were then scaled appropriately, i.e., the shares in column [IV] equal domestic costs in column [II] times 100/(\$645.973m + \$1.947m).

TABLE 5.11.5: A MAPPING OF JENNINGS INDUSTRIES' ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets (a) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
87 Residential Buildings	205,477	-	205,477	28.56
88 Other Construction	237,038	-	237,038	32.95
102 Other Business Services	269,870	-	269,870	37.51
Unallocated	7,020	-	7,020	0.96
	<u>719,405</u>	<u>-</u>	<u>719,405</u>	<u>100.00</u>

(a) That is, column [I] - column [II].

Table 5.11.5 are the same as the total asset figures listed in column [I] of that table. Finally, the domestic asset shares are given in column [IV] of Table 5.11.5.

5.12 Oil Search

5.12.1 History

Following Datex (1987), Oil Search has traditionally been involved in oil and gas exploration in Papua New Guinea. However, significant discoveries at Juha and Iagifu since 1983 are set to transform the group into a major producer. Both discoveries are onshore and pose some engineering problems, as well as political ones, before development can proceed. Note that Pioneer Concrete has a significant shareholding in Oil Search.

5.12.2 Industry Segments

According to Oil Search (1987a, p. 2), the principal activity of the company is the search for oil and gas deposits in Papua New Guinea. However, Oil Search also has some interest bearing investments; see Oil Search (1987a, p. 14). Industry segmented data for Oil Search is presented in Table 5.12.1. Note that there exist two complications with the data. The first is that the data cover an 18 month period rather than the usual 12 months. This is due to a change in accounting requirements in PNG; see Oil Search (1987b). The second is that the unit of measurement is the PNG konicca rather than the Australian dollar. These complications are corrected for in Table 5.12.2.

TABLE 5.12.1: ESTIMATED INDUSTRY SEGMENTED DATA FOR OIL SEARCH FOR THE 18 MONTHS ENDING 31ST DECEMBER 1987*

Economic Activity	Total Revenue [I]	Total Profit [II]	Total Costs [III]	Total Assets [IV]
Exploration	-(a)	-13,693,146(b)	13,693,146(c)	15,405,826(d)
Investments	2,868,294(e)	1,445,057(f)	1,423,237(g)	17,626,016(h)
	<u>2,868,294</u>	<u>-12,248,089</u>	<u>15,116,383</u>	<u>33,031,842(h)</u>

* It has been customary for companies resident in Papua New Guinea to adopt the calendar year as the basis for their financial reporting. However, in 1987, this practice has been declared obligatory. In order to conform to this requirement, the Board of Oil Search decided to extend the 1986/87 financial year from 30th June 1987 to 31st December 1987, thereby involving an accounting period of 18 months; see Oil Search (1987b). Note also that the unit of measurement is the PNG konicca.

- (a) No revenue was imputed for exploration on own account as Oil Search has not yet commenced production.
 (b) By assumption, see footnotes (a) and (c).
 (c) See Oil Search (1987a, p. 13).
 (d) Estimated as a residual.
 (e) See Oil Search (1987a, p. 11 note (i) and p. 17).
 (f) See Oil Search (1987a, p. 17).
 (g) See Oil Search (1987a, p. 8).
 (h) See Oil Search (1987a, p. 8). Note that assets included exploration expenditure.

TABLE 5.12.2: ESTIMATED INDUSTRY SEGMENTED DATA FOR OIL SEARCH
FOR THE 12 MONTHS ENDING 31ST DECEMBER 1987*

Economic Activity	Total Revenue \$'000 [I]	Total Profit \$'000 [II]	Total Costs \$'000 [III]	Total Assets \$'000 [IV]
Exploration	-	-13,041	13,041	14,672
Investments	2,732	1,376	1,355	16,787
	<u>2,732</u>	<u>-11,665</u>	<u>14,396</u>	<u>31,459</u>

* The figures presented in this table for revenue, profit, and costs were estimated by first taking two-thirds of the corresponding values given in Table 5.11.1. Note that the values for assets were not scaled. These figures were then converted to Australian dollars at the rate of \$1A = 0.7 konikas.

5.12.3 Geographical Segments

Although Oil Search is listed on Australian Stock Exchanges, all of its economic activities are located in Papua New Guinea; see Oil Search (1987a).

5.12.4 Revenue Share Estimates

Recall from the preliminary mapping in Table 5.1 that Oil Search with its ASX Industry classification of Oil/Gas Explorer (042) maps to ORANI's oil and gas producing industry. However, as Oil Search has not yet commenced production it just maps to ORANI's exploration industry, that is, Services to Mining; see Table 5.12.3. The mapping in Table 5.12.3 is used in conjunction with the revenue figures given in column [I] of Table 5.12.2 to produce estimates of Oil Search's total revenue across ORANI industries; see Table 5.12.4, column [I]. It is known from section 5.12.3 that Oil Search only operates in PNG. Thus all the revenue earned is from overseas sources; see Table 5.12.4.

5.12.5 Cost Share Estimates

The first task is to allocate Oil Search's total profit across the ORANI industries. Similar to above, the profit figures listed in column [II] of Table 5.12.2 are used in conjunction with the mapping in Table 5.12.3 to generate the estimates presented in column [I] of Table 5.12.5. It is known from section 5.12.3 that all of Oil Search's profit is derived from overseas operations. Thus Oil Search does not earn any

TABLE 5.12.3: A MAPPING OF OIL SEARCH'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Exploration	100	17	Services to Mining

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

TABLE 5.12.4: A MAPPING OF OIL SEARCH'S REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue (a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
17 Services to Mining	-	-	-	-
Investments	2,732	2,732	-	-
	<u>2,732</u>	<u>2,732</u>	<u>-</u>	<u>-</u>

(a) That is, column [I] - column [II].

TABLE 5.12.5: A MAPPING OF OIL SEARCH'S PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit(a) \$'000 [III]
17 Services to Mining	(13,041)	(13,041)	-
Investments	1,376	1,376	-
	<u>(11,665)</u>	<u>(11,665)</u>	<u>-</u>

(a) That is, column [I] - column [II].

domestic (i.e., Australian) profits; see Table 5.12.5, column [III]. Similarly, Oil Search does not have any domestic costs; see Table 5.12.6.

5.12.6 Asset Share Estimates

The first step is to allocate Oil Search's total assets across the ORANI Industries. The asset figures given in column [IV] of Table 5.12.2 are used in conjunction with the mapping in Table 5.12.3 to generate the estimates presented in column [I] of Table 5.12.7. It is known from section 5.12.3 that all of Oil Search's economic activities are located in PNG. Thus all of Oil Search's assets are located overseas; see Table 5.12.7.

TABLE 5.12.6: A MAPPING OF OIL SEARCH'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Pre-Tax Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
17 Services to Mining	-	-	-	-
Investments	-	-	-	-
	-	-	-	-

(a) Source: Table 5.11.4, column [III].

(b) Source: Table 5.11.5, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.11.5) from total revenue (see total of column [I], Table 5.11.4).

TABLE 5.12.7: A MAPPING OF OIL SEARCH'S ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000	Foreign Assets \$'000	Domestic Assets (a) \$'000	Share of Domestic Assets in Total Assets (percentage)
	[I]	[II]	[III]	[IV]
17 Services to Mining	14,672	14,672	-	-
Investments	16,787	16,787	-	-
	31,459	31,459	-	-

(a) That is, column [I] - column [II].

5.13 Pioneer Concrete

5.13.1 History

Following Stock Exchange Research (1986, p. 49), the company was formed in 1956 as Concrete Services (Holdings) Pty Ltd to acquire the interests of five private companies in the concrete and quarrying industries. In 1959 the company changed its name the Pioneer Concrete and commenced an expansion and diversification programme. The principal diversification to date has been the acquisition in 1980 of approximately 80 per cent of Ampol. Other acquisitions that followed include Kathleen Investments, Queensland Mines, Total, Besser (Qld), and Noranda Pacific. In addition to its diversified activities, Pioneer is one of three companies (the others being Boral and CSR) that dominate the Australian concrete and quarrying industry. Pioneer is now one of Australia's major international companies with established trading operations in 13 countries. The activities of Pioneer Concrete are depicted in Figure 5.13.1.

5.13.2 Industry Segments

According to note 31 of the 1988 annual report (see Pioneer Concrete (1988, p. 53)), the group operates in five broad areas. The revenue, pre-tax profit, and assets for 1987-88 in these segments are as follows:

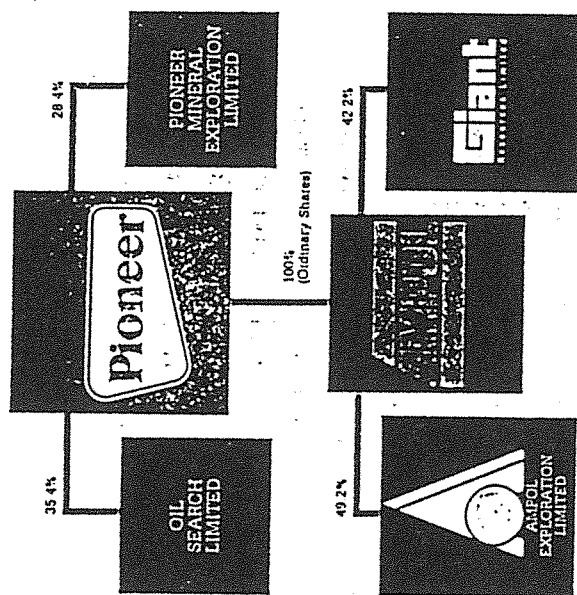


FIGURE 5.13.1: PIONEER CONCRETE CORPORATE STRUCTURE*

* Source: Pioneer Concrete (1988).

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Building Materials	1,438,326	155,204	1,209,506
Petroleum	1,854,045	113,111	881,573
Minerals	135,702	65,037	543,543
Oil and Gas	-	-	252,029
Other	-	12,099	359,551
	<u>3,428,073</u>	<u>345,451</u>	<u>3,246,202</u>

As Pioneer Concrete has significant investments in Ampol and Oil Search, which are companies that are of interest to this study, the first step is to recognize the contribution of these investments in the above consolidated data; see Table 5.13.1. The next step is to disaggregate the consolidated data, net of these contributions, to a level such that they can be mapped to the ORANI industries; see Table 5.13.2, column [V].

5.13.3 Geographical Segments

According to note 31 of the 1988 annual report, Pioneer Concrete operates in three geographical regions:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Australia	2,494,348	252,296	2,393,662
Europe	694,676	68,872	376,586
Other	239,049	24,283	470,954
	<u>3,428,073</u>	<u>345,451</u>	<u>3,246,202</u>

Geographical breakdowns by industry segments of Pioneer Concrete's revenue, profit, and assets are given in Tables 5.13.3, 5.13.4, and

TABLE 5.13.1: CONTRIBUTION TO THE CONSOLIDATED ACCOUNTS OF PIONEER CONCRETE FROM ITS HOLDINGS IN AMPOL AND OIL SEARCH

Subsidiary Company/ Associate Company	Revenue \$'000 [I]	Profit \$'000 [II]	Assets \$'000 [III]
Ampol (a)			
Ampol Exploration	-(b)	-(b)	124,368(b)
Giant Resources	-(b)	65(b)	160,008(b)
Other	1,972,458(b)	172,990(b)	1,079,040(b)
	<u>1,972,458</u>	<u>173,055</u>	<u>1,363,416</u>
Oil Search(c)	-(d)	-(e)	36,358(f)
Other	1,455,615	172,396	3,846,428
	<u>3,428,073</u>	<u>345,451</u>	<u>3,246,202</u>

(a) Note that Ampol is a subsidiary company of Pioneer Concrete. Ampol Exploration and Giant Resources are associate companies of Ampol and therefore they are also associate companies of Pioneer Concrete.

(b) Source: Table 5.2.1.

(c) Note that Oil Search is an associate company of Pioneer Concrete.

(d) Note that revenue is from sales only and does not include dividends received; see Pioneer Concrete (1988, pp. 34 and 53).

(e) No dividends were paid by Oil Search; see Pioneer Concrete (1988, p. 52).

(f) Source: Pioneer Concrete (1988, p. 52).

TABLE 5.13.2: A BREAKDOWN OF THE CONTRIBUTIONS TO THE CONSOLIDATED INDUSTRY SEGMENT ACCOUNTS OF PIONEER CONCRETE FROM ITS HOLDINGS IN AMPOL AND OIL SEARCH

Consolidated Accounts/ Industry Segment	Ampol				Oil Search	Other (a)	Total (b)
	Ampol Exploration [I]	Giant Resources [II]	Other [III]	[IV]			
Revenue (\$'000)							
Building Materials	-	-	-	-	-	1,438,326	1,438,326
Petroleum	-	-	1,854,045 (c)	-	-	-	1,854,045
Minerals	-	-	118,413 (d)	-	-	17,289	135,702
Oil and Gas	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
	-	-	1,972,458	-	-	1,455,615	3,428,073
Profit (\$'000)							
Building Materials	-	-	-	-	-	155,204	155,204
Petroleum	-	-	113,111 (e)	-	-	-	113,111
Minerals	-	65 (f)	59,879 (g)	-	-	5,093	65,037
Oil and Gas	-	-	-	-	-	12,099	12,099
Other	-	-	-	-	-	-	-
	-	65	172,990	-	-	172,396	345,451
Assets (\$'000)							
Building Materials	-	-	-	-	-	1,209,506	1,209,506
Petroleum	-	-	881,573 (h)	-	-	-	881,573
Minerals	-	160,008 (i)	197,467 (j)	-	-	186,068	543,543
Oil and Gas	124,368 (f)	-	-	36,358 (j)	-	91,303	252,029
Other	-	-	-	-	-	359,551	359,551
	124,368	160,008	1,079,040	36,358	-	1,846,428	3,246,202

(a) The figures in this column were estimated as residuals.

(b) That is, columns [I] + [II] + [III] + [IV] + [V]. Note that these totals correspond with the figures given in section 5.13.2.

(c) As total revenue earned by Ampol's petroleum segment (see section 5.2.2) exceeded the total for Pioneer Concrete's petroleum segment (see section 5.13.2), this figure was constrained to equal the latter total.

(d) Estimated as a residual; see footnote (c) above.

(e) As total profit earned by Ampol's petroleum segment (see section 5.2.2) exceeded the total for Pioneer Concrete's petroleum segment (see section 5.13.2), this figure was constrained to equal the latter total.

(f) See Table 5.2.1.

(g) Estimated as a residual; see footnotes (e) and (f) above.

(h) As total assets of Ampol's petroleum segment (see section 5.2.2) exceeded the total for Pioneer Concrete's petroleum segment (see section 5.13.2), this figure was constrained to equal the latter total.

(i) Estimated as a residual; see footnotes (f) and (h) above.

(j) See Table 5.13.1.

TABLE 5.13.3: A GEOGRAPHICAL BREAKDOWN BY INDUSTRY SEGMENTS OF THE CONTRIBUTIONS TO THE CONSOLIDATED REVENUE OF PIONEER CONCRETE FROM ITS HOLDINGS IN AMPOL AND OIL SEARCH

Consolidated Accounts/ Industry Segment	Ampol				Oil Search	Other (a)	Total (b)
	Ampol Exploration [I]	Giant Resources [II]	Other [III]	[IV]			
Revenue (\$'000)							
Building Materials	-	-	-	-	-	933,725 (f)	933,725 (f)
	-	-	-	-	-	504,601 (d) (a)	504,601 (d)
Petroleum	-	-	-	0 (f)	-	-	0 (f)
	-	-	1,854,045 (d) (b)	-	-	-	1,854,045 (d)
Minerals	-	-	-	0 (f)	-	0 (f)	0 (f)
	-	-	118,413 (d) (b)	-	-	17,289 (d) (c)	132,702 (d)
Oil and Gas	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
	-	-	-	0 (f)	-	933,725 (f)	933,725 (f)
	-	-	1,972,458 (d)	-	-	521,890 (d)	2,494,348 (d)
	-	-	1,972,458	-	-	1,455,615	3,428,073

(f) Refers to revenue earned from foreign activities and (d) refers to revenue earned from domestic activities.

(a) The domestic component was estimated as a residual; see section 5.13.3 and footnotes (b) and (c) below.

(b) See section 5.2.3.

(c) See Pioneer Concrete (1988, pp. 12-16).

TABLE 5.13.4: A GEOGRAPHICAL BREAKDOWN BY INDUSTRY SEGMENTS OF THE CONTRIBUTIONS TO THE CONSOLIDATED PROFIT OF PIONEER CONCRETE FROM ITS HOLDINGS IN AMPOL AND OIL SEARCH*

Consolidated Accounts/ Industry Segment	Ampol				Total (b)
	Ampol Exploration [I]	Grant Resources [II]	Other [III]	Oil Search [IV]	
Profit (\$'000)					[VI]
Building Materials	-	-	-	-	93,155(F) 62,049(D)(a)
Petroleum	-	-	0(F) 113,111(D)(b)	-	0(F) 113,111(D)
Minerals	-	0(F) 65(D)(c)	0(F) 59,879(D)(b)	-	0(F) 5,093(D)(d)
Oil and Gas	-	-	-	-	-
Other	-	-	-	-	0(F) 12,099(D)(e)
	-	0(F) 65(D)	0(F) 172,990(D)	-	93,155(F) 252,296(D)
	-	65	172,990	-	172,396
	-			-	345,451

* (F) refers to revenue earned from foreign activities and (D) refers to revenue earned from domestic activities.

(a) The domestic component was estimated as a residual; see section 5.13.3 and footnotes (b), (c), (d), and (e) below.

(b) See section 5.2.3.

(c) See Pioneer Concrete (1988, pp. 14 and 15).

(d) See Pioneer Concrete (1988, pp. 12-16).

(e) See Pioneer Concrete (1988, pp. 22).

5.13.5, respectively. These tables are required for the subsequent mapping to ORANI Industries.

5.13.4 Revenue Share Estimates

The first task is to estimate a mapping of Pioneer Concrete's areas of economic activity to the ORANI Industries. Recall from Table 5.1 that Pioneer Concrete with its ASX industry classification of Concrete, Petroleum (075) maps to just one ORANI industry, namely, Ready Mixed Concrete. A revised version of this mapping (net of Pioneer Concrete's holdings in Ampol and Oil Search) is given in Table 5.13.6. The next task is to allocate Pioneer Concrete's total revenue across ORANI Industries. According to Pioneer Concrete (1988), Pioneer Concrete owns 100 per cent of Ampol and 35.4 per cent of Oil Search. The unrealized contributions to Pioneer Concrete's total revenue from these investments are estimated in columns [I] and [II], respectively, of Table 5.13.7. Next the mapping Table 5.13.6 is applied to the revenue figures in column [V] of Table 5.13.2 to produce estimates of Pioneer Concrete's realized revenue across ORANI Industries; see column [III] of Table 5.13.7. Finally, estimates of Pioneer Concrete's total revenue mapped across ORANI Industries are given in column [IV] of Table 5.13.7.

The next task is to allocate Pioneer Concrete's revenue earned from overseas operations across ORANI Industries. The unrealized contributions to Pioneer Concrete's foreign revenue from its investments in Ampol and Oil Search are given in columns [I] and [II], respectively,

TABLE 5.13.5: A GEOGRAPHICAL BREAKDOWN BY INDUSTRY SEGMENTS OF THE CONTRIBUTIONS TO THE CONSOLIDATED ASSETS OF PIONEER CONCRETE FROM ITS HOLDINGS IN AMPOL AND OIL SEARCH*

Consolidated Accounts/ Industry Segment	Ampol				Total (b)
	Ampol Exploration [I]	Giant Resources [II]	Other [III]	Oil Search [IV]	
					[VI]
Assets (\$'000)					
Building Materials	-	-	-	-	575,477(F) 575,477(F) 634,029(D) (a) 634,029(D)
Petroleum	-	-	0(F) 881,573(D) (b) -	-	881,573(D) 0(F)
Minerals	-	91,205(F) 66,803(D)	0(F) 197,467(D) (b) -	-	0(F) 91,205(F) 186,068(D) (d) 452,338(D)
Oil and Gas	83,327(F) 41,041(D) (e) -	-	-	36,358(F) 61,173(F) 0(D) (f) 30,130(D) (g) -	180,858(F) 71,171(D)
Other	-	-	-	-	0(F) 359,551(D) (h) 359,551(D)
	83,327(F) 91,205(F) 41,041(D) 66,803(D)	0(F) 36,358(F) 61,173(F) 0(D)	1,079,040(D)	1,846,128	2,246,202

* (F) refers to revenue earned from foreign activities and (D) refers to revenue earned from domestic activities.

(a) The domestic component was estimated as a residual; see section 5.13.3 and footnotes (a), (b), (c), (d), (e), (f), (g), and (h) below.

(b) See section 5.2.3.

(c) Estimated using the proportions observed in Table 5.10.6.

(d) See Pioneer Concrete (1988, pp. 12-16).

(e) Estimated using the proportions observed in Table 5.3.6.

(f) See section 5.11.2.

(g) Assumed to be in the same proportions as observed in Table 5.3.6; see also footnote (e) above.

(h) See Pioneer Concrete (1988, p. 22).

TABLE 5.13.6: A MAPPING OF PIONEER CONCRETE'S AREAS OF ECONOMIC ACTIVITY (NET OF ITS HOLDING IN AMPOL AND OIL SEARCH) TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Building Materials(a)	5	56	Petrol and Coal Products
	20	59	Cement
	75	60	Ready Mixed Concrete
Minerals(b)	100	13	Non-Ferrous Metal Ores
Oil and Gas	100	15	Oil, Gas, and Brown Coal

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).
(a) Paterson (1987, p. 5) estimates that the 1988 profit in the asphalt, cement and pre-mix concrete industries will be \$1.5m, \$7.5m, and \$25m, respectively. On the basis of these figures it is estimated that the building materials segment roughly maps 5 per cent (i.e., $100 \times \$1.5m/\$34m$), 20 per cent, and 75 per cent to the ORANI Industries 56, 59, and 60, respectively.
(b) See Pioneer Concrete (1988, p. 16).

of Table 5.13.8. Next the mapping in Table 5.13.6 is applied to the foreign revenue figures in column [V] of Table 5.13.3 to produce estimates of Pioneer Concrete's realized foreign revenue across ORANI Industries; see column [III] of Table 5.13.8. Finally, estimates of Pioneer Concrete's foreign revenue mapped across ORANI Industries are given in column [IV] of Table 5.13.8.

The final task is to subtract the foreign revenue figures from the total revenue figures to estimate the domestic revenue figures; see Table 5.13.9. The shares of domestic revenue in total revenue mapped across ORANI Industries are given in column [IV] of Table 5.13.9.

5.13.5 Cost Share Estimates

The first task is to allocate Pioneer Concrete's total profit across ORANI Industries. The unrealized contributions to Pioneer Concrete's profit from its investments in Ampol and Oil Search are estimated in columns [I] and [II], respectively, of Table 5.13.10. Next the mapping in Table 5.13.6 is applied to the profit figures in column [V] of Table 5.13.2 to produce estimates of Pioneer Concrete's realized profits across ORANI Industries; see column [III] of Table 5.13.10. Finally, estimates of Pioneer Concrete's total profits mapped across ORANI Industries are given in column [IV] of Table 5.13.10.

The next task is to allocate Pioneer Concrete's profit earned from overseas operations across ORANI Industries. The unrealized contributions to Pioneer Concrete's foreign profit from its investments

ORANI Industry		Contribution from Ampol(a)		Contribution from Oil Search(b)		Other(c)		Total(d)	
		[I]	\$'000	[II]	\$'000	[III]	\$'000	[IV]	
13	Non-Ferrous Metal Ores	599,847	-	-	-	17,289	617,136		
14	Black Coal	15,163	-	-	-	-	15,163		
15	Oil, Gas, and Brown Coal	14,711	-	-	-	-	14,711		
17	Services to Mining	48,468	-	-	-	-	48,468		
56	Petrol and Coal Products	64,697	-	-	-	71,916	136,613		
59	Cement	-	-	-	-	287,665	287,665		
60	Ready Mixed Concrete	-	-	-	-	1,078,745	1,078,745		
88	Other Construction	35,504	-	-	-	35,504	887,113		
89	Wholesale Trade	887,113	-	-	-	-	380,191		
90	Retail Trade	380,191	-	-	-	-	26,825		
102	Other Business Services	26,825	-	-	-	-	8,679		
109	Entertainment, Leisure	8,679	-	-	-	-	58,242		
	Investments	57,275	967	967	967	-	3,595,055		
		2,138,473				1,455,615			

TABLE 5.13.10: A MAPPING OF PIONEER CONCRETE'S TOTAL REVENUE ACROSS ORANI INDUSTRIES

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.5.
 (b) Estimated by applying the mapping in Table 5.13.6 to column [V] of Table 5.13.2.
 (c) Estimated by columns [I] + [II] + [III].
 (d) That is, columns [I] + [II] + [III].

TABLE 5.13.8: A MAPPING OF PIONEER CONCRETE'S FOREIGN REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol (a) \$'000	Contribution from Oil Search (b) \$'000	Other (c) \$'000	Foreign (d) \$'000
13 Non-Ferrous Metal Ores	15,415	-	-	15,415
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	1,697	-	-	1,697
17 Services to Mining	17,500	-	-	17,500
56 Petrol and Coal Products	-	46,686	-	46,686
59 Cement	-	186,745	-	186,745
60 Ready Mixed Concrete	-	700,294	-	700,294
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	24,315	967	-	25,282
	<u>58,927</u>	<u>967</u>	<u>933,725</u>	<u>993,619</u>

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.6.
 (b) Estimated by taking 35.4 per cent of column [II] of Table 5.11.4.
 (c) Estimated by applying the mapping in Table 5.13.6 to the foreign components of column [V] of Table 5.13.3.
 (d) That is, columns [I] + [II] + [III].

TABLE 5.13.9: A MAPPING OF PIONEER CONCRETE'S DOMESTIC REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue (a) \$'000	Foreign Revenue (b) \$'000	Domestic Revenue (c) \$'000	Share of Domestic Revenue in Total Revenue (percentage) [IV]
13 Non-Ferrous Metal Ores	617,136	15,415	601,721	16.73
14 Black Coal	15,163	-	15,163	0.42
15 Oil, Gas, and Brown Coal	14,711	1,697	13,014	0.36
17 Services to Mining	48,468	17,500	30,968	0.86
56 Petrol and Coal Products	136,613	46,686	89,927	2.50
59 Cement	287,665	186,745	100,920	2.81
60 Ready Mixed Concrete	1,078,745	700,294	378,451	10.53
88 Other Construction	35,504	-	35,504	0.99
89 Wholesale Trade	887,113	-	887,113	24.67
90 Retail Trade	380,191	-	380,191	10.58
102 Other Business Services	26,825	-	26,825	0.75
109 Entertainment, Leisure	8,679	-	8,679	0.24
Investments	58,245	25,282	32,960	0.92
	<u>3,595,055</u>	<u>993,619</u>	<u>2,601,436</u>	<u>72.36</u>

(a) See Table 5.13.7, column [IV].
 (b) See Table 5.13.8, column [IV].
 (c) That is, column [I] - column [II].

in Ampol and Oil Search are given in columns [I] and [II], respectively, of Table 5.13.11. Next the mapping in Table 5.13.6 is applied to the foreign profit figures in column [V] of Table 5.13.4 to produce estimates of Pioneer Concrete's realized foreign profits across ORANI Industries; see column [III] of Table 5.13.11. Finally, estimates of Pioneer Concrete's foreign profit mapped across ORANI Industries are given in column [IV] of Table 5.13.11.

The estimates of Pioneer Concrete's foreign profit are then subtracted from Pioneer Concrete's total profit to give estimates of Pioneer Concrete's domestic profit mapped across ORANI Industries; see Table 5.13.12. These domestic profits are then subtracted from Pioneer Concrete's domestic revenue (see column [III] of Table 5.13.9) to generate estimates of Pioneer Concrete's domestic costs across ORANI Industries; see Table 5.13.13. The final estimated cost shares are given in column [IV] of Table 5.13.13.

5.13.6 Asset Share Estimates

The first task is to allocate Pioneer Concrete's total assets across ORANI Industries. The unrealized contributions to Pioneer Concrete's assets from its investments in Ampol and Oil Search are estimated in columns [I] and [II], respectively, of Table 5.13.14. Next the mapping in Table 5.13.6 is applied to the asset figures in column [V] of Table 5.13.2 to produce estimates of Pioneer Concrete's realized assets across ORANI Industries; see column [III] of Table 5.13.14.

TABLE 5.13.10: A MAPPING OF PIONEER CONCRETE'S TOTAL PROFIT ACROSS ORANI INDUSTRIES				
ORANI Industry	Ampol(a) \$'000 [I]	Oil Search(b) \$'000 [II]	Other(c) \$'000 [III]	Total Profit(d) \$'000 [IV]
13 Non-Ferrous Metal Ores	51,678	-	5,093	56,771
14 Black Coal	5,716	-	-	5,716
15 Oil, Gas, and Brown Coal	8,208	-	-	8,208
17 Services to Mining	1,733	(4,616)	-	(2,883)
56 Petrol and Coal Products	5,674	-	7,760	13,434
59 Cement	-	-	31,041	31,041
60 Ready Mixed Concrete	-	-	116,403	116,403
88 Other Construction	3,114	-	-	3,114
89 Wholesale Trade	77,802	-	-	77,802
90 Retail Trade	33,343	-	-	33,343
102 Other Business Services	2,353	-	-	2,353
109 Entertainment, Leisure	761	-	-	761
Investments	4,571	487	12,099	17,157
	<u>194,953</u>	<u>(4,129)</u>	<u>172,396</u>	<u>363,220</u>

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.8.
 (b) Estimated by taking 35.4 per cent of column [I] of Table 5.11.5.
 (c) Estimated by applying the mapping in Table 5.13.6 to column [V] of Table 5.13.2.
 (d) That is, columns [I] + [II] + [III].

TABLE 5.13.11: A MAPPING OF PIONEER CONCRETE'S FOREIGN PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol(a) \$'000 [I]	Contribution from Oil Search(b) \$'000 [II]	Other(c) \$'000 [III]	Foreign Profit(d) \$'000 [IV]
13 Non-Ferrous Metal Ores	1,645	-	-	1,645
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	359	-	-	359
17 Services to Mining	1,644	(4,616)	-	(2,972)
56 Petrol and Coal Products	-	-	4,658	4,658
59 Cement	-	-	18,631	18,631
60 Ready Mixed Concrete	-	-	69,866	69,866
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	(667)	967	-	(180)
	<u>2,981</u>	<u>(4,129)</u>	<u>93,155</u>	<u>92,007</u>

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.9.

(b) Estimated by taking 35.4 per cent of column [I] of Table 5.11.5.

(c) Estimated by applying the mapping in Table 5.13.6 to column [V] of Table 5.13.4.

(d) That is, columns [I] + [II] + [III].

TABLE 5.13.12: A MAPPING OF PIONEER CONCRETE'S DOMESTIC PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Profit(a) \$'000 [I]	Foreign Profit(b) \$'000 [II]	Domestic Profit(c) \$'000 [III]
13 Non-Ferrous Metal Ores	56,771	1,645	55,126
14 Black Coal	5,716	-	5,716
15 Oil, Gas, and Brown Coal	8,208	359	7,849
17 Services to Mining	(2,883)	(2,972)	89
56 Petrol and Coal Products	13,434	4,658	8,776
59 Cement	31,041	18,631	12,410
60 Ready Mixed Concrete	116,403	69,866	46,537
88 Other Construction	3,114	-	3,114
89 Wholesale Trade	77,802	-	77,802
90 Retail Trade	33,343	-	33,343
102 Other Business Services	2,353	-	2,353
109 Entertainment, Leisure	761	-	761
Investments	17,157	(180)	17,337
	<u>363,220</u>	<u>92,007</u>	<u>271,213</u>

(a) See Table 5.13.10, column [IV].

(b) See Table 5.13.11, column [IV].

(c) That is, column [I] - column [II].

TABLE 5.13.13: A MAPPING OF PIONEER CONCRETE'S DOMESTIC COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
13 Non-Ferrous Metal Ores	601,721	55,126	546,595	16.91
14 Black Coal	15,163	5,716	9,447	0.29
15 Oil, Gas, and Brown Coal	13,014	7,849	5,165	0.16
17 Services to Mining	30,968	89	30,879	0.96
56 Petrol and Coal Products	89,927	8,776	81,151	2.51
59 Cement	100,920	12,410	88,510	2.74
60 Ready Mixed Concrete	378,451	46,537	331,914	10.27
88 Other Construction	35,504	3,114	32,390	1.00
89 Wholesale Trade	887,113	77,802	809,311	25.04
90 Retail Trade	380,191	33,343	346,848	10.73
102 Other Business Services	26,825	2,353	24,472	0.76
109 Entertainment, Leisure	8,679	761	7,918	0.25
Investments	32,960	17,337	15,623	0.48
	<u>2,601,436</u>	<u>271,213</u>	<u>2,330,223</u>	<u>72.10</u>

(a) See Table 5.13.9, column [III].

(b) See Table 5.13.12, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [II], Table 5.13.12) from total revenue (see total of column [I], Table 5.13.9).

TABLE 5.13.14: A MAPPING OF PIONEER CONCRETE'S TOTAL ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampl (a) \$'000	Contribution from Oil Search (b) \$'000	Other (c) \$'000	Total Assets (d) \$'000
	[I]	[II]	[III]	[IV]
13 Non-Ferrous Metal Ores	388,715	-	186,068	574,783
14 Black Coal	36,035	-	-	36,035
15 Oil, Gas, and Brown Coal	62,364	-	91,303	153,667
17 Services to Mining	312,988	5,194	-	318,182
56 Petrol and Coal Products	35,393	-	60,475	95,868
59 Cement	-	-	241,901	241,901
60 Ready Mixed Concrete	-	-	907,130	907,130
88 Other Construction	19,423	-	-	19,423
89 Wholesale Trade	485,297	-	-	485,297
90 Retail Trade	207,985	-	-	207,985
102 Other Business Services	14,675	-	-	14,675
109 Entertainment, Leisure	4,748	-	-	4,748
Investments	127,371	5,942	359,551	492,864
	<u>1,694,994</u>	<u>11,136</u>	<u>1,846,428</u>	<u>3,552,558</u>

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.12.

(b) Estimated by taking 35.4 per cent of column [I] of Table 5.11.7.

(c) Estimated by applying the mapping in Table 5.13.6 to column [V] of Table 5.13.2.

(d) That is, columns [I] + [II] + [III].

Finally, estimates of Pioneer Concrete's total assets mapped across ORANI Industries are given in column [IV] of Table 5.13.14.

The next task is to allocate Pioneer Concrete's overseas assets across ORANI Industries. The unrealized contributions to Pioneer Concrete's foreign assets from its investments in Ampol and Oil Search are given in columns [I] and [II], respectively, of Table 5.13.15. Next the mapping in Table 5.13.6 is applied to the foreign asset figures in column [V] of Table 5.13.5 to produce estimates of Pioneer Concrete's realized foreign assets across ORANI Industries; see Column [III] of Table 5.13.15. Finally, estimates of Pioneer Concrete's foreign assets mapped across ORANI Industries are given in column [IV] of Table 5.13.15.

The last step is to subtract the above estimates of foreign assets from total assets to give estimates of Pioneer Concrete's domestic assets across ORANI Industries; see Table 5.13.16. The final estimated asset shares are given in column [IV] of Table 5.13.16.

TABLE 5.13.15: A MAPPING OF PIONEER CONCRETE'S FOREIGN ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Contribution from Ampol(a) [I] \$'000	Contribution from Oil Search(b) [II] \$'000	Other(c) [III] \$'000	Foreign Assets(d) [IV] \$'000
13 Non-Ferrous Metal Ores	54,132	-	-	54,132
14 Black Coal	-	-	-	-
15 Oil, Gas, and Brown Coal	28,312	-	61,173	89,485
17 Services to Mining	238,614	5,194	-	243,808
56 Petrol and Coal Products	-	-	28,774	28,774
59 Cement	-	-	115,095	115,095
60 Ready Mixed Concrete	-	-	431,608	431,608
88 Other Construction	-	-	-	-
89 Wholesale Trade	-	-	-	-
90 Retail Trade	-	-	-	-
102 Other Business Services	-	-	-	-
109 Entertainment, Leisure	-	-	-	-
Investments	60,931	5,942	-	66,873
	<u>381,989</u>	<u>11,136</u>	<u>636,650</u>	<u>1,029,775</u>

(a) Estimated by taking 100.00 per cent of column [IV] of Table 5.2.13.

(b) Estimated by taking 35.4 per cent of column [II] of Table 5.11.7.

(c) Estimated by applying the mapping in Table 5.13.6 to column [V] of Table 5.13.5.

(d) That is, columns [I] + [II] + [III].

TABLE 5.13.16: A HAPPING OF PIONEER CONCRETE'S DOMESTIC ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets (a) \$'000 [I]	Foreign Assets (b) \$'000 [II]	Domestic Assets (c) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
13 Non-Ferrous Metal Ores	574,783	54,132	520,651	14.66
14 Black Coal	36,035	-	36,035	1.01
15 Oil, Gas, and Brown Coal	153,667	89,485	64,182	1.81
17 Services to Mining	318,182	243,808	74,374	2.09
56 Petrol and Coal Products	95,868	28,774	67,094	1.89
59 Cement	241,901	115,095	126,806	3.57
60 Ready Mixed Concrete	907,130	431,608	475,522	13.39
88 Other Construction	19,423	-	19,423	0.55
89 Wholesale Trade	485,297	-	485,297	13.66
90 Retail Trade	207,985	-	207,985	5.85
102 Other Business Services	14,675	-	14,675	0.41
109 Entertainment, Leisure	4,748	-	4,748	0.13
Investments	492,864	66,873	425,991	11.99
	<u>3,552,558</u>	<u>1,029,775</u>	<u>2,522,783</u>	<u>71.01</u>

(a) See Table 5.13.14, column [IV].

(b) See Table 5.13.15, column [IV].

(c) That is, column [I] - column [II].

5.14 Howard Smith Limited

5.14.1 History

Following Howard Smith (1986), Captain Howard Smith Initially established a shipping business based on Melbourne-Geelong trade during Australia's gold rush in the 1850s. This expanded in the 1860s to cover inter-colony trade. In the 1870s the business commenced operating passenger and cargo routes across the Atlantic. By the 1890s Howard Smith operated 22 ships of various types. In 1901 the company was restructured as Howard Smith Co Ltd, and in 1909 its shares were listed for the first time.

In the early 1910s and 1920s Howard Smith diversified its investments due to declines in the coastal passenger trade. These included coal, sugar, and steel interests. Note that in 1914 Howard Smith owned the Australian Sugar Company Pty Ltd, and in the late 1920s it was one of the four original share holders in Australian Iron & Steel Pty Ltd. A.I.S. was sold in 1935 to the Broken Hill Proprietary Company Limited in which Howard Smith Limited was an important shareholder until it sold its interest in 1984.

In 1960 a new company, Coal and Allied Industries was formed to acquire Howard Smith's coal interests and to merge these with other coal interests; see section 5.7. Then in 1985 Howard Smith Limited acquired full ownership of R.W. Miller (Holdings) Limited, which has

access to extensive black coal deposits in the Hunter Valley (NSW) and Queensland.

Also in the 1960s the Group's stevedoring interests (i.e., the loading and unloading of ships) were expanded. Then in the 1980s Howard Smith Limited substantially increased its interest in James Patrick & Co Pty Limited, which is Australia's biggest conventional stevedoring contractor and its largest agency for shipowners.

Other activities of Howard Smith include its takeover in the 1960s of the engineering company A. Goninar & Co Limited. In 1984 Howard Smith Limited then acquired J. Blackwood & Son Limited, Australia's largest distributor of engineering supplies and industrial products.

The final activity of Howard Smith of interest is its venture into banking. After the 1985 deregulation of the banking system, Howard Smith joined with the Mitsubishi Bank Ltd of Japan to form a new trading bank known as Mitsubishi Bank of Australia Limited.

5.14.2 Industry Segments

According to Howard Smith (1988, p. 26), the group operates in six industry segments. The revenue, operating profit (before tax), and assets for 1987-88 in these segments are as follows:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Maritime Industries	290,554	9,999	190,566
Manufacture & Distribution of Industrial/Engineering Products	507,703	24,766	265,307
Sugar Milling & Cane Farming	51,787	7,329	-
Coal Mining	152,704	110	326,507
Civil Engineering, Industrial & Commercial Services	19,601	(5,478)	17,321
Investments	69,250	(3,252)	85,764
Eliminations	(70,516)	(25,293)	(17,926)
	<u>1,021,083</u>	<u>8,181</u>	<u>867,539</u>

Note that eliminations refer to intersegment sales with respect to revenue and include group net interest with respect to profit.

As Howard Smith is involved in a reciprocal holding arrangement with Coal and Allied, the above industry segmented data must be re-estimated such that it is net of Howard Smith's investment in Coal and Allied. The first correction to make is to subtract the dividend income of \$2.882m (see Howard Smith (1988, p. 31)) earned by Howard Smith from Coal and Allied from the coal segment's profit figure. (Note that dividends are not included in the revenue figures.) The final correction is to subtract from Howard Smith's coal segment assets its investment in Coal and Allied of \$50.939m; see Howard Smith (1988, p. 31). However, before the above are subtracted, the eliminated revenue is allocated across the segments according to the intersegment sales data given in Howard Smith (1988, p. 26). Then the eliminated profits and revenue are allocated across the segments in absolute proportion to the above profit and revenue figures, respectively. Finally, the

milling and cane farming activities (which have been sold; see Howard Smith (1988, p. 3)) are aggregated with investments:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Maritime Industries	286,829	5,034	186,708
Manufacture & Distribution of Industrial/Engineering Products	497,974	12,467	259,936
Coal Mining	152,704	(2,827)	268,958
Civil Engineering, Industrial & Commercial Services	19,211	(8,198)	16,970
Investments	64,365	(1,177)	84,028
	<u>1,021,083</u>	<u>5,299</u>	<u>816,600</u>

5.14.3 Geographical Segments

According to Howard Smith (1988, p. 27), the groups activities can be geographically defined:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Australia	867,571	39,825	802,219
United Kingdom	144,512	(6,022)	65,320
Eliminations		(25,622)	
	<u>1,021,083</u>	<u>8,181</u>	<u>867,539</u>

Similar to section 5.14.2, eliminations include group net interest. To be consistent with the above, eliminations are allocated across the geographical segments in absolute proportion to the profit figures: profit earned from Australia is \$17.569m and the loss incurred from the U.K. is \$9.388m. Finally, note that the economic activities in the U.K. are in the maritime industries segment; see Howard Smith (1988, p. 5).

5.14.4 Revenue Share Estimates

The first task is to allocate Howard Smith's total revenue (net of its holding in Coal and Allied) across the ORANI Industries. A mapping of Howard Smith's areas of economic activity to the ORANI Industries is given in Table 5.14.1. This mapping is then applied to the revenue figures given in section 5.14.2 to produce estimates of Howard Smith's total revenue (net of its holding in Coal and Allied) across ORANI Industries; see Table 5.14.2, column [I]. As Coal and Allied is involved in a reciprocal holding with Howard Smith, the next step is to estimate a mapping of the total revenue of Coal and Allied (net of its holding in Howard Smith) across ORANI Industries; see section 5.7.4 and Table 5.14.2, column [II]. It is now possible, given the above data, to implement the procedure set out in Appendix A.1 for estimating mappings involving reciprocal holdings. The final estimates of Howard Smith's total revenue across ORANI Industries are given in column [III] of Table 5.14.2.

The above procedure is then repeated to estimate a mapping of Howard Smith's foreign revenue across ORANI Industries; see Table 5.14.3. The foreign revenue components are then subtracted from the total revenue to estimate domestic revenue across ORANI Industries; see Table 5.14.4. Finally, the shares of domestic revenue in total revenue for Howard Smith mapped across ORANI Industries are given in column [IV] of Table 5.14.4.

TABLE 5.14.1: A MAPPING OF HOWARD SMITH'S AREAS OF ECONOMIC ACTIVITY (NET OF ITS HOLDING IN COAL AND ALLIED INDUSTRIES) TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Maritime Industries	100	95	Water Transport
Manufacture & Distribution of Industrial/Engineering Products (a)	65	70	Locomotives
	10	75	Other Electrical Goods
	25	89	Wholesale Trade
Coal Mining	100	14	Black Coal
Civil Engineering, Industrial & Commercial Services	100	102	Other Business Services

* The categories of ORANI industries that correspond with each of the areas of economic activity were obtained from Table 3.3 and ABS (1985a,b).

(a) The subsidiary company A. Goninan & Co Limited manufactures railway rolling stock, which corresponds to ORANI industry 70. This subsidiary contributed \$4.310m towards consolidated group profit; see Howard Smith (1988, pp. 27 and 28). The subsidiary company Rymer Lighting manufactures light tubes, which corresponds to ORANI industry 75. This subsidiary contributed \$0.510m towards consolidated group profit; see Howard Smith (1988, p. 28). The subsidiary company J. Blackwood & Son Limited distributes engineering supplies, which corresponds to ORANI industry 89. This subsidiary contributed \$1.491m towards consolidated group profit; see Howard Smith (1988, pp. 27 and 30). On the basis of the above, it is estimated that these economic activities roughly map 65 per cent (i.e., $100 \times \$4.310m / (\$4.310m + \$0.510m + \$1.491m)$), 10 per cent, and 25 per cent to ORANI industries 70, 75, and 89 respectively.

TABLE 5.14.2: A MAPPING OF HOWARD SMITH'S TOTAL REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Revenue Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Total Revenue Net of its Holding in Howard Smith (b) \$'000 [II]	Total Revenue (c) \$'000 [III]
14 Black Coal	152,704	469,973	427,655
70 Locomotives	323,683	-	222,305
75 Other Electrical Goods	49,797	-	34,201
89 Wholesale Trade	124,494	-	85,502
95 Water Transport	286,829	-	196,994
102 Other Business Services	19,211	-	13,194
Investments	64,365	2,289	45,778
	<u>1,021,083</u>	<u>472,262</u>	<u>1,025,629</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.5 / (0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.3: A MAPPING OF HOWARD SMITH'S FOREIGN REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Revenue Net of its Holding in Coal and Allied Industries(a) \$'000 [I]	Coal and Allied Industries' Foreign Revenue Net of its Holding in Howard Smith(b) \$'000 [II]	Foreign Revenue(c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	144,512	-	99,251
102 Other Business Services	-	-	-
Investments	-	-	-
	<u>144,512</u>	<u>-</u>	<u>99,251</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) × 0.5 / (0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.4: A MAPPING OF HOWARD SMITH'S DOMESTIC REVENUE ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue(a) \$'000 [I]	Foreign Revenue(b) \$'000 [II]	Domestic Revenue(c) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
14 Black Coal	427,655	-	427,655	41.70
70 Locomotives	222,305	-	222,305	21.67
75 Other Electrical Goods	34,201	-	34,201	3.33
89 Wholesale Trade	85,502	-	85,502	8.34
95 Water Transport	196,994	99,251	97,743	9.53
102 Other Business Services	13,194	-	13,194	1.29
Investments	45,778	-	45,778	4.46
	<u>1,025,629</u>	<u>99,251</u>	<u>926,378</u>	<u>90.32</u>

(a) Source: Table 5.14.2, column [III].

(b) Source: Table 5.14.3, column [III].

(c) That is, column [I] - column [II].

5.14.5 Cost Share Estimates

The first task is to allocate Howard Smith's total profit across ORANI Industries. Similar to above, Howard Smith's profit figures (net of its holding in Coal and Allied) listed in section 5.14.2 are used in conjunction with the mapping in Table 5.14.1 to generate the estimates presented in column [I] of Table 5.14.5. The next step is to estimate a mapping of the total profits of Coal and Allied (net of its holding in Howard Smith) across ORANI Industries; see section 5.7.5 and Table 5.14.5, column [II]. Following the procedure set out in Appendix A.1, estimates are then made of Howard Smith's total profit mapped across ORANI Industries; see Table 5.14.5, column [III].

The above procedure is then repeated to estimate a mapping of Howard Smith's foreign profit across ORANI Industries; see Table 5.14.6. The foreign profit components are then subtracted from total profit to estimate domestic profit mapped across ORANI Industries; see Table 5.14.7.

The last step is to subtract domestic profits from domestic revenue to estimate Howard Smith's domestic costs mapped across ORANI Industries; see Table 5.14.8. The final estimated cost shares are given in column [IV] of Table 5.14.8.

TABLE 5.14.5: A MAPPING OF HOWARD SMITH'S TOTAL PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Profit Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Total Profit Net of its Holding in Howard Smith (b) \$'000 [II]	Total Pre-Tax Profit (c) \$'000 [III]
14 Black Coal	(2,827)	(19,140)	(15,066)
70 Locomotives	8,103	-	5,565
75 Other Electrical Goods	1,247	-	856
89 Wholesale Trade	3,117	-	2,141
95 Water Transport	5,034	-	3,457
102 Other Business Services	(8,198)	-	(5,630)
Investments	(1,177)	1,671	339
	<u>5,299</u>	<u>(17,469)</u>	<u>(8,358)</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) × 0.5 / (0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.6: A MAPPING OF HOWARD SMITH'S FOREIGN PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Profit Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Foreign Profit Net of its Holding in Howard Smith(b) \$'000 [II]	Pre-Tax Foreign Profit(c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	-	-	-
102 Other Business Services	(9,388)	-	(6,448)
Investments	-	-	-
	<u>(9,388)</u>	<u>-</u>	<u>(6,448)</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) $\times$ 0.5/(0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.7: A MAPPING OF HOWARD SMITH'S DOMESTIC PROFIT ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit(a) \$'000 [I]	Foreign Pre-Tax Profit(b) \$'000 [II]	Domestic Pre-Tax Profit(c) \$'000 [III]
14 Black Coal	(15,086)	-	(15,086)
70 Locomotives	5,565	-	5,565
75 Other Electrical Goods	856	-	856
89 Wholesale Trade	2,141	-	2,141
95 Water Transport	3,457	(6,448)	9,905
102 Other Business Services	(5,630)	-	(5,630)
Investments	339	-	339
	<u>(8,358)</u>	<u>(6,448)</u>	<u>(1,910)</u>

(a) Source: Table 5.14.5, column [III].

(b) Source: Table 5.14.6, column [III].

(c) That is, column [I] - column [II].

TABLE 5.14.8: A MAPPING OF HOWARD SMITH'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue (a) \$'000	Domestic Pre-Tax Profit (b) \$'000	Domestic Costs (c) \$'000	Share of Domestic Costs in Total Costs (d) (percentage)
	[I]	[II]	[III]	[IV]
14 Black Coal	427,655	(15,086)	442,741	42.83
70 Locomotives	222,305	5,565	216,740	20.96
75 Other Electrical Goods	34,201	856	33,345	3.22
89 Wholesale Trade	85,502	2,141	83,361	8.06
95 Water Transport	97,743	9,905	87,838	8.50
102 Other Business Services	13,194	(5,630)	18,824	1.82
Investments	45,778	339	45,439	4.39
	<u>926,378</u>	<u>(1,910)</u>	<u>928,288</u>	<u>89.78</u>

(a) Source: Table 5.14.4, column [III].

(b) Source: Table 5.14.7, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.14.7) from total revenue (see total of column [I], Table 5.14.4).

5.14.6 Asset Share Estimates

The first task is to allocate Howard Smith's total assets across ORANI Industries. Howard Smith's total asset figures (net of its holding in Coal and Allied) listed in section 5.14.2 are used in conjunction with the mapping in Table 5.14.1 to generate the estimates presented in column [I] of Table 5.14.9. The next step is to estimate a mapping of the total assets of Coal and Allied (net of its holding in Howard Smith) across ORANI Industries; see section 5.7.6 and Table 5.14.9, column [II]. Following the procedure set out in Appendix A.1, estimates are then made of Howard Smith's total assets mapped across ORANI Industries; see Table 5.14.9, column [III].

The above procedure is then repeated to estimate a mapping of Howard Smith's foreign assets across ORANI Industries; see Table 5.14.10.

The foreign assets are then subtracted from total assets to estimate domestic assets mapped across ORANI Industries; see Table 5.14.11. The final estimated asset shares are given in column [IV] of Table 5.14.11.

TABLE 5.14.9: A MAPPING OF HOWARD SMITH'S TOTAL ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Total Assets Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Total Assets Net of its Holding in Howard Smith (b) \$'000 [II]	Total Assets (c) \$'000 [III]
14 Black Coal	268,958	289,673	383,668
70 Locomotives	168,958	-	116,040
75 Other Electrical Goods	25,994	-	17,853
89 Wholesale Trade	64,984	-	44,631
95 Water Transport	186,708	-	128,231
102 Other Business Services	16,970	-	11,655
Investments	84,028	83,147	114,816
	<u>816,600</u>	<u>372,820</u>	<u>816,894</u>

(a) Source: section 5.14.2.

(b) Source: section 5.7.2.

(c) Column [III] = (column [I] + column [II]) × 0.5 / (0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.10: A MAPPING OF HOWARD SMITH'S FOREIGN ASSETS ACROSS ORANI INDUSTRIES

ORANI Industry	Howard Smith's Foreign Assets Net of its Holding in Coal and Allied Industries (a) \$'000 [I]	Coal and Allied Industries' Foreign Revenue Net of its Holding in Howard Smith (b) \$'000 [II]	Foreign Assets (c) \$'000 [III]
14 Black Coal	-	-	-
70 Locomotives	-	-	-
75 Other Electrical Goods	-	-	-
89 Wholesale Trade	-	-	-
95 Water Transport	65,320	-	44,862
102 Other Business Services	-	-	-
Investments	-	-	-
	<u>65,320</u>	<u>-</u>	<u>44,862</u>

(a) Source: section 5.14.3.

(b) Source: section 5.7.3.

(c) Column [III] = (column [I] + column [II]) × 0.5 / (0.228 + 0.5). For more details see Appendix A.1.

TABLE 5.14.11: A MAPPING OF HOWARD SMITH'S DOMESTIC ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets (a) \$'000 [I]	Foreign Assets (b) \$'000 [II]	Domestic Assets (c) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
14 Black Coal	383,668	-	383,668	46.96
70 Locomotives	116,040	-	116,040	14.20
75 Other Electrical Goods	17,853	-	17,853	2.19
89 Wholesale Trade	44,631	-	44,631	5.46
95 Water Transport	128,231	44,862	83,369	10.21
102 Other Business Services	11,655	-	11,655	1.43
Investments	114,816	-	114,816	14.06
	<u>816,894</u>	<u>44,862</u>	<u>772,032</u>	<u>94.51</u>

(a) Source: Table 5.14.9, column [III].

(b) Source: Table 5.14.10, column [III].

(c) That is, column [I] - column [II].

5.15 Westpac

5.15.1 History

Following Stock Exchange Research (1986, p. 57), Westpac was the result of the merger of the Bank of New South Wales with The Commercial Bank of Australia in October 1982. The Bank of New South Wales was established in 1817 as the first bank in Australia. The Savings Bank subsidiary was formed in 1955 and in 1957 a controlling interest was acquired in the Australian Guarantee Corporation. The Commercial Bank of Australia was established in Melbourne in 1866 and by 1890 had branches in all the mainland colonies. In 1912 operations were expanded to New Zealand.

Activities of the Westpac Group include: general and savings banking; provision of retail, corporate, and international banking services; travel services; investment portfolio, unit trust, and superannuation fund management; insurance broking services; merchant banking; stockbroking; and property development and investment. Westpac's operations are located in Australia, New Zealand, Europe, Asia, America, and the Pacific Islands.

5.15.2 Industry Segments

According to Westpac (1987, p. 61), the group operates predominantly in the financial services industry.

5.15.3 Geographical Segments

According to note 27 of the 1987 annual report (see Westpac (1987, p. 61)), the group operates in three geographical regions:

	Revenue (\$'000)	Profit (\$'000)	Assets (\$'000)
Australia	6,237,700	636,600	43,744,500
New Zealand	1,141,700	114,600	6,162,300
Other	1,808,500	119,400	20,426,700
	<u>9,187,900</u>	<u>870,600</u>	<u>70,333,500</u>

5.15.4 Revenue Share Estimates

The first task is to allocate Westpac's total revenue across the ORANI Industries. Recall from Table 5.1 that Westpac with its ASX industry classification of Bank (161) maps to just one ORANI industry, namely, Banking. A revised version of this mapping is given in Table 5.15.1. This mapping is then applied to the total revenue figure given in section 5.13.3 to produce estimates of Westpac's revenue across ORANI Industries; see Table 5.15.2, column [I].

The next step is to subtract from the above total revenue figures the components due to Westpac's overseas operations. It is assumed that the proportion of revenue derived from foreign activities is the same in each ORANI industry as it is in total; see section 5.15.3 and Table 5.15.2, column [II]. The resulting estimates of domestic revenue and domestic revenue shares in total revenue are given in columns [III] and [IV], respectively, of Table 5.15.2.

TABLE 5.15.1: A MAPPING OF WESTPAC'S AREAS OF ECONOMIC ACTIVITY TO THE ORANI INDUSTRIES*

Economic Activity	Percentage of Economic Activity in the ORANI Industry	ORANI Industry Number	ORANI Industry
Financial Services(a)	60	98	Banking
	37	99	Non-Bank Finance
	3	100	Investment and Services

* The categories of ORANI Industries that correspond with each of the areas of economic activity were obtained from Falkiner (1988), Westpac (1987), Table 3.3, and ABS (1985a,b).
(a) The percentages of financial services in each of the ORANI Industries were estimated as follows. According to Westpac (1987, p. 38), the after-tax profit from trading and savings banks was \$220.5m, from AOC and merchant banks was \$145.6m, and from stockbroking activities was \$9.3m. Thus, financial services is estimated to roughly map 60 per cent (i.e., $100 \times \$220.5m / (\$220.5m + \$145.6m + \$9.3m)$), 37 per cent, and 3 per cent to ORANI Industries 98, 99, and 100, respectively.

TABLE 5.15.2: A MAPPING OF WESTPAC'S REVENUE
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Revenue \$'000 [I]	Foreign Revenue \$'000 [II]	Domestic Revenue(a) \$'000 [III]	Share of Domestic Revenue in Total Revenue (percentage) [IV]
98 Banking	5,512,740	1,770,120	3,742,620	40.73
99 Non-Bank Finance	3,399,523	1,091,574	2,307,949	25.12
100 Investment and Services	275,637	88,506	187,131	2.04
	<u>9,187,900</u>	<u>2,950,200</u>	<u>6,237,700</u>	<u>67.89</u>

(a) That is, column [I] - column [II].

5.15.5 Cost Share Estimates

The first task is to allocate Westpac's total profit across the ORANI Industries. Similar to above, the mapping in Table 5.15.1 is applied to the total profit figure in section 5.15.3 to produce estimates of Westpac's profit across ORANI Industries; see Table 5.15.3, column [I]. The next step is to subtract from the above total profit figures the components due to Westpac's overseas operations. It is assumed that the proportion of profit derived from foreign activities is the same in each ORANI industry as it is in total; see section 5.15.3 and Table 5.15.3, column [II]. The resulting estimates of domestic profit mapped across ORANI Industries are given in column [III] of Table 5.15.3. Domestic profits are then subtracted from domestic revenue to estimate Westpac's domestic costs; see Table 5.15.4. The final estimated cost shares are given in column [IV] of Table 5.15.4.

5.15.6 Asset Share Estimates

The first step is to allocate Westpac's total assets across ORANI Industries. The mapping in Table 5.15.1 is applied to the total assets figure given in section 5.15.3 to produce estimates of Westpac's assets across ORANI Industries; see Table 5.15.5, column [I]. The next step is to subtract from the above total asset figures the components due to Westpac's overseas operations. It is assumed that the proportion of assets located overseas is the same in each ORANI industry as it is in total; see section 5.15.3 and Table 5.15.5, column [II]. The

TABLE 5.15.3: A MAPPING OF WESTPAC'S PROFIT
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Pre-Tax Profit \$'000 [I]	Foreign Pre-Tax Profit \$'000 [II]	Domestic Pre-Tax Profit(a) \$'000 [III]
98 Banking	522,360	140,400	381,960
99 Non-Bank Finance	322,122	86,580	235,542
100 Investment and Services	26,118	7,020	19,098
	<u>870,600</u>	<u>234,000</u>	<u>636,600</u>

(a) That is, column [I] - column [II].

TABLE 5.15.4: A MAPPING OF WESTPAC'S COSTS
ACROSS ORANI INDUSTRIES

ORANI Industry	Domestic Revenue(a) \$'000 [I]	Domestic Pre-Tax Profit(b) \$'000 [II]	Domestic Costs(c) \$'000 [III]	Share of Domestic Costs in Total Costs(d) (percentage) [IV]
98 Banking	3,742,620	381,960	3,360,660	40.40
99 Non-Bank Finance	2,307,949	235,542	2,072,407	24.92
100 Investment and Services	187,131	19,098	168,033	2.02
	<u>6,237,700</u>	<u>636,600</u>	<u>5,601,100</u>	<u>67.34</u>

(a) Source: Table 5.15.2, column [III].

(b) Source: Table 5.15.3, column [III].

(c) That is, column [I] - column [II].

(d) Total cost is given by subtracting total pre-tax profit (see total of column [I], Table 5.15.3) from total revenue (see total of column [I], Table 5.15.2).

TABLE 5.15.5: A MAPPING OF WESTPAC'S ASSETS
ACROSS ORANI INDUSTRIES

ORANI Industry	Total Assets \$'000 [I]	Foreign Assets \$'000 [II]	Domestic Assets (a) \$'000 [III]	Share of Domestic Assets in Total Assets (percentage) [IV]
98 Banking	42,200,100	15,953,400	26,246,700	37.32
99 Non-Bank Finance	26,023,395	9,837,930	16,185,465	23.01
100 Investment and Services	2,110,005	797,670	1,312,335	1.07
	<u>70,333,500</u>	<u>26,589,000</u>	<u>43,744,500</u>	<u>62.20</u>

(a) That is, column [I] + column [II].

resulting estimates of domestic assets and shares of domestic assets in total assets are given in columns [III] and [IV], respectively, of Table 5.15.5.

6. DIRECTIONS FOR FUTURE WORK

Two major lines for future investigation emerge from the work reported above. One involves increasing the scope of the present study by using the techniques developed here to estimate contemporary mappings for a larger number of corporations. The other involves attempting to estimate a time series of mappings, initially at least confined to the corporations studied in this paper.

There are three points in favour of a more comprehensive contemporary mapping. First, if the industrial profiles of corporations are to be traced from the present through the maze of potential takeovers and other types of change in corporate ownership, then a wide coverage of the market is necessary. The second and third points relate to the wider project in portfolio analysis (Higgs (1988)) of which this study forms a part. In the context of this wider project the more comprehensive mapping is necessary to ensure that an institutional investor using the portfolio rules developed therein will have access to at least a large subset of listed stocks. Finally, one potential spin-off from the portfolio project would be the ability to design stock market indices for special purposes. Needless to say, the construction of such indices requires a wide data base.

The development of a time series data base is also required by the portfolio project (Higgs (1988)). The explanatory power of the economic model and associated portfolio rules can only be assessed by examination of their historical performance.

APPENDIX

This appendix is divided into two sections. The first describes how differential equation techniques can be used to estimate the mapping of economic activities to ORANI industries when there exists cross holding between corporations. The second describes a technique for estimating capital stocks using rental rates, rates of return, and depreciation rates. Note that this technique is not used in the paper, however it has been included for possible future work.

A.1 RECIPROCAL HOLDINGS

In this note we tackle the problem of how to estimate the mapping of economic activities to ORANI industries when there exists cross holding between two or more corporations. Consider first the simplest case where corporation X owns a share of corporation Y, denoted by S_{YX} . Furthermore, corporation Y owns a share of corporation X, denoted by S_{XY} . Finally, the activities of corporations X and Y prior to accounting for cross holding are denoted by X_0 and Y_0 , respectively.

The first round of accounting for cross holding could be thought of as follows. Corporation X owns $S_{YX}Y_0$ of corporation Y's activities, which leaves $(1 - S_{YX})Y_0$ for ownership by corporation Y of its own activities. Similarly, corporation Y owns $S_{XY}X_0$ of corporation X's activities, which leaves $(1 - S_{XY})X_0$ for ownership by corporation X of its own activities. Thus, at the end of the first round, the ownership of activities for corporations X and Y are:

$$X_1 = S_{YX}Y_0 + (1 - S_{YX})X_0 \quad ; \quad (A1.1)$$

and

$$Y_1 = (1 - S_{YX})Y_0 + S_{XY}X_0 \quad . \quad (A1.2)$$

The second and subsequent rounds of accounting for cross holding can be represented by:

$$X_t = S_{YX}X_{t-1} + (1 - S_{YX})X_{t-1} \quad \text{for all } t; \quad (A1.3)$$

and

$$Y_t = (1 - S_{YX})Y_{t-1} + S_{XY}X_{t-1} \quad \text{for all } t. \quad (A1.4)$$

The ultimate allocation of ownership can be solved using differential equation techniques. Following Baumol (1970, pp. 328-331), for example, we first derive the characteristic equation of the above simultaneous difference equation system. This involves trying a solution of the form:

$$X_t = P_X Z^t \quad \text{for all } t; \quad (A1.5)$$

and

$$Y_t = P_Y Z^t \quad \text{for all } t; \quad (A1.6)$$

where P_X and P_Y are constants. Next substitute equations (A1.5) and (A1.6) into equations (A1.3) and (A1.4):

$$P_X Z^{t+1} - S_{YX} P_Y Z^t - (1 - S_{YX}) P_X Z^t = 0 \quad ; \quad (A1.7)$$

and

$$P_Y Z^{t+1} - (1 - S_{YX}) P_X Z^t - S_{XY} P_X Z^t = 0 \quad . \quad (A1.8)$$

Now define two ratios:

$$P = P_X / P_Y \quad ; \quad (A1.9)$$

and

$$Z = Z^{t+1} / Z^t \quad . \quad (A1.10)$$

Equations (A1.7) and (A1.8) are then divided by $P_Y Z^t$:

$$PZ - S_{YX} - (1 - S_{YX})P = 0 \quad ; \quad (A1.11)$$

and

$$Z - (1 - S_{YX}) - S_{XY}P = 0 \quad . \quad (A1.12)$$

From equation (A1.12) we can write:

$$P = (Z - (1 - S_{YX}))/S_{XY} \quad (A1.13)$$

Substitute (A1.13) into (A1.11):

$$Z^2 - (2 - S_{YX} - S_{XY})Z + (1 - S_{YX} - S_{XY}) = 0 \quad (A1.14)$$

Equation (A1.14) is called the characteristic equation of the simultaneous difference equation system.

The next step is to solve the characteristic equation for its roots. Recall that the roots to the general quadratic equation:

$$ax^2 + bx + c = 0 \quad (A1.15)$$

are given by:

$$x = -b/(2a) \pm (b^2 - 4ac)^{1/2}/(2a) \quad (A1.16)$$

Thus the roots to equation (A1.14) are given by:

$$Z = 1 \quad (A1.17)$$

and

$$Z = 1 - S_{YX} - S_{XY} \quad (A1.18)$$

The corresponding solutions for P can be calculated by substituting equations (A1.17) and (A1.18) into equation (A1.13):

$$P = S_{YX}/S_{XY} \quad (A1.19)$$

and

$$P = -1 \quad (A1.20)$$

Now substitute the corresponding values for Z and P into the trial solution (i.e., equations (A1.5) and (A1.6)) and for convenience arbitrarily set $P_Y = 1$ so that $P = P_X/P_Y = P_X$:

$$X_t^{**} = S_{YX}/S_{XY}(1)^t, \quad Y_t^{**} = (1)^t \quad (A1.21)$$

and

$$X_t^{**} = -1(1 - S_{YX} - S_{XY})^t, \quad Y_t^{**} = (1 - S_{YX} - S_{XY})^t \quad (A1.22)$$

Thus, we have two pairs of solutions corresponding to the two roots of the characteristic equation.

The next step is to derive a general solution. The sum of two solutions each multiplied by an arbitrary constant is also a solution:

$$X_t = V_1 X_t^{**} + V_2 X_t^{**} \quad (A1.23)$$

and

$$Y_t = V_1 Y_t^{**} + V_2 Y_t^{**} \quad (A1.24)$$

where V_1 and V_2 are constants; see Baumol (1970, pp. 344-349). Now substitute (A1.21) and (A1.22) into (A1.23) and (A1.24):

$$X_t = V_1 S_{YX}/S_{XY}(1)^t - V_2(1 - S_{YX} - S_{XY})^t \quad (A1.25)$$

and

$$Y_t = V_1(1)^t + V_2(1 - S_{YX} - S_{XY})^t \quad (A1.26)$$

To complete the solution procedure we must solve for the values of V_1 and V_2 . These are calculated by taking the case where $t=0$ and substituting the initial conditions X_0 and Y_0 into equations (A1.25) and (A1.26):

$$X_0 = V_1 S_{YX}/S_{XY} - V_2 \quad ; \quad (A1.27)$$

and

$$Y_0 = V_1 + V_2 \quad . \quad (A1.28)$$

Thus, the values for V_1 and V_2 are, respectively:

$$V_1 = (X_0 + Y_0) S_{XY}/(S_{YX} + S_{XY}) \quad ; \quad (A1.29)$$

and

$$V_2 = (Y_0 S_{YX} - X_0 S_{XY})/(S_{YX} + S_{XY}) \quad . \quad (A1.30)$$

Finally, substitute (A1.29) and (A1.30) into equations (A1.25) and (A1.26):

$$\begin{aligned} X_t &= [(X_0 + Y_0) S_{YX} S_{XY}/(S_{YX} + S_{XY})](1)^t \\ &\quad - [(Y_0 S_{YX} - X_0 S_{XY})/(S_{YX} + S_{XY})](1 - S_{YX} - S_{XY})^t \quad ; \quad (A1.31) \end{aligned}$$

$$\begin{aligned} Y_t &= [(X_0 + Y_0) S_{XY}/(S_{YX} + S_{XY})](1)^t \\ &\quad + [(Y_0 S_{YX} - X_0 S_{XY})/(S_{YX} + S_{XY})](1 - S_{YX} - S_{XY})^t \quad . \quad (A1.32) \end{aligned}$$

So long as $S_{YX} + S_{XY}$ lies in the range $1 \geq S_{YX} + S_{XY} > 0$, then as $t \rightarrow \infty$ equations (A1.31) and (A1.32) reduce to:

$$X = (X_0 + Y_0) S_{YX} S_{XY}/[S_{YX} (S_{YX} + S_{XY})] \quad ; \quad (A1.33)$$

and

$$Y = (X_0 + Y_0) S_{XY}/(S_{YX} + S_{XY}) \quad . \quad (A1.34)$$

Two points should be noted. The first is that the Companies Code prohibits the ownership of shares by a subsidiary in its holding company; see section 2.4. Thus, $S_{YX} + S_{XY}$ must lie in the range $1 \geq S_{YX} + S_{XY} > 0$. The second point is that while the outcome is dependent on the aggregate value of $X_0 + Y_0$, it is independent of the individual values of X_0 and Y_0 . Thus, the final outcome depends on the aggregate activities of the corporations involved and not their individual activities.

The above result can be illustrated using the cross holding that exists between Coal and Allied Industries and Howard Smith Limited. Recall from sections 5.7 and 5.14, respectively, that Coal and Allied Industries own 22.8 per cent of Howard Smith (i.e., $S_{YX} = 0.228$) and that Howard Smith in turn owns 50 per cent of Coal and Allied (i.e., $S_{XY} = 0.5$). Assume for illustrative purposes that the activities of Coal and Allied (excluding its investment in Howard Smith) earned a nominal profit of \$100 (i.e., $X_0 = \$100$), and that the activities of Howard Smith (excluding its investment in Coal and Allied) earned a nominal profit of \$200 (i.e., $Y_0 = \$200$). The actual profit earned by these corporations after accounting for cross holding can be calculated from equations (A1.33) and (A1.34):

$$X = (\$100 + \$200)0.228 \times 0.5/[0.5(0.228 + 0.5)] = \$93.96$$

$$Y = (\$100 + \$200)0.5/(0.228 + 0.5) = \$206.04.$$

Finally, it is possible to solve the above problem using matrix methods. In addition, matrix methods are capable of solving more complex cross holdings (i.e., those involving three or more companies).

For an example of the matrix solution method see Baumol (1970, pp. 353-357).

A.2 A NOTE ON ESTIMATING CAPITAL STOCK SHARES

Let S_{ij}^t be the share of corporation i 's total capital stock located in industry j at time t :

$$S_{ij}^t = V_{ij}^t / \sum_{k=1}^{n+1} V_{ik}^t \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.1) \end{matrix}$$

where V_{ij}^t is the value of corporation i 's capital stock located in industry j at time t . Note that the subscript ranges refer to m corporations, n domestic industries and an aggregate of all foreign industries (i.e., the $n+1$ th industry). Furthermore, the shares sum to one:

$$\sum_{j=1}^{n+1} S_{ij}^t = 1 \quad i=1, \dots, m. \quad (A2.2)$$

To estimate the S_{ij}^t 's the following procedure is adopted.

First we define the average annual rate of return on a unit of corporation i 's capital located in industry j (where j runs over the n ORANI industries and an $n+1$ th foreign industry) over the period beginning at instant $t-1$ and ending at instant t , R_{ij}^t :

$$R_{ij}^t = P_{ij}^t (1 + r_{ij}^t) / \Pi_{ij}^{t-1} + (\Pi_{ij}^t (1 + r_{ij}^t) - \Pi_{ij}^{t-1}) / (\Pi_{ij}^{t-1}) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.3) \end{matrix}$$

where P_{ij}^t is the average annual pre-tax rental earned on a unit of corporation i's capital located in industry j over the period $t-1$ to t ; v_{ij}^t is the ratio of taxes paid over the period $t-1$ to t to the rentals earned over that period; π_{ij}^{t-1} and π_{ij}^t are the creation costs of a unit of corporation i's capital located in industry j at $t-1$ and t , respectively; l is the number of years between $t-1$ and t ; and d_{ij}^t is the depreciation rate on a unit of corporation i's capital located in industry j over the period $t-1$ to t . As we observe a price times a quantity we rewrite equation (A2.3):

$$R_{ij}^t = P_{ij}^t K_{ij}^{t-1} (1 - \tau_{ij}^t) / (\pi_{ij}^{t-1} K_{ij}^{t-1}) \\ + (\pi_{ij}^{t-1} K_{ij}^{t-1} (1 - \tau_{ij}^t) - \pi_{ij}^{t-1} K_{ij}^{t-1}) / (\pi_{ij}^{t-1} K_{ij}^{t-1}) \\ i=1, \dots, m \\ j=1, \dots, n+1; \quad (A2.4)$$

where K_{ij}^{t-1} is the quantity of corporation i's capital stock located in ASIC industry j at instant $t-1$. Next we note that:

$$K_{ij}^t = K_{ij}^{t-1} (1 - \tau_{ij}^t) \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.5)$$

Thus equation (A2.4) can be written:

$$R_{ij}^t = P_{ij}^t K_{ij}^{t-1} (1 - \tau_{ij}^t) / (\pi_{ij}^{t-1} K_{ij}^{t-1}) \\ + (\pi_{ij}^{t-1} K_{ij}^t - \pi_{ij}^{t-1} K_{ij}^{t-1}) / (\pi_{ij}^{t-1} K_{ij}^{t-1}) \quad i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.6)$$

Next, we note that the value of corporation i's capital stock located in industry j at instant t can be written:

$$v_{ij}^t = \pi_{ij}^t K_{ij}^t \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.7)$$

Using equation (A2.7) we can rewrite equation (A2.6):

$$R_{ij}^t = P_{ij}^t K_{ij}^{t-1} (1 - \tau_{ij}^t) / v_{ij}^{t-1} \\ + (v_{ij}^t - v_{ij}^{t-1}) / (\pi_{ij}^{t-1} K_{ij}^{t-1}) \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.8)$$

If we assume that all the depreciation occurs just before the instant t , then the after-tax rental component θ_{ij}^t , which we assume can be observed from industry-segmented annual reports, is equal to:

$$\theta_{ij}^t = P_{ij}^t K_{ij}^{t-1} (1 - \tau_{ij}^t) \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.9)$$

Furthermore, we will assume that the number of years between instants $t-1$ and t is one. Given the above, equation (A2.8) can be written:

$$R_{ij}^t = (\theta_{ij}^t + v_{ij}^t - v_{ij}^{t-1}) / v_{ij}^{t-1} \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.10)$$

From equation (A2.10) we can solve for v_{ij}^t :

$$v_{ij}^t = v_{ij}^{t-1} (1 + R_{ij}^t) - \theta_{ij}^t \\ i=1, \dots, m \\ j=1, \dots, n+1. \quad (A2.11)$$

Thus, given an initial V_{ij}^{t-1} and if we assume that the R_{ij}^t can be calculated from stockmarket data (this is discussed below), then equation (A2.11) could be used to estimate a time series of the V_{ij}^t 's and hence of the S_{ij}^t 's:

$$S_{ij}^t = [V_{ij}^{t-1} (1 + R_{ij}^t) - \theta_{ij}^t] / \sum_{k=1}^{n+1} [V_{ik}^{t-1} (1 + R_{ik}^t) - \theta_{ik}^t] \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.12) \end{matrix}$$

To calculate an initial value of corporation i's capital stock located in industry j we could assume that there were no capital gains over the period $t-1$ to t :

$$\pi_{ij}^t K_{ij}^t = \pi_{ij}^{t-1} K_{ij}^{t-1} \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.13) \end{matrix}$$

Substitute equation (A2.5) (note that we are assuming $l = 1$) into equation (A2.13):

$$\pi_{ij}^t K_{ij}^t = \pi_{ij}^{t-1} K_{ij}^{t-1} (1 + d_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.14) \end{matrix}$$

Using equation (A2.7) we can rewrite equation (A2.14):

$$V_{ij}^t = V_{ij}^{t-1} (1 + d_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.15) \end{matrix}$$

Now substitute equation (A2.15) into equation (A2.10):

$$R_{ij}^t = (\theta_{ij}^t + V_{ij}^{t-1} (1 - d_{ij}^t) - V_{ij}^{t-1}) / V_{ij}^{t-1} \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.16) \end{matrix}$$

Equation (A2.16) reduces to:

$$V_{ij}^{t-1} = \theta_{ij}^t / (R_{ij}^t + d_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.17) \end{matrix}$$

Equation (A1.17) says that we can estimate the value of corporation i's capital stock located in industry j at instant $t-1$ if we know: the after-tax rental earned over the period $t-1$ to t , the rate of return earned over the period $t-1$ to t , and its depreciation rate over the period $t-1$ to t .

As an aside, note that if we are prepared to ignore capital gains over all t , then the shares of corporation i's capital stock across industries could be estimated by substituting equation (A2.17) into equation (A2.1):

$$S_{ij}^t = [\theta_{ij}^t / (R_{ij}^t + d_{ij}^t)] / \sum_{k=1}^{n+1} [\theta_{ik}^t / (R_{ik}^t + d_{ik}^t)] \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1. (A2.18) \end{matrix}$$

As mentioned above, we assume that we can observe the after-tax rental components (i.e., the θ_{ij}^t 's) from industry-segmented annual reports. Furthermore, we assume that the depreciation rates required in equation (A2.17) to estimate the initial V_{ij}^t 's (i.e., the

d_{ij}^t 's) can be estimated from published data. Note that it may be necessary to assume:

$$d_{ij}^t = d_{ij}^t \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.19) \end{matrix}$$

where d_{ij}^t is the average depreciation rate for industry j . Thus all that remains to be estimated before we can calculate the revised S_{ij}^t 's are the after-tax rates of return on capital (i.e., the R_{ij}^t 's). However, these are difficult to calculate. On the other hand, we can calculate the average annual rate of return for corporation i over the period $t-2$ to t , R_{i*}^t :

$$R_{i*}^t = D_{i*}^t / \left(\frac{t-2}{t-1} + \left(\frac{t-2}{t-1} - \frac{t-2}{t-1} \right) / \frac{t-2}{t-1} \right) \quad i=1, \dots, m; \quad (A2.20)$$

where D_{i*}^t is the average annual flow of dividends on one share in corporation i over the period $t-2$ to t ; and $\frac{t-2}{t-1}$ and $\frac{t-2}{t-1}$ are the market prices of a share of corporation i at instants $t-2$ and t , respectively. Furthermore, we note that:

$$R_{i*}^t = \sum_{j=1}^{n+1} S_{ij}^t R_{ij}^t \quad i=1, \dots, m. \quad (A2.21)$$

At this stage, the problem of estimating the S_{ij}^t 's can be characterized as follows. The system above essentially consists of $3m(n+1) + 3m$ equations which can be summarized:

$$S_{ij}^t = r(v_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.1) \end{matrix}$$

$$\sum_{j=1}^{n+1} S_{ij}^t = 1 \quad i=1, \dots, m; \quad (A2.2)$$

$$v_{ij}^t = r(v_{ij}^{t-1}, R_{ij}^t, \theta_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.11) \end{matrix}$$

$$v_{ij}^{t-1} = r(\theta_{ij}^t, R_{ij}^t, d_{ij}^t) \quad \begin{matrix} i=1, \dots, m \\ j=1, \dots, n+1; (A2.17) \end{matrix}$$

$$R_{i*}^t = r(D_{i*}^t, \frac{t-2}{t-1}, \frac{t-2}{t-1}) \quad i=1, \dots, m; \quad (A2.20)$$

and

$$R_{i*}^t = \sum_{j=1}^{n+1} S_{ij}^t R_{ij}^t \quad i=1, \dots, m. \quad (A2.21)$$

There are a total of $6m(n+1) + 4m$ variables of which we know the values of $2m(n+1) + 3m$ variables, that is the variables θ_{ij}^t , d_{ij}^t , D_{i*}^t , $\frac{t-2}{t-1}$, and $\frac{t-2}{t-1}$. This leaves a deficit of $4m(n+1) + m$ unknown variables. As the number of unknown variables is greater than the number of equations (i.e., $4m(n+1) + m > 3m(n+1) + 3m$, which holds so long as $n > 1$) then we require additional equations and/or assumptions to solve our estimation problem.

One solution to the above problem would involve separating corporations into two groups. The first group would consist of all those corporations located solely within one industry. Let this group be designated by the first m^* corporations. The second group would consist of all other corporations. The strategy would then be to calculate the R_{i*}^t 's using equation (A2.20) for corporations in the first group. In such cases R_{ij}^t equals R_{i*}^t , since S_{ij}^t equals one; see equation (A2.21). Furthermore, the R_{ij}^t 's could then be substituted together with estimates of the θ_{ij}^t 's and the d_{ij}^t 's into equation

(A2.17) to generate an estimate of the respective V_{ij}^{t-1} 's. These in turn could be substituted into equation (A2.11) to estimate the V_{ij}^t 's. Given the R_{ij}^t 's and the V_{ij}^t 's we could then estimate industry average annual rates of return, based on our subset of corporations that are located in only one industry:

$$R_{*j}^t = \frac{\sum_{i=1}^m G_{ij}^t}{\sum_{i=1}^m R_{ij}^t}$$

where

$$j=1, \dots, n+1; (A2.22)$$

$$G_{ij}^t = V_{ij}^t / \sum_{i=1}^m V_{ij}^t$$

$$j=1, \dots, n+1; (A2.23)$$

Next the R_{ij}^t 's for the corporations located in more than one industry could be estimated:

$$R_{ij}^t = R_{*j}^t + h_{ij}^t$$

$$i=1, \dots, m \\ j=1, \dots, n+1; (A2.24)$$

where h_{ij}^t is a shift variable that enables the rate of return on the component of corporation i located in industry j to deviate, if applicable, from the average for industry j . At this stage the h_{ij}^t 's are set exogenously. Finally, the R_{ij}^t 's could be substituted together with the V_{ij}^{t-1} 's and the θ_{ij}^t 's into equation (A2.11) to estimate the V_{ij}^t 's. These would then be used in equation (A2.1) to calculate revised estimates of the S_{ij}^t 's.

REFERENCES

- Amalgamated Wireless (1987) Annual Report 1987, 4 York Street, Sydney, 2000.
- American Institute of Certified Public Accountants (1970) "Statement No. 4: Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises", American Institute of Certified Public Accountants, Accounting Principles Board, Paragraph 132, New York.
- Ampol (1988) Annual Report 1988, 84 Pacific Highway, North Sydney, 2060.
- Ampol Exploration (1988) Annual Report 1988, 76 Berry Street, North Sydney, 2060.
- Archibald, D. (1987) "Pioneer Concrete Services Limited", HUB Research, Horden Utz and Bode Limited, August, mimeo, 45 pp.
- Arnotts (1987) Annual Report 1987, 168-170 Kent Street, Sydney, 2000.
- Australian Bureau of Statistics (1985a) Australian Standard Industrial Classification Volume 1: The Classification 1983, ABS Catalogue Number 1202.0, Australian Government Publishing Service, Canberra.
- Australian Bureau of Statistics (1985b) Australian Standard Industrial Classification Volume 2: Alphabetical Index of Primary Activities 1983, ABS Catalogue Number 1202.0, Australian Government Publishing Service, Canberra.
- Australian Bureau of Statistics (1987) Australian National Accounts, Input-Output Tables Commodity Details 1979-80 and 1980-81, ABS Catalogue Number 5215.0, Australian Government Publishing Service, Canberra.
- Australian Bureau of Statistics (1988) "Australian National Accounts, National Income and Expenditure, June Quarter 1988", Catalogue No. 5206.0, Australian Government Publishing Service, Canberra.
- Australian Business (1988a) Top 500, May 11, Australian Consolidated Press, Sydney.
- Australian Business (1988b) Giants of the Future, May 18, Australian Consolidated Press, Sydney.
- Australian National Industries (1987) Annual Report 1987, 5 Birnie Avenue, Lidcombe, 2141.
- Australian Society of Accountants (1979) Members' Handbook, Butterworths, Melbourne.
- Batsakis, G. (1988a) "Email Limited Investment Review", Eric J. Morgan & Co Ltd Research, March, mimeo, 10pp.
- Batsakis, G. (1988b) "Jennings Industries Limited, Investment Review", Eric J. Morgan & Co Ltd Research, April, mimeo, 11 pp.

- Sumol, W.J. (1970) Economic Dynamics, Third Edition, Macmillan, New York.
- Tamplin, C.W. (1985) "A Listing of the 1977-78 Balanced ORANI Data Base with the Typical-Year Agricultural Sector Implemented", IMPACT Research Memorandum, mimeo, 401 pp.
- Unclaberg Sugar (1988) Annual Report 1988, 17th Floor, Capita Building, 307 Queen Street, Brisbane, 4000.
- ureau of Agricultural Economics (1972) The Australian Sheep Industry Survey: 1967-68 to 1969-70, Australian Government Publishing Service, Canberra.
- ureau of Agricultural Economics (1974a) The Northern Territory and Kimberly Region Beef Cattle Industry, BAE Beef Research Report No.13, Australian Government Publishing Service, Canberra.
- ureau of Agricultural Economics (1974b) The Queensland Beef Cattle Industry 1968-69 to 1970-71, BAE Beef Research Report No.14, Australian Government Publishing Service, Canberra.
- ureau of Agricultural Economics (1976) The Australian Sheep Industry Survey: 1970-71 to 1972-73, Australian Government Publishing Service, Canberra.
- ilft, R.C. (1985) Corporate Accounting in Australia, Second Edition, Prentice-Hall, Sydney.
- oal and Allied Industries (1987) 1987 Annual Report, 1 York Street, Sydney, 2000.
- oal and Allied Industries (1988) 1988 Annual Report, 1 York Street, Sydney, 2000.
- omalco (1987) 1987 Annual Report, 38th Floor, 55 Collins Street, Melbourne, 3000.
- rawford, Peter J. (1988) "Address to the Securities Institute of Australia, Sydney, 19 May, 1988", Newslink AWA, mimeo, 4 pp.
- atex (1987) 1987 Australian Investment Year Book, Datex Services Ltd, GPO Box 2558, Sydney, N.S.W. 2000.
- Valence, G. (1988) "Comparison of ASX and ASIC Industry Classifications", mimeo, 4 pp. Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.
- ixon, P.B., B.R. Parmenter, J. Sutton, and D.P. Vincent (1982) ORANI: A Multisectoral Model of the Australian Economy, North-Holland Publishing Company, Amsterdam.
- Wall (1988) 1988 Annual Report, Joynton Avenue, Waterloo, 2017.
- alkiner, J. (1988) "Westpac Banking Corp.", Kleinwort Hattersley Securities, July, mimeo, 31pp.

- Gerrard, T. (1988) "Comalco Limited", Resource Earning Series, Potts West Trumbull and Company, July, mimeo, 4pp.
- Giant Resources (1988) 1988 Annual Report, 17th Floor, 141 Walker Street, North Sydney, 2060.
- Gliddon, S. (1988) "Australian National Industries Limited", MacTab Clarke limited, Company Research Report, July, mimeo, 10 pp.
- Henderson, S. and G. Peirson (1980) Issues in Financial Accounting, Second Edition, Longman Cheshire, Melbourne.
- Higgs, Peter J. (1986) Adaptation and Survival in Australian Agriculture, Oxford University Press, Melbourne.
- Higgs, Peter J. (1988) "A Forward Looking Approach to Portfolio Analysis Using a Computable General Equilibrium Model", IMPACT Preliminary Working Paper No. IP-37, 146 pp.
- Hilton, Peter (1988) "AWA Limited", McCaughan-Dyson-Capel-Cure Australasia Research Report, Diversified Industrials, August, mimeo, 18 pp.
- Hourigan, M. (1980) "Estimation of an Australian Capital Stock Matrix for the IMPACT Project", IMPACT Working Paper No. I-11, 212 pp.
- Howard Smith (1986) The Howard Smith Group of Companies, 1 York Street, Sydney, 2000.
- Howard Smith (1988) 1988 Annual Report, 1 York Street, Sydney, 2000.
- Hunter, N.M. (1986) "Bundaberg Sugar Company Limited", Paul Morgan and Co Pty Limited, December, mimeo 10 pp.
- Jennings Industries (1988) 1988 Annual Report, 690 Springvale Road, Mulgrave, Victoria.
- Johnson, Deborah (1988) "Arnotts Limited", Dominguez Barry Samuel Montagu Securities Ltd, Company Review, March, mimeo, 13 pp.
- Kenderes, M. (1988) "Notes on the Preparation and Updating of the ORANI Database to 1980-81", ORANI Research Memorandum No. OA-416, mimeo, 138 pp.
- Knapton, T. (1987) "Ampol Ltd, Third Time Lucky?", James Capel-Rivkin, 3rd December, mimeo, 2 pp.
- Lyon, L. (1988) "Jennings Industries Limited", Macquarie Equities Limited, July, mimeo, 8 pp.
- McCaughan Dyson Capel Cure (1988) "Coal and Allied Industries Limited", 5 March, mimeo 4 pp.
- Oil Search (1987a) 1987 Annual Report, G.P.O. Box 2442, Sydney, 2001.
- Oil Search (1987b) "Interim Report and Advice of Change of Balancing Date", G.P.O. Box 2442, Sydney, 2001.

Paterson, C. (1987) "Pioneer Concrete Services Ltd", Research Report, McCaughan Dyson & Co. Limited, November, mimeo, 7pp.

Personal Investment (1988) Should You Close Your Super Fund?, July.

Pioneer Concrete (1988) 1988 Annual Report, 11th Floor, 55 Macquarie Street, Sydney, 2000.

Stock Exchange Research (1986) Australian Investment Handbook, G. Smith (ed.), Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.

Stock Exchange Research (1987a) "A.S.E. Index Changes", mimeo, 9 pp. Available from Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.

Stock Exchange Research (1987b) "Industry Classification of all Listed Companies", mimeo, 34 pp. Issued on the 21st December 1987 by Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.

Stock Exchange Research (1988a) "Monthly Index Analysis", No.99, mimeo, 32 pp. Issued on the 31st May 1988 by Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.

Stock Exchange Research (1988b) "Complete Index Printout of All Ordinaries Index", mimeo, 25 pp. Issued on 31st May 1988 by Stock Exchange Research Pty Ltd, Exchange Centre, 20 Bond Street, Sydney, 2000.

J.B. Were & Son (1988) "Coal and Allied Industries Ltd", Statistical Research Service, March, mimeo, 2 pp.

Westpac (1987) 1987 Annual Report, 60 Martin Place, Sydney, 2000.

