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Generation of Regional Input-output Tables for the State and Regions of South Australia - GRIT II

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GENERATION OF REGIONAL INPUT-OUTPUT TABLES FOR THE STATE AND REGIONS OF SOUTH AUSTRALIA

GRIT II

Report to the Treasury Department, the Department of Urban and Regional Affairs and the Department of Trade and Industry.

by

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PREFACE

In 1976 a research group at the University of Queensland were commissioned to produce input-output tables for the state and regions of Queensland. The ensuing report, which is now known as the GRIT Report (Generation of Regional Input-Output Tables) was produced for the Queensland Co-ordinator General's Department and the Queensland Department of Commercial and Industrial Development.

GRIT is a variable-interference non-survey based system, producing "hybrid" input-output tables. It is based on a combination of non-survey and survey methods but allows interference in the mechanical application of these methods at the discretion of the analyst.

Considerable interest in the GRIT method was evidenced upon its appearance, and enthusiasm for developing GRIT type tables for other areas of Australia emerged.

During early 1979 the Governments of the Northern Territory and South Australia commissioned the authors to produce input-output tables at a regional and territory-state level. Since its emergence major modifications have been made to the original GRIT procedure and the new system has been entitled GRIT II. This Report is the South Australian section of twin reports and contains input-output tables for the regions and state of South Australia.

The GRIT II system is a further attempt to promote regional input-output analysis from the status of simply a research technique to that of an operational planning technique.

GRIT II provides a methodology for developing regional input-output tables at relatively low cost, but free of substantial error.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

In 1976, following discussions between representatives of the Queensland Co-ordinator General's Department and a research group at the University of Queensland, it was agreed that the research group would produce input-output tables and multipliers for the state and regions of Queensland. The project, funded both by that department and the Queensland Department of Commercial and Industrial Development, resulted in December 1977 in the report now known as the GRIT report.[1]

The research group faced the major problem that the methods in current use to assemble regional input-output tables were for obvious reasons, unsuitable for the project. The most widely used method, the survey method, ideally involved sample surveys of firms in each industry in each region, of consumers, governments and so on. Such a task was prohibitively expensive, not only in terms of funds, but in terms of time. Tables of this nature frequently involve several man-years; the tables are frequently outdated by the time they are published. The alternatives to the survey approach were a number of 'non-survey' approaches which attempted to produce regional tables from national tables by applying 'single-sheet' conversion techniques of various types; the non-survey tables which resulted from these procedures were of dubious repute, and generally accepted as of insufficient accuracy.

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1. Jensen, R.C., Mandeville, T.D. and Karunaratne, N.D. (1977), Generation of Regional Input-Output Tables for Queensland. Report to the Co-ordinator General's Department and the Department of Commercial and Industrial Development, Department of Economics, University of Queensland. Published (1979) as Regional Economic Planning: Generation of Regional Input-Output Analysis, Croom Helm.

It was clear that a new procedure for producing regional input-output tables was necessary. This procedure should produce tables of an acceptable degree of accuracy in a relatively short period of time and at relatively low cost. Following a period of theoretical research, a procedure termed the Generation of Regional Input-Output (GRIT) procedure was evolved. This procedure employed a number of mechanical means to produce first estimates of regional input-output tables from national input-output tables, and allowed facilities for operator interference to introduce survey-based or other superior estimates into the tables, according to the preferences of the analyst.[2]

Since the emergence of the GRIT report, these further developments associated with the GRIT procedure have occurred. One development has been the use of the procedure for developing and using GRIT input-output tables for impact studies.[3] Another has been the interest shown in evaluation and improvement of the GRIT procedure. A third development has been an active interest in the development of GRIT-type tables for other areas of Australia. It is with the last two of these that this report is concerned.

1.2 Objectives of the Study

During early 1979, discussions took place between the authors of this report and the governments of the Northern Territory and South Australia. Both of these governments commissioned the authors to produce input-output tables at a regional and territory-state level. These tables are contained in twin-reports, of which this report refers to the regions

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2. The procedure is discussed in more detail in Chapter 3.

3. Mandeville, T.D. and Jensen, R.C. (1978), The Impact of Major Development Projects on the Gladstone/Calliope, Fitzroy, Queensland, and Australian Economies: An Application of Input-Output Analysis. Report to the Department of Commercial and Industrial Development and Comalco Limited, Department of Economics, University of Queensland.

and state of South Australia. The main objective of this report is therefore the portrayal of the economy of South Australia and its regions in input-output tables which are deemed to be free of substantial error.

A second objective of this study is of some importance, and relates to the nature of the original GRIT methodology. This methodology consists of a number of procedural steps, each of which was considered to contribute to the ultimate accuracy and realism of the final input-output tables. Some of these steps have been the subject of criticism in the literature, and were deserving of closer attention in order to improve the accuracy of the calculation procedures. Perhaps more important, however were some of the conclusions reached relating to the accuracy of the GRIT tables. The GRIT report took a pragmatic approach to the question of accuracy, suggesting that a holistic concept of accuracy was appropriate and that such accuracy could be attained by concentrating more effort on the larger coefficients which exert a greater influence on the size of the multipliers, and less on the smaller coefficients which are, apparently, operationally irrelevant.[4] Thus the GRIT report implied a rough concept of accuracy optimisation. This report is much more explicit with respect to this concept, and attempts accuracy optimisation as an explicit additional part of the technique. The report provides some theoretical discussion on the aspect, and some illustrative examples. The authors feel that this major modification to the GRIT procedure, with the several minor modifications mentioned later in the text, require this version of GRIT to be distinguished from the original predecessor, and we have attached the title GRIT II to the procedure which actively incorporates the accuracy optimisation procedure.

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4. See Jensen, R.C. and West, G.R.,"The Effect of Relative Coefficient Size on Input-Output Multipliers", Environment and Planning A (forthcoming).

1.3 Outline of the Report

The prime object of this report is the preparation of input-output tables for the regions and state of South Australia - these results are reported in Chapter 6 and in the various appendices. Two other aspects of this report require, however, description at some length. One of these aspects is the revised definition of the components of input-output multipliers used in this study. This revised definition will replace the conventional definitions used in the past, in all further input-output work by this research team. It is described in some detail in Chapter 2; a copy of a paper written by G.R. West and R.C. Jensen on this topic is included in this report as Appendix IV.

The second aspect requiring description at some length is the revised GRIT system. The system, as published in the original GRIT report is described briefly in Chapter 4. Some significant changes to the original formulation are described in Chapter 5; these are sufficiently significant to warrant an identifying title to the new computational package used in this study and the term GRIT II has been applied.

A brief discussion of the selection of regional boundaries is provided in Chapter 3.

The report is designed so that readability is improved by placing the mass of technical detail in appendices.

CHAPTER 2

INPUT-OUTPUT TABLES AND MULTIPLIERS[1]

Input-output tables and analysis have been part of the literature of economic analysis for some time, and it is probably not necessary in a report of this nature to include another simple outline of the technique. A number of useful texts[2] provide introductions to the technique, and these are recommended for further insights into the power and flexibility of input-output. This chapter provides only a brief summary of input-output, by reference to a highly aggregated 3-sector table of the Queensland economy.

This summary is included primarily to demonstrate the multiplier structure and terminology used in the empirical sections of this report. The authors have been dissatisfied for some time with the conventional input-output multipliers and the inconsistencies in interpretation of these multipliers. They have developed a revised structure and terminology for input-output multipliers; this structure is considered to be simpler to interpret and to avoid inconsistencies in interpretation. An outline of these inconsistencies in conventional multipliers and of the revised multiplier format is provided in more detail in Appendix IV.

2.1 The Input-Output Transactions Table

An input-output table represents an economy in terms of aggregated industrial or commodity groups, or sectors. The table traces out the value of transactions, in dollar terms, between these sectors for a given year. Sectors sell goods and services to other sectors and to final users or final demand, and buy their inputs from other sectors and sources of primary

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1. The early pages of this chapter draw heavily from the original GRIT report.

2. See, for example (a) Miernyk, W.H. (1965), Elements of Input-Output Analysis, Random House; (b) Chenery, H.B. & Clark, P.G. (1962), Interindustry Economics, Wiley; and (c) Richardson, H.W. (1972), Input-Output and Regional Economics, Weidenfeld & Nicolson.

inputs. The transactions table summarises the intersectoral flows for a given period and is conventionally presented in matrix form. A highly-aggregated 3-sector transactions table for the Queensland economy is shown as Table 2.1. Each row indicates the sales flows from one sector to another and to final demand. From Table 2.1, Sector 1 sells $129.1m of its output (of $1819.9m) to firms in the same sector, $703.5m to firms in Sector 2, $20.6m to firms in Sector 3, $102.4m to household consumers as final users and $864.3m to other final demand sources. The columns show the purchasing patterns of the sectors. For example, Sector 2 purchases $703.5m from firms in Sector 1, $778.6m from firms in the same sector, $503.2m from firms in Sector 3, $946.9m from primary inputs in the firms of household labour (via wages, salaries etc.) and $1107.6m in the form of other primary inputs.

TABLE 2.1: HIGHLY AGGREGATED TRANSACTIONS TABLE, QUEENSLAND, 1973-4 ($m)

	Intermediate Sectors					
Intermediate Sectors	1	2	3	Household Consumption	Other Final Demand	Total Output
	(Quadrant I)			(Quadrant II)		
1	129.1	703.5	20.6	102.4	864.3	1819.9
2	242.5	778.6	359.2	762.2	1897.3	4039.8
3	224.0	503.2	536.7	1434.2	1325.5	4023.6
	(Quadrant III)			(Quadrant IV)		
Households	191.6	946.9	1660.4	-	-	2798.9
Other Primary Inputs	1032.7	1107.6	1446.7	500.1	429.2	4516.3
Total	1819.9	4039.8	4023.6	2798.9	4516.3	17198.5

It is usual to define four quadrants (Quadrants I to IV) in an input-output table. Quadrant I is termed the 'intermediate' or the 'processing' quadrant. It shows the flows of transactions between the industrial sectors defined for the study, and, as later described, provides the analytical core of the input-output technique. Quadrant II indicates sales by each sector to final demand. This quadrant in most input-output tables traditionally includes columns relating to personal consumption, capital formation, some government expenditure and exports. Quadrant III lists the primary inputs into each industry, i.e. those inputs which are not purchases from local industrial sectors. It represents mainly value-added in production. Normally included in this quadrant are rows for depreciation, indirect taxes, wages and salaries (the household row in Table 2.1), gross operating surplus, imports and other value-added items. Quadrant IV, showing primary inputs absorbed by final demand, is normally of less importance in most input-output tables and is often ignored in analytical terms. This quadrant includes however, in tables with direct allocation of imports, the basic value of imported goods consumed by householders; this is often a relatively significant entry in input-output models of small or rural economies.

The number of sectors shown in a particular table is determined mainly by the availability of data and the objectives of the study. All endogenous sectors of the economy are included within the intermediate quadrant of the table and all exogenous sectors in other quadrants. Endogenous sectors are those which are assumed to be influenced by the internal structure of the economy, while exogenous sectors are those assumed to be governed by external influences. Thus exports, capital expenditure and government spending are usually treated as exogenous since these are influenced primarily by factors external to the regional economy. Personal consumption expenditure is treated as exogenous in one type of input-output table, the standard or 'open' model, but as endogenous in the 'closed' or induced-consumption model.

The transactions table provides a concise, descriptive snapshot of a particular economy at a point in time. It is also a disaggregated and consistent accounting system for an economy. The final demand components are considered to indicate the equivalent of what GNP or

GRP (Gross Regional Product) measures on the expenditure side, and primary inputs are the same as the receipts side. However, since GNP or GRP accounting seeks to avoid the double-counting involved in all the transactions leading up to final demand, it contains only part of the information represented in an input-output table. In the regional policy and planning context, the transactions table gives both a general understanding of the economy of a particular region, and important information on particular aspects of the region's economy.

Before discussing the output, income and employment multipliers in some detail, it is necessary to distinguish between the treatment of the household sector in 'open' and 'closed' input-output models. In open input-output models, household personal consumption is located in the final demand portion of the table, and its accompanying row comprising wages, salaries and other household income is included with primary inputs. Alternatively, the input-output table may be closed with respect to households by inserting the household row and column into the endogenous matrix. The implications of these alternatives will become clear in the discussion on multipliers in Section 2.2.

2.2 The Mathematical Structure of Input-Output

Once the transaction table has been compiled, simple mathematical procedures can be applied to derive output, income and employment multipliers for each sector in the economy. These procedures are illustrated briefly with accompanying comment.

The transactions table may be represented by a series of equations thus:

$$
\begin{aligned}
X_1 &= X_{11} + X_{12} + \dots\dots + X_{1n} + Y_1 \\
X_2 &= X_{21} + X_{22} + \dots\dots + X_{2n} + Y_2 \\
&\vdots \\
X_n &= X_{n1} + X_{n2} + \dots\dots + X_{nn} + Y_n
\end{aligned}
$$

where

X_i = Total output of intermediate sector i (row totals)

X_{ij} = Output of sector i purchased by sector j (elements of processing sector)

Y_i = Total final demand for the output of sector i

It is possible, by dividing the elements of the columns of the transactions table by the respective column totals to derive coefficients which represent more clearly the purchasing pattern of each sector. These coefficients, variously termed 'direct' or 'input-output' coefficients or less appropriately 'technical coefficients', are normally notated as the a_{ij}, and represent the direct or first round requirement from the output of each sector following an increase in output of any sector.

In equation terms the model becomes:

$$
\begin{aligned}
X_1 &= a_{11}X_1 + a_{12}X_2 + \dots\dots + a_{1n}X_n + Y_1 \\
X_2 &= a_{21}X_1 + a_{22}X_2 + \dots\dots + a_{2n}X_n + Y_2 \\
&\vdots \\
X_n &= a_{n1}X_1 + a_{n2}X_2 + \dots\dots + a_{nn}X_n + Y_n
\end{aligned}
$$

where $a_{ij} = X_{ij}/X_j$, when a_{ij} is the input-output coefficient.

This may be represented in matrix terms:

$$X = AX + Y \qquad \dots\dots\dots\dots\dots\dots (1)$$

where $A = [a_{ij}]$, the matrix of input-output coefficients.

The A matrix of direct coefficients for the Queensland example is given as Table 2.2.

TABLE 2.2: DIRECT COEFFICIENTS MATRIX, QUEENSLAND, 1973-4

	1	2	3
1	.071	.174	.005
2	.133	.193	.089
3	.123	.125	.133
Total Intermediate	.327	.492	.227
Households	.105	.234	.413
Other Primary Inputs	.568	.274	.360
Total	1.000	1.000	1.000

Equation (1) can be extended to:

$X(I-A) = Y$ where I-A is termed the Leontief matrix

or $X = (I-A)^{-1}Y$ where $(I-A)^{-1}$ is termed the 'general solution' (or simply the inverse of the open model).

Let this general solution be represented by:

$$Z = (I-A)^{-1} = [z_{ij}]$$

This open inverse is given for the Queensland example by Table 2.3.

TABLE 2.3: $Z = (I-A)^{-1}$, QUEENSLAND, 1973-4

	1	2	3
1	1.116	.246	.032
2	.205	1.304	.136
3	.188	.222	1.178
Total	1.509	1.772	1.346

The input-output table can be 'closed' with respect to certain elements of the table. Closure involves the transfer of an item from the exogenous portions of the table (exclusively Quadrants II, III and IV) to inclusion in the endogenous section of the table (Quadrant I); closure implies that the analyst considers that the transferred item is related more to the level of local economic activity than to external influences. Closure of input-output tables with respect to households is common; this is illustrated for the Queensland table in Table 2.4.

TABLE 2.4: MATRIX OF DIRECT COEFFICIENTS, CLOSED WITH RESPECT TO HOUSEHOLDS, QUEENSLAND

	1	2	3	Households
1	.071	.174	.005	.036
2	.133	.193	.089	.273
3	.123	.125	.133	.512
Households	.105	.234	.413	-

We refer to the 'closed' or 'augmented' matrix as A^*; the inverse of the Leontief matrix formed from A^* is given by $Z^* = (I-A^*)^{-1}$, and is provided for this example in Table 2.5.

TABLE 2.5: $Z^* = (I-A^*)^{-1}$, QUEENSLAND, 1973-4

	1	2	3	Households
1	1.165	.332	.138	.204
2	.378	1.604	.505	.710
3	.456	.689	1.752	1.102
(Total)	(1.999)	(2.625)	(2.395)	
Households	.399	.695	.856	1.643

2.3 Input-Output Multipliers

2.3.1 The Structure of Input-Output Multipliers

This section avoids the use of the conventional terms "direct" and "indirect" because of the confusion of meaning attracted to these terms, as outlined in Appendix IV.[3]

A multiplier is essentially a measurement of response to an economic stimulus. In the case of input-output multipliers the stimulus

3. This section draws heavily from the paper reproduced in Appendix IV.

is normally assumed to be an increase of one dollar in sales to final demand by a sector, and we are interested in the major categories of response in terms of output and income increases. These major categories of effect/response are listed below. They are:

(i) The Initial Effect. This refers to the assumed dollar increase in sales; it is the stimulus. It is the unity base for the output multiplier and provides the identity matrix of the Leontief matrix. Associated directly with this dollar increase in output is an own-sector increase in household (HH) income in wages, salaries etc. used in the production of that dollar of output. This is the household coefficient h_i (\$0.105 for Sector 1). Associated also will be an own-sector increase in employment, determined by the size of the employment coefficient.

(ii) The First-Round Effect. This refers to the effect of the first-round of purchases by the sector providing the additional dollar of output. Clearly in the case of the output multiplier this is shown in the elements of the direct coefficients matrix (Table 2.2). For example, the direct effect of an increase of one dollar in the output of Sector 1 is \$0.071 on Sector 1, \$0.133 on Sector 2, and \$0.123 on Sector 3 (these are termed the disaggregated direct effects) or a total of \$0.327 on all intermediate sectors of the economy. The disaggregated effects are given by the individual a_{ij}, and the total first-round effects by the $\sum_i a_{ij}$.

First-round income effects are calculated by multiplying the first-round output effects by the appropriate HH income coefficients, as shown in Table 2.6. The total first-round income effect is given by $\sum_i a_{ij} h_i$, in this case \$0.089, and

TABLE 2.6: FIRST-ROUND INCOME EFFECTS, SECTOR 1, QUEENSLAND, 1973-4

Sector	a_{i1}	h_i	$a_{i1}h_i$
1	.071	.105	.007
2	.133	.234	.031
3	.123	.413	.051
	First-Round Income Effect	=	.089

the disaggregated income effects, or the extent to which HH income increases in each sector due to the first-round output effects, is given by the individual $a_{ij}h_i$, i.e. in this case \$0.007 in Sector 1, \$0.031 in Sector 2 and \$0.051 in Sector 3.

(iii) Industrial Support Effects. This term is applied here to "second and subsequent round" effects, as successive waves of output increases occur in the economy to provide industrial support as a response to the dollar increase in output *per se*. The term excludes any increases caused by increased household consumption. Output effects are calculated from the open Z inverse (Table 2.3), as a measure of industrial response to the first-round effects. The industrial support output requirements must be calculated as the elements of the columns of the Z inverse, less the initial dollar stimulus and the first-round effects, as shown in Table 2.7. This table shows that the industrial support effects of an increase of one dollar in the

TABLE 2.7: CALCULATION OF INDUSTRIAL SUPPORT OUTPUT AND INCOME EFFECTS, SECTOR 1, QUEENSLAND, 1973-4

Sector	Z column	Initial Stimulus	First-Round Effect	HH coefficient	Industrial Support Effects	
					Output[a]	Income[b]
	(1)	(2)	(3)	(4)	(5)	(6)
1	1.116	1.000	.071	.005	.045	.105
2	.205	-	.133	.017	.072	.234
3	.188	-	.123	.027	.065	.413
	1.509	1.000	.327	.049	.182	

(a) Column (3) less columns (1) & (2)
(b) Column (5) by column (4)

sales of Sector 1 to final demand are \$0.045 on Sector 1, \$0.072 on Sector 2, \$0.065 on Sector 3, or a total of $\sum_i z_{ij} - 1 - \sum a_{ij}$ over all sectors of \$0.182. The industrial support income effects for each sector will be defined consistently with the output effects as column (5) of Table 2.7 multiplied by the HH income coefficients i.e. individually in disaggregated income effects as $z_{ij}h_i - h_i - a_{ij}h_i$, or as total industrial support income effects as $\sum_i z_{ij}h_i - h_i - a_{ij}h_i$.

The first-round and industrial support effects are together termed the production-induced effect.

(iv) Consumption-induced Effects. The consumption-induced effect is defined in a manner similar to that used in conventional input-output multipliers, namely as that induced by increased HH income associated with the original dollar stimulus in output. The consumption-induced output effects are calculated in disaggregated form as the difference between the corresponding elements of the open and closed inverse i.e. $z^*_{ij} - z_{ij}$, and in total as $\sum_i (z^*_{ij} - z_{ij})$. The consumption-induced income effects are simply these output effects multiplied by the household coefficients, i.e. $z^*_{ij}h_i - z_{ij}h_i$ for each disaggregated effect and $\sum_i (z^*_{ij}h_i - z_{ij}h_i)$ for the total consumption-induced income effect.

The four effects are summarised in Table 2.8. It should be noted that employment multipliers are calculated by substituting the employment coefficient e_i for the household coefficient h_i in Table 2.8.

TABLE 2.8: OUTPUT AND INCOME EFFECTS OF AN INCREASE IN SALES TO FINAL DEMAND

	Output Multipliers		Income Multipliers	
	General Case	Example	General Case	Example
(i) Initial Effect	1	1	h_i	.105
(ii) First Round Effect	$\sum_i a_{ij}$	.327	$\sum_i a_{ij} h_i$	.089
(iii) Industrial Support Effect	$\sum_i b_{ij} - 1 - \sum_i a_{ij}$	.182	$\sum_i b_{ij} h_i - h_i - a_{ij} h_i$	.049
(iv) Induced Effect	$\sum_i b^*_{ij} - \sum_i b_{ij}$	.490	$\sum_i b^*_{ij} h_i - \sum b_{ij} h_i$	.155
Total	$\sum_i b^*_{ij}$	1.999	$\sum_i b^*_{ij} h_i$	.398

Output multipliers for the Queensland example are shown in Tables 2.9 and 2.10, and revised income multipliers of consistent definition in Tables 2.11 and 2.12. These multipliers indicate for example that a dollar increase in sales of sector 1 to final demand results in:

(i) an initial income increase to the workers/staff/owners in Sector 1 of $0.105.

(ii) a first-round output effect on all sectors of $0.327 ($0.071 in Sector 1, $0.133 in Sector 2, and $0.123 in Sector 3), accompanied by a first-round income increase of $0.089, being $0.007, $0.031, and $0.051 in each sector.

(iii) industrial support output effects of $0.182 (being $0.045, $0.072 and $0.065 in the three sectors), which in turn are accompanied by income increases of $0.049, being $0.005, $0.017 and $0.027 respectively.

(iv) consumption-induced output effects of $0.490 ($0.049, $0.173 and $0.268 respectively in the sectors) and accompanying consumption-induced income increases of $0.156, being in each sector $0.005, $0.040, and $0.110 respectively.

TABLE 2.9: SECTOR OUTPUT MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, QUEENSLAND, 1973-4

Sector	Initial	First Round[a]	Industrial[b] Support	Induced	Total
1	1.000	.327	.182	.490	1.999
2	1.000	.492	.280	.853	2.625
3	1.000	.227	.119	1.049	2.395

(a) from Table 2.
(b) from Table 2 & 3, using formula (iii) of Table 12.
(c) from Table 6.

TABLE 2.10: DISAGGREGATED OUTPUT MULTIPLIERS, BY FOUR CATEGORIES OF EFFECT, SECTOR 1, QUEENSLAND, 1973-4

Sector	Initial	First Round[a]	Industrial Support	Induced	Total
1	1.000	.071	.045	.049	1.165
2	-	.133	.072	.173	.378
3	-	.123	.065	.268	.456
	1.000	.327	.182	.490	1.999

(a) from Table 2.

TABLE 2.11: SECTOR INCOME MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, QUEENSLAND, 1973-4

Sector	Initial	First Round	Industrial Support	Induced	Total
1	.105	.089	.049	.156	.398
2	.234	.115	.074	.272	.695
3	.413	.077	.032	.335	.857

TABLE 2.12: DISAGGREGATED INCOME MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, SECTOR 1. QUEENSLAND, 1973-4

Sector	Initial	First Round	Industrial Support	Induced	Total
1	.105	.007	.005	.005	.122
2	-	.031	.017	.040	.088
3	-	.051	.027	.110	.188
	.105	.089	.049	.155	.398

Type I and Type II Multipliers

The output multipliers are calculated on a 'per unit of initial effect' basis - i.e. output responses to a dollar change in output. Income multipliers as described above refer to changes in income per dollar initial change in output. Income multipliers are conventionally converted to a 'per unit' measurement by the calculation of Type I and II multipliers as:

$$\text{Type IA Income Multiplier} = \frac{\text{Initial} + \text{First Round effects (IF)}}{\text{Initial effects (I)}}$$

$$\text{Type IB Income Multiplier} = \frac{\text{Initial} + \text{Production-induced effects (IP)}}{\text{Initial effects (I)}}$$

$$\text{Type II Income Multiplier} = \frac{\text{Initial} + \text{Production-induced} + \text{Consumption-induced effects (IPC)}}{\text{Initial effects (I)}}$$

The Type I and II income multipliers for the Queensland example are given in Table 2.13. The Type IA multiplier illustrates, for example that for each dollar of initial income effect (as a result of increased output) in sector 1, associated first-round effects will be $0.85; when industrial support effects are included (Type IB), associated income effects will be $1.31, and when consumption-induced effects are included (Type II), associated income will be $2.80.

TABLE 2.13: TYPE I AND II INCOME MULTIPLIERS, QUEENSLAND, 1973-4

Type IA	$= \frac{IF}{I}$	Sector 1	1.85
		2	1.49
		3	1.19
Type IB	$= \frac{IP}{I}$	Sector 1	2.31
		2	1.81
		3	1.26
Type II	$= \frac{IPC}{I}$	Sector 1	3.80
		2	2.97
		3	2.07

CHAPTER 3

THE STATE AND REGIONS OF SOUTH AUSTRALIA

3.1 Considerations in the Definition of Region

Consideration of what constitutes a region and of how the nation/state may be subdivided into a system of regions is a prerequisite for any economic analysis at the regional level. The choice and definition of a region is constrained by the number of regions to be considered, and this number depends on the form and nature of the analysis. The approximate number of regions to be considered has to be predetermined before regional delimitation can be attempted.

One approach to the definition of a region is based on the notion that separate spatial units which exhibit particular common characteristics may be linked together to form an homogeneous region. Such characteristics might include similar production structures or consumption patterns, the prevalence of a dominant natural resource or even non-economic variables such as similar typography or climate. However, some areas which can be linked on the basis of some particular characteristics will at the same time exhibit other characteristics which enable them to be linked to a different (or neighbouring) region. This makes the task of deciding appropriate boundaries more difficult.

Differences in economic phenomena will generally be evident in any one region. For example, most regions will contain both urban and rural areas. Moreover, large areas are likely to exhibit an uneven distribution of population with greater numbers clustered in urban centres and fewer people scattered over rural parts. The economic significance of such features is that it becomes difficult to consider such regions as uniformly homogeneous since "large urban centres always introduce heterogeneity".[1]

1. E. Ullman p. 16 quoted in Gajda, R.T. (1964) "Methods of Economic Rationalization", Geographica Polonica 4 (185), reproduced in Richardson, H.W., Regional Economics (1972), Weidenfeld and Nicolson.

There is a functional interdependence between the internal components of a region, and also between the region itself and its neighbouring regions. Internally, functional linkages, may be derived from service connections within the region, while externally, transportation networks, trade links, production links, communication networks, migration flows, and flows of raw materials and manufactured etc. link a particular region with a wider spatial framework. Thus, emphasis on one type of region rather than another may depend on the structure of the regional system considered as a whole.

If there are a number of areas with clearly defined economic structures, then the division of the national/state economy into a number of regions is made easier. However, where clearly marked geographic areas of economic specialization are not evident the choice of regional boundaries becomes more difficult and arbitrary. Therefore the choice of an ideal region is constrained by the purpose for which delimitation of a set of regions is required and by the overall structure and degree of integration of the system as a whole.

3.2 The Regional Boundaries

Since many input-output studies are commissioned by regional or national government agencies, existing administrative units often form the basis of regional boundaries. However, ideally the "regions" of an input-output analysis should exhibit reasonably stable interregional trade coefficients and a conform to a production or supply area which preserves intact local economic structures.

South Australia contains a wide range of regions in terms of economic complexity. The more isolated regions to the north of the state exhibit a simple economic structure with one or two primary industries providing the export base, very restricted local manufacturing (e.g. bakeries, light engineering), and the importation of most consumer goods. However, the Adelaide Region with almost a million people exhibit all the complexities of a modern city region. Between these two extremes a wide range of regions of varying economic complexity can be identified.

In order to encompass the different levels of economic complexity of the individual regions the study team together with representatives of the various government departments decided to divide the regions into three types of regions - Metropolitan, Provincial and Rural. The administrative unit which formed the basis for delimitation of the regional boundaries were Statistical Divisions.[1] This facilitated the collection of required data since government authorities collect information on such divisions for their own purposes.

The Metropolitan Region (Adelaide Region) represented the only Metropolitan Region in the State and was considered to exhibit a sufficiently diverse economy to warrant attention in its own right. The administrative unit which formed the Adelaide Region was Adelaide Statistical Division.[2]

A number of regions were defined under the general heading of Provincial Regions. These generally contained a significant urban area with a considerable range of manufacturing activity, and where the primary activities were relatively diverse.

These provincial regions included the following.[3]

(i) Central Region

(ii) Eastern Region

(iii) South Eastern Region

The Central Region comprises the Statistical Divisions of York and Lower North. The Eastern Region comprises the Statistical Divisions of Outer Adelaide and Murray Lands. The South Eastern Region comprises the Statistical Division of South East.

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1. Statistical Divisions as defined by the Australian Bureau of Statistics.
2. See Map 1.
3. See Map 1.

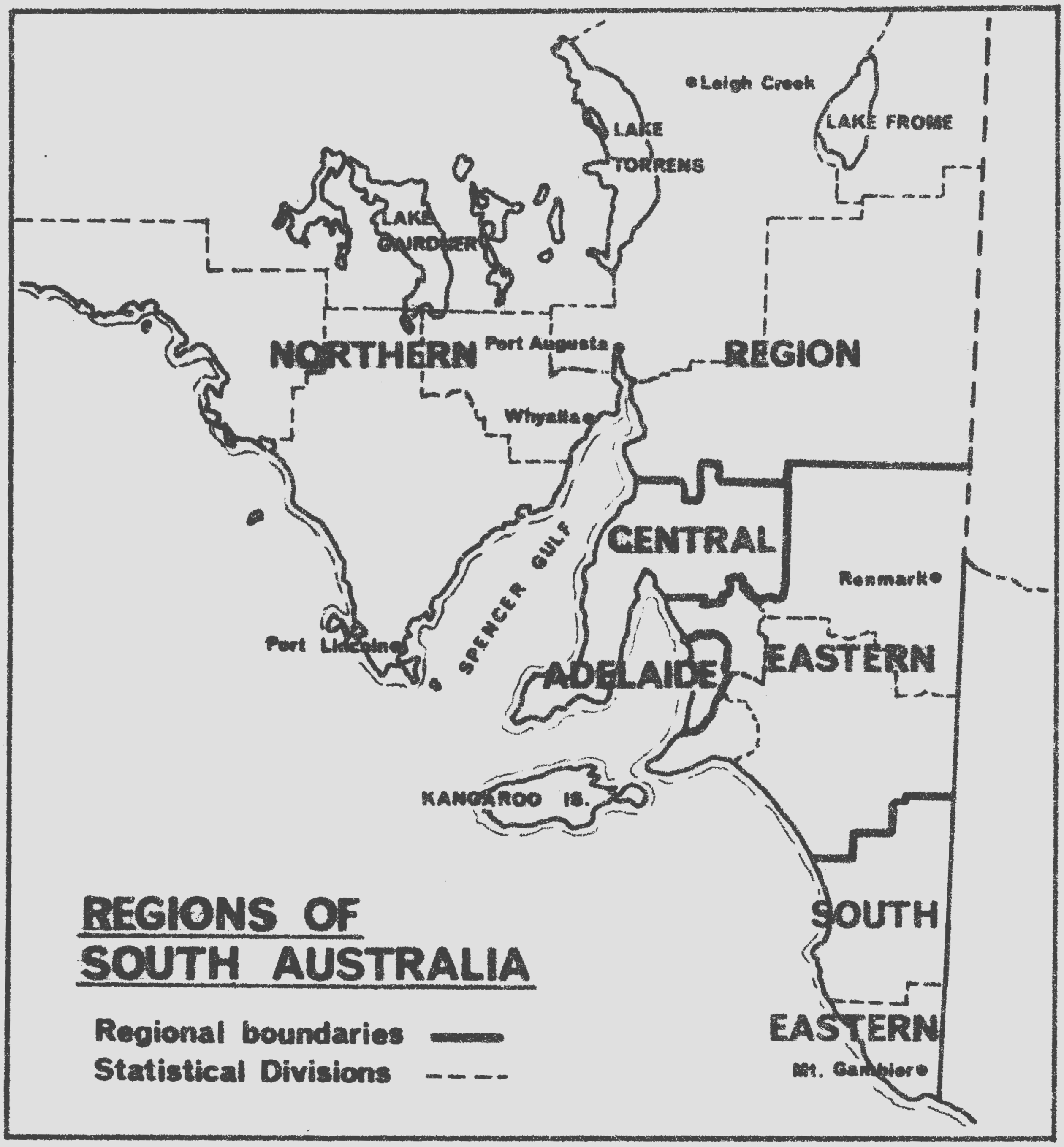
The Rural Region considered was the Northern Region. This comprised the Statistical Divisions of Eyre and Northern. Rural regions represent regional economies which exhibit a simpler structure. For example, those which contain one or a few primary industries and whose manufacturing sector consists of a small number of basic industries.

Finally, a region encompassing the State as a whole facilitated the preservation of statistical consistency as well as allowing interstate comparisons to be made.

Summarizing the above, the Regional Boundaries for the State of South Australia are shown below.

SOUTH AUSTRALIA STATE

- Metropolitan Regions
  - Adelaide Region (comprising Adelaide Statistical Division)
- Provincial Regions
  - (i) Central Region (York and Lower North Statistical Divisions)
  - (ii) Eastern Region (Outer Adelaide and Murray Lands Statistical Divisions)
  - (iii) South Eastern Region (South East Statistical Division)
- Rural Regions
  - Northern Region (Northern Statistical Division)


Leigh Creek
LAKE FROME
LAKE TORRENS
LAKE GAIRDNER
NORTHERN
Port Augusta
REGION
Whyalla
CENTRAL
SPENCER GULF
Renmark
Port Lincoln
ADELAIDE
EASTERN
KANGAROO IS.
REGIONS OF SOUTH AUSTRALIA
Regional boundaries
Statistical Divisions
SOUTH
EASTERN
Mt. Gambier

MAP 1

CHAPTER 4

THE GRIT SYSTEM

4.1 Introduction

This chapter provides a summary of the original GRIT procedure (Jensen, Mandeville and Karunaratne (1979)). The objective of this study was the development of techniques to provide an empirical base for regional economic planning, and to apply these techniques to the state of Queensland. It was intended to devise a system which facilitated the examination both of the economic structure of individual regions in reasonable detail, and of the regional structure of the state economy. It was considered that such a requirement could be met only by the development of a series of input-output tables relating to the state and its constituent regions. It was further recognised that the development of such a system of input-output tables would be feasible only if suitable techniques could be developed, or existing techniques modified, to derive the series of regional tables largely from national input-output tables.

Input-output analysis is potentially an excellent descriptive device and a powerful analytical technique. In practice, the time and expense required to complete survey-based tables has restricted the application of the technique to 'research' rather than operational applications. Certainly input-output techniques appear to have played no significant part in most regional planning decisions made by governments, due at least partly to the inability of analysts to produce input-output tables by conventional means within the time span in which most decisions must be made.

Recent input-output literature describes attempts to produce input-output tables by non-survey, or largely mechanical means. These methods have the advantage of relative speed and low cost, but have attracted criticism for an apparently lower degree of reliability. The current 'state-of-the-art' appeared to offer a choice between the more expensive and professionally-respected survey-based tables and the cheaper less-respected non-survey tables. The only further alternative was the so-called 'hybrid' table, which supplements mechanically produced elements of the table with insertions of survey-based data to improve the acceptability of the resulting table.

This study was the result of efforts by the authors to move input-output analysis from the category of a 'research' technique to one of operational application for regional planning and analysis. A system was developed, termed the Generation of Regional Input-Output Tables (or GRIT) system which produced variable-interference non-survey based tables, essentially hybrid in nature. GRIT relied on a series of mechanical steps to produce regional coefficients, but provided the opportunity at three stages for the insertion of 'superior data'.[1]

The system is 'variable-interference' to the extent that the analyst is able to determine the extent to which he interferes with the mechanically-produced tables by insertion of this superior data at various stages in the development of the tables. In this way, the judgement of the analyst is incorporated into the tables. It is argued that such a system incorporates the advantages of both survey-based and non-survey tables, and avoids the cost extravagances of the former. The GRIT system allows the calculation of tables to the degree of accuracy which we would simply claim as 'free from significant error', rather than accuracy in detail. The implication here is one of a concept of holistic accuracy, that the table as a whole is substantially representative of the regional economy in question. It is argued also that since the smaller coefficients in an input-output table have an insignificant effect

1. The term 'superior data' refers specifically to data considered by the analyst to be 'more reliable' than that produced by the mechanical process. Such data could originate from surveys, primary or secondary data sources, or simply from "well-informed sources".

on the analytical uses of the tables, the method of calculation of these coefficients is operationally irrelevant. The more significant coefficients in the tables warrant more attention, and may be corrected by the insertion of superior data. It is, therefore, probable that the analytical reliability of GRIT tables would be similar to that of survey-based tables.

The crucial question becomes then the extent of interference in the mechanical process or the extent to which superior data is sought for insertion into the mechanically-produced table. It is tempting to conclude that this interference should be maximised subject to the resources available for the study and this would be an appropriate conclusion. An alternative approach, and one adopted in this study was to ensure that the characteristics of major or dominant industries were faithfully represented, and to search the prototype tables for any anomalies apparent to those familiar with the economic structure of the individual regions.

The GRIT system was designed to incorporate the following features:

(a) that input-output tables and their attendant multipliers could be calculated for any region for which certain minimum levels of data are available, from local government areas, to 'planning' regions, to any ad hoc region devised for a specific purpose.

(b) that the regional tables be consistent with the table developed for the economy as a whole.

(c) that, although the basic GRIT methodology for producing both state and regional tables is a combination of procedures for converting national tables to regional tables, sufficient flexibility exists to allow the insertion of other data at the discretion of the analyst.

(d) that the system be capable of updating with minimum effort, as new data sources become available.

(e) that the input-output tables and multipliers derived for the state and for each region be directly comparable, both conceptually and by sector definition, and internally consistent within the system.

(f) that the application of the system in an empirical context involve a minimum of expense and time, consistent with a reasonable degree of accuracy.

(g) that the application of the system be sufficiently uncomplicated to encourage adoption by analysts without a high level of expertise in 'conventional' approaches in the preparation of input-output tables.

(h) that the system be designed as a series of modular components, each of which might be modified by the analyst.

4.2 The GRIT Methodological Sequence

The GRIT methodological system is basically a combination and adaptation of non-survey methods in the literature, reinforced by new approaches formulated by the authors into an overall framework for application to individual regions. For each sector in the tables the objective was to convert the national input structure (cost coefficients) into the regional input structure. The national sector will differ from the regional one by three main factors: (a) imports (the main difference arising from the greater "openness" of regional economies); (b) industrial mix, and (c) production functions. The GRIT methodology accounts for these differences and has been expressed in a sequence of fifteen steps which are arranged in five phases; a brief description of the sequence follows.

4.2.1 Phase I Adjustments to the National Table

Phase I provided for selection of an appropriate version of the national table which provided the basic input into GRIT, and for necessary adjustments to this table to develop the most appropriate form for the subsequent calculation of regional tables. Step 1 identified the chosen version of the national tables; this was the 1968-69 109-sector table in basic values with direct allocation of all imports. Step 2, provided for adjustment for price levels and updating, was inserted as an optional step. Procedures for these adjustments are available, and could be incorporated at the discretion of the analyst; in this application to develop regional tables for the state of Queensland, Step 2 was omitted. This decision was taken in the knowledge that updated tables could be substituted for the 1968-69 tables if they became available. The implementation of updating and price adjustment procedures at the 109-sector level were, in any case, beyond the resources available for the study.

The extent to which a nation and any of its constituent regions trade with the 'rest of the world' differs significantly, both in terms of the relative importance of trade, and the trading pattern of the various sectors. Thus Step 3 provided for adjustments to the national table for international trade, to produce a table representing a national closed economy, i.e. that the imports originally shown in the national tables were assumed to be domestically produced. This was achieved by allocating imports over the intermediate entries in the columns of the national table.

Examination of the national tables indicated that the bulk of imports were of inputs to, or of finished products of, secondary industries. This invited the suggestion that accuracy would be served more by restricting the reallocation of the import coefficient in each column to those coefficients representing purchases from secondary industries within that column. This was adopted as a standard reallocation procedure. However, it was recognised that this procedure could produce serious distortions in some sectors where it was known that national imports to the sector were not primarily of secondary commodities. A procedure was therefore implemented to allow interference in the general reallocation procedure to allow the operator to reallocate imports over any combination of the three groups i.e. primary, secondary and tertiary sectors.

4.2.2 Phase II Adjustment for Regional Imports

Phase I provided the reference base for that part of the GRIT system which is mechanical in nature, and from which the calculation of any number of tables referring to regions within the nation could be initiated. Phase II and subsequent phases were required with respect to each regional table. Phase II attempted the conversion of national trade coefficients to the first approximations of regional trade coefficients. We begin with the 109-sector matrix of national coefficients adjusted for international trade, and seek to produce a matrix of regional coefficients, by applying two adjustment procedures.

The conversion of national coefficients to regional coefficients is usually stated simply in terms of decomposing the national technical coefficient a_{ij} (from the national coefficient A matrix) into a regional input coefficient r_{ij} and a regional import coefficient m_{ij}. The process of decomposition is usually based on the assumption that national and regional technical coefficients are identical, and that the decomposition will provide estimates of regional input-output coefficients r_{ij} and imports m_{ij} which are closer to survey-based coefficients than to national coefficients. We argued that since national tables are derived, in Australia at least, from transactions or flows rather than physical quantities, it is inappropriate to suggest that these national coefficients are technical coefficients in any real sense. The process of regionalisation of national coefficients should then be seen as adjusting national flow or trade coefficients to coefficients which represent regional flows.

Step 4 involved the application of a procedure similar to that proposed by Smith and Morrison (1974)[2]. Where data from the Australian Bureau of Statistics indicated the absence in the region of either firms or employment in any nationally defined sector, the a_{ij} associated with that classification from the 'regional' A matrix was entered as a regional import. Following this, Step 5 provides for downward adjustment of some of the remaining coefficients in the national A matrix, to remove to the imports row that portion of purchases ascribed to these sectors in the national table, but which become imports at the regional level.

The various methods which have been adopted for this conversion in Step 5 have been discussed at length in the literature. The selection of a technique for decomposing the national coefficient has received more attention in the literature than other aspects of developing regional non-survey tables; in fact, apart from the work of Smith and Morrison (1974)[2] and Schaffer (1976)[3] it has been regarded by most previous analysts as the sole method of developing non-survey tables. Certainly the selection of a procedure is important to the ultimate accuracy of the regional tables. It has been suggested by Smith and Morrison (1974) and Czamanski and Malizia (1969)[4] that the simple location quotient (LQ) would produce regional tables closer to survey-based tables than the alternative location quotient and commodity balance procedures. These analysts

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2. Smith, P.S. and Morrison, W.I. (1974), Simulating the Urban Economy, Pion, London.

3. Schaffer, W.A. (1976), On the Use of Input-Output Models for Regional Planning, Studies in Applied Regional Science, Martinus Nijhoff, Leiden.

4. Czamanski, S. and Malizia, E. (1969), "Applicability and Limitations in the Use of National Input-Output Tables for Regional Studies", Papers and Proceedings of the Regional Science Association, 23 : 65-77.

measured the 'closeness' of the survey-based and derived non-survey tables, in terms of the distance between coefficients of the two tables. The location quotient was thus chosen as the appropriate procedure for the GRIT system. An important criticism of the location quotient rests on the implicit assumption of uniformity in demand and consumption patterns throughout the state. This assumption was inevitable in the absence of studies of consumption on a spatial basis. This problem was overcome to some extent by allowing the analyst the freedom to insert more appropriate consumption data for any region, should this be available.

The location quotient in the GRIT sequence was applied as follows:

(i) Calculation of location quotients on employment data for the 109 sectors of the national tables.

(ii) Isolation of those sectors where $LQ_i < 1$, and the application of the location quotient across the rows of the appropriate sectors to decompose the national trade coefficient into the regional trade coefficient and the regional import coefficients, the latter to be collected in the import row for each column.

4.2.3 Phase III Definition of Regional Sectors

Step 6 provided for the insertion of "disaggregated superior data", i.e. estimates which the analyst considers superior to those produced by the mechanical operations of Phases I and II, and which were available at the disaggregated level. In Step 7, sectors were aggregated to form smaller tables which were more commensurate with the simpler economic structure of the regions. Two sets of regional tables were produced, one set at different levels of aggregation to accommodate the variety in regional economic complexity, and one set at a uniform level of aggregation to allow direct comparisons between regions, and between regions and the state, for all sectors.

The mechanics of sector aggregation in Step 7 proceed by aggregation of coefficients weighted by employment data. Shen (1960)[5] produced evidence that some form of weighting of national coefficients by regional data, would be more likely to produce coefficients closer to 'true' regional coefficients by accounting for region-unique industrial mix and production functions. While Shen used the weighting technique as a 'one-shot' method to produce regional from national tables, GRIT uses the weighting technique as a marginal improvement to already estimated 'regional' coefficients. It was recognized that other weights, in particular value-added or output, would be more acceptable weights to incorporate in the aggregation process. Neither value-added nor output data were available at the 109-sector level for any regions and this fact precluded the use of these as weights.

Step 8 provided an opportunity for the insertion into coefficient matrices of superior data which is available only in a more aggregated form consistent with the sector definitions adopted. Together with Step 6, this facility maximised the potential use of the various forms of superior data, some of which were available on a detailed 109-sector basis, and some of which were available at a regional level only with respect to combinations of industries.

4.2.4 Phase IV Derivation of Prototype Transactions Tables

The aim of Phase IV was the conversion of regional coefficient tables into prototype transactions tables for each region. These prototype tables were 'next-to-final' regional transactions tables, to be subjected to the detailed scrutiny of the analyst in Phase V of

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5. Shen, T.Y. (1960), "An Input-Output Table with Regional Weights", Papers and Proceedings of the Regional Science Association, 6 : 113-119.

the GRIT sequence. The development of the prototype tables and their multipliers was essentially the production of the 'interim results' of the GRIT system. Two steps were required for expansion of these matrices into conventional transactions tables, namely the conversion of the coefficients to transactions and the completion of the final demand quadrants. Step 9 provide for the former, and Step 10 for the latter.

Step 9 simply involved multiplying the elements of each column by estimates of output for each sector to convert the coefficients to first estimates of transactions. The tables produced were termed initial transactions tables, and as suggested above, referred to intermediate and primary inputs quadrants only. The derivation of output levels for the implementation of Step 9 presented some problems. Official statistics of output were available for several sectors at the regional level. For those sectors for which these output statistics were not available, estimates were derived from other input-output studies or by the use of indirect methods of calculation.

Step 10 produced, from the initial transactions tables (detailing the intermediate and primary inputs quadrants only), the prototype transactions table, detailing the four quadrants of each table, by calculation of estimates for the elements of final demand quadrants for all regional tables. Conventionally the components of final demand in a regional input-output table include household consumption, exports, public authority net current expenditure, inventory accumulation and capital formation. The derivation of estimates, by region of these components, was in effect, the estimation of their spatial distribution within the state - these are aspects of economic activity in which there is almost a complete lack of useful data in Australia.

Two questions were considered at this stage: (i) the choice of a level of aggregation in final demand sectors which will be consistent with the probable ultimate uses of the regional tables, and (ii) the choice of technique for the estimation of the final demand sectors chosen in (i).

It is necessary for the ultimate production of multipliers, for the regional tables to contain estimates of household consumption. It was considered a necessary and achievable object of the study for regional exports to be included in the tables. Beyond these two components, no further components of final demand were considered individually measurable for individual regions, and these were therefore aggregated under the heading 'Other Final Demand'.

Two approaches to the estimation of final demand in the regional tables were considered. First, it was possible to use aggregate final demand as a residual item to achieve the necessary row and column consistency within each table. Secondly, it was possible to incorporate independent estimates of final demand. Such a procedure would almost certainly produce inconsistent tables, i.e. column and row totals of intermediate sectors which were not equal, and it would be necessary to enforce consistency using an appropriate mathematical technique.

The decision between these two alternatives must depend on the availability and reliability of data relating to regional final demand. If reliable data relating to final demand was not available for each region, as was the case in the GRIT application to the regions of Queensland, the use of aggregate final demand as a residual item seems the obvious solution; the GRIT tables were derived on this basis.

However, circumstances might exist where analysts are able to develop estimates of final demand for regions, and have an equal or higher degree of confidence in these estimates, compared to those produced by earlier phases in the GRIT sequence. In this case it would be important for these estimates to be entered in the regional transactions tables and some operations undertaken to ensure consistency within these tables. These operations might be carried out manually, or by the use of some iterative constrained-matrix technique (such as the RAS).

Step 11 provided for further aggregation if uniform tables were required. In this application, the 36-sector prototype tables of the state and the metropolitan region, and the 19-sector provincial tables were further aggregated to 11-sector tables. Step 12 simply derived inverses and multipliers for the prototype tables using conventional techniques for multiplier calculation.

4.2.5 Phase V Derivation of Final Transactions Tables

It is useful to summarise briefly the total effect of Steps 1-12 in producing regional input-output tables. The basic component of GRIT is a multi-stage mechanical sequence for adjusting the national table, calculation of regional imports and weighted aggregation of sectors. Important modifications to this mechanical procedure ensured that where any data, other than that generated by the mechanical processes, was available, this could be incorporated to improve the general level of accuracy. The prototype tables represented therefore the 'best' tables which could be produced by the variable-interference mechanical processes. Phase V, the final stage in the GRIT sequence shifted the responsibility for adjustment from modified mechanical procedures to the analyst. At this stage, the analysts were faced with a series of non-uniform tables (and probably a uniform series) which must be examined in detail, with a view to implementing Step 13, the final superior data insertions and other adjustments.

In most sectors, there could be a reasonable expectation that the estimates generated in Phases I-IV were free of substantial error. These cases would include sectors which did not differ substantially in structure between regions, for example certain categories of manufacturing, service industries and the like. The identification of such sectors by the analyst should be possible as an exercise of his professional judgement. However, the analyst cannot be absolved of the responsibility, either in the use of the GRIT system or in the development of any input-output table, to exercise his professional judgement in the detection of inappropriate entries in the table. Whichever method of table construction is employed, the ultimate responsibility for assessment and final adjustment must be accepted by the analyst, and there should be no refuge in mechanically produced figures. To take such refuge is to abdicate from professional responsibility.

The experience of the GRIT team was that inspection of the final tables showed that few adjustments were required. However, some of these adjustments were significant, and the tables would have been inadequate representations of these economies if this examination had been avoided. The GRIT team drew on the extensive knowledge of other input-output workers, government officers skilled in economic interpretation of the various facets of the regional and state economies, and other useful sources of opinion. From this consultation emerged a series of tables which were accepted as conforming with the original main criterion of GRIT, namely as 'free of significant error'.

The number of 'major' adjustments to the prototype tables was restricted to sectors which showed either unique regional characteristics, or which had been 'submerged' by dominant national industries outside the region through their effect on the national coefficients. Most entries in the prototype tables were acceptable and conformed to expected magnitudes. Examination of the multipliers of the prototype tables, and comparison of these multipliers with those from other studies assisted in highlighting potential 'problem areas'.

Step 14 provided for the derivation of the final transactions table, and Step 15 for the calculation of inverses and multipliers for each of the regional tables and for the state table.

CHAPTER 5

GRIT II

This chapter sets out the major differences between the original GRIT system and the GRIT II system used in this study. Three major modifications were introduced: (i) the location quotient technique used to obtain the basic regional table was modified; (ii) a technique to isolate the critical cells of the prototype table to allow a more cost-effective approach to table accuracy was incorporated; and (iii) changes in the aggregation system were introduced to allow better compatability between tables. There were, of course, numerous other minor modifications of an operational nature incorporated to make the procedure more efficient. For example, the GRIT computer program has been largely modified and is now split into two parts. Part A derives the initial transactions tables, and Part B is a standalone package which allows the operator to update, impact, aggregate, RAS, etc. the derived tables. The resultant package allows the operator extreme flexibility in the manipulation and use of the tables.

5.1 Modifications to the Simple Location Quotient

The location quotient (LQ) is a measure which compares the relative importance of an industry in a region to its relative importance in the nation.

$$\text{i.e.} \quad LQ_i = (X_i^r/X^r)/(X_i^n/X^n)$$

where X represents output or employment and the superscripts r and n denote region and nation respectively. The LQ is used to estimate regional imports, on the assumption that the regional trade coefficients differ from the national technical coefficients only by the magnitude of the regional import coefficient. Thus

$$a_{ij} = r_{ij} + m_{ij}$$

where a_{ij} is the national technical coefficient, r_{ij} is the regional trade coefficient, and m_{ij} $(0 \leq m_{ij} \leq a_{ij})$ is a regional import coefficient. Operationally, the regional coefficients for row i are estimated by multiplying the national coefficient by LQ_i and approportioning the difference to imports.

$$\text{i.e.} \quad r_{ij} = a_{ij} \, LQ_i \qquad \text{where} \quad LQ_i \leq 1$$

This means that the region produces less than its share of national output in industry i, and imports are therefore required. Alternatively, if $LQ_i > 1$, the region is deemed to produce more than its fair share of output of industry i, and the balance is exported.

There are a number of deficiencies in the simple LQ, however. They tend to overestimate intraregional interdependence and ignore cross-hauling. Also they assume uniformity in production and demand/consumption patterns throughout the nation. Thus large regional industries that conform to the national 'average' would be fairly well represented, but the more unique a regional industry is in terms of different production function and demand/supply characteristics, the less appropriate is the simple LQ. Identification of these industries and the addition of superior transactions data into the table is a characteristic of the GRIT methodology. The system is enhanced, however, if some of these abnormalities can be taken account of at the LQ stage of the procedure.

The simple LQ used in GRIT uses employment data, as this is the only reliable data available at the 109 national sector level. Thus

$$LQ_i^E = \frac{E_i^r / E^r}{E_i^n / E^n}$$

The first modification introduced was to adjust the national employment figures. If national production levels of industry i include a significant export component, then E_i^n is an inappropriate base for estimation of the LQ for industry i in a region, since E_i^n implicitly represents national employment in industry i for domestic consumption. Therefore the E_i^n's were adjusted to represent national employment in the production of industry i for domestic use. Similar adjustments were carried out for industries which comprised substantial import components.

The second modification attempts to take account of labour productivity differences between corresponding regional and national industries and between the region and the nation, where data were available. The only measure of productivity which we could hope to obtain fairly comprehensive data on was labour output ratios. The productivity ratio of the region relative to the nation is thus

$$\theta = (E^r/X^r)/(E^n/X^n)$$

where X refers to output, and the productivity ratio for the corresponding industries is

$$\theta_i = (E_i^r/X_i^r)/(E_i^n/X_i^n)$$

The simple employment LQ was thus modified to become

$$LQ_i^X = LQ_i^E \cdot \frac{\theta}{\theta_i}$$

If labour output ratios were not available for some industries, the LQ automatically reverted back to the simple employment LQ.

Thirdly, in an attempt to take account of demand and consumption pattern differences throughout the nation, estimates of personal consumption were derived where possible and consumption ratios were obtained for the region relative to the nation and also between corresponding regional and national sectors. Thus

$$C = C^r/C^n$$

and

$$C_i = C_i^r/C_i^n$$

where C_i refers to the per capita consumption levels of significant commodities or groups of commodities. Where possible, price differentials were taken into account in deriving C_i. The modified LQ thus becomes

$$LQ_i^{CX} = LQ_i^{X} . \frac{C}{C_i}$$

$$= LQ_i^{E} . \frac{\theta}{\theta_i} . \frac{C}{C_i}$$

Therefore if the local per capita consumption for commodity i is higher than the corresponding national per capita consumption, the LQ_i will be lower resulting in relatively higher imports and/or lower exports of commodity i. Again, if the relevant data were not available, LQ^{CX} automatically reverted back to LQ^{X} or LQ^{E}.

It appears that the above modified LQ gives a more accurate measure of regional trade coefficients in regions which are relatively more distant from the national 'average'. The greater the difference between the region and the nation, the less satisfactory is the simple LQ. Empirical testing of the various LQ's to the Northern Territory regional economies showed that the modified LQ above produced more realistic coefficients than the other less modified LQ's.

5.2 Accuracy Optimization[1]

The completion of regional input-output tables within any reasonable budget/time constraint makes it virtually impossible for close scrutiny to be given, and superior data obtained for all the coefficients in the prototype table. In addition it would be very difficult to justify such a procedure in terms of cost-benefit considerations. Analysts would agree that some sections of the table are more 'critical' than others. Thus first priority of those limited resources should go to ensuring that

1. This section draws heavily from the paper reproduced in Appendix V.

the 'critical' areas are relatively accurate; less attention can be given to the 'non-critical' areas.

The problem has been determining which coefficients are 'critical'. Up to now there have been only vague rules of thumb in this regard, the majority of which have been derived from shocking and simulation techniques. Some of these rules of thumb were implicit in GRIT, but lacked mathematical backing. Recent developments have shown that there is a simple mathematical relationship between errors in coefficients and errors in input-output multipliers. This relationship is explicitly included in this study.

5.2.1 The Concept of Accuracy[2]

Accuracy in input-output can be bisected into two broad categories:

(i) Accuracy of the transactions table, which refers to the exactness with which the input-output table represents the 'true' table for the economy. This is the accounting intrepretation of the input-output table epitomised by those concerned with the preparation of the national tables, where the exercise is seen simply and appropriately as an extension of the national accounts. This interpretation requires cell-by-cell accuracy in the statistical sense, on the assumption that if each cell of the table is an accurate record of the 'true' transaction, the table as a whole will reflect the 'true' table with a high degree of accuracy. This interpretation can be called partitive accuracy.

(ii) Model accuracy, which refers to the exactness with which the input-output model reflects the realism of the operation of the regional economy. This emphasises the 'snapshot' interpretation of the economy. This interpretation relies, not on accuracy in each cell of the table, but

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2. For a full discussion on the concept of accuracy in regional input-output see Jensen (1979).

with the accuracy with which the table represents the main features of the economy in a descriptive sense and preserves the importance of these features in an analytical sense. This interpretation of accuracy can be called holistic accuracy. While partitive accuracy represents the accounting accuracy of the table, holistic accuracy represents the operational accuracy of the table.

Once we move from the world of the more reliable 'hard' data and technical input-output teams at the national level to the world of inadequate and often unreliable data and limited research resources at the regional level, the distinction between these two interpretations becomes more important. Input-output literature casts doubt on our ability to achieve partitive accuracy with existing data sources and research resources; that although partitive accuracy is possible in some portions of the table, it is not appropriate as a general approach to regional input-output tables.

This therefore means that we require some technique for isolating those portions of the table where partitive accuracy can be strived for. The following section outlines the procedure for isolating the relatively more important cells of the table, and ranking them in the order of their relative importance.

5.2.2 Coefficient Errors and their Effects on Multipliers

Suppose we have an initial estimate of an input-output direct coefficient matrix, A. It is likely that all, or some, of the direct coefficients, a_{ij}, contain errors, d_{ij}. These errors could be expressed either in absolute or proportional terms. If the errors are absolute errors, we in fact have initial estimates of $(a_{ij} + d_{ij})$. On the other hand, the errors may be proportional, in which case $d_{ij} = a_{ij}\, p_{ij}$.

This section shows what affects, if any, coefficient errors have on the various input-output multipliers, and then explains how this can be used to maximize the accuracy of the final transactions table in the light of limited budget resources. The analysis that follows is based on the assumption that the initial coefficient error is proportional, but this does not restrict the analysis in any way. The assumption of absolute coefficient errors is more restrictive, and the theory can easily be converted from one system to the other. In the empirical sense, there is little to suggest either error format is more likely to occur, and one can find arguments in favour of both propositions. Given that a decision had to be made, however, the research team were inclined towards the proportional error theory, primarily on the basis that one would expect, ceteris paribus, larger coefficients to contain larger errors.

All the input-output multipliers are calculated from the Leontief inverse $B = (I-A)^{-1}$. Therefore we need to know how the error matrix $D = [d_{ij}] = [a_{ij}p_{ij}]$ affects B. If we apply the usual theory to the initial matrix A we obtain $B \neq (I-A-D)^{-1}$. Therefore we need to know how $(I-A-D)^{-1}$ is related to B.

It can be shown that

$$
\begin{aligned}
(I-A-D)^{-1} &= B + (BD)B + (BD)^2B + (BD)^3B + \ldots. \\
&= B + E1 + E2 + E3 + \ldots. \\
&= B + E
\end{aligned}
$$

where $E = E1 + E2 + E3 + \ldots$ is the error induced into B in response to an initial error D introduced into A.

Consider the error component E1 first. The $(i,j)^{th}$ element of E1 is $\sum_{\ell}\sum_{k} b_{ik}\, a_{k\ell}\, p_{k\ell}\, b_{\ell j}$, and thus the error in the jth output multiplier is

$$\varepsilon 1\,(om_j) = \sum_{\ell}\sum_{k} om_k\, a_{k\ell}\, p_{k\ell}\, b_{\ell j}$$

where om_k denotes the kth output multiplier.

We now have to make an additional decision; what criteria do we want to use to measure the effects of the initial coefficient errors D? The answer to this lies in the primary use to which the tables are intended to be put. The majority of current input-output impacts concentrate on multiplier analysis, and therefore the primary aim should be to minimize the error in the multipliers. Which multipliers? This is not a simple answer and will again depend on the intended impact projects; obviously income and employment multipliers are more important than output multipliers, and in this study the final decision was left to the South Australian Government. The following discussion, for the sake of simplicity, will be in terms of the output multiplier; the analysis, however, is equally applicable to income or employment multipliers. The final question to be answered is how should the error in the output multipliers be measured? Again there are several alternatives such as total absolute multiplier error or average proportional multiplier error. Absolute multiplier error does not take into account the magnitude of the multipliers, and it was decided that average proportional multiplier error was the more appropriate measure, bearing in mind the model can be used with various other criteria.

The average proportional output multiplier error is:

$$\frac{1}{n} \sum_j \left(\frac{\varepsilon 1(om_j)}{om_j}\right) = \frac{1}{n} \sum_\ell \sum_k om_k \, a_{k\ell} \, p_{k\ell} \sum_j \left(\frac{b_{\ell j}}{om_j}\right)$$

where $\frac{b_{\ell j}}{om_j}$ is the proportion of the column total which lies in cell (1,j) of B, and n is the number of intermediate sectors.

The average proportional multiplier error can thus be expressed as a summation of terms, and can be rewritten as:

$$\frac{1}{n} \sum_j \left(\frac{\varepsilon 1(om_j)}{om_j}\right) = \frac{1}{n} [om_{k1}\, a_{k1.\ell 1}\, p_{k1.\ell 1} \sum_j \left(\frac{b\ell_{1.j}}{om_j}\right) + om_{k2}\, a_{k2.\ell 2}\, p_{k2.\ell 2} \sum_j \left(\frac{b\ell_{2.j}}{om_j}\right)$$

$$+ \ldots + om_{ki}\, a_{ki.\ell i}\, p_{ki.\ell i} \sum_j \left(\frac{b\ell_{i.j}}{om_j}\right) + \ldots\ ]$$

where the terms in the series [ ] can be rewritten in sequential order from high to low. We then have a sequential list of cells which contribute, in order of importance, to the average proportional multiplier error. In terms of relative efficiency, therefore, we should concentrate firstly on reducing the error in the coefficient $a_{k1.\ell 1}$, secondly in the coefficient $a_{k2.\ell 2}$, and so on.

In the operational sense, we need to make the broad assumption that the proportional error in each coefficient is roughly of the same magnitude. We need not specify a particular value. In situations where more detailed knowledge of the local economy is available, one may be able to obtain rough ratios of these errors e.g. one may be led to believe that the error in one particular coefficient is approximately twice as large as in other coefficients. Remember the procedure does not aim to tell us what the errors are (although in some circumstances it can provide a rough estimate). It only gives us a pointer which indicates which cells we should be concentrating on, in the light of all the prior available information.

The above analysis can be extended to include the error components E2, E3, etc., and, in general, we find the (j)th term in the series is (under the assumption p = 1):

$$\frac{1}{n} \sum_j \left(\frac{\varepsilon(om_j)}{om_j}\right) = \frac{1}{n} [\ldots + (om_j + \sum_m \sum_q om_q\, a_{qm}\, b_{mj} + \sum_r \sum_s \sum_m \sum_q om_r\, a_{rs}\, b_{sm}\, a_{mq}\, b_{qj}$$

$$+ \ldots)\, a_{ji} \sum_k \left(\frac{b_{ik}}{om_k}\right) + \ldots\ ]$$

In empirical tests it was found that the ranking of the coefficients did not alter past the error components E1 + E2, although all rankings in this study were taken to E1 + E2 + E3. If we are interested primarily in the rankings, E1 + E2 appears to be sufficient. An example of the ranking of the first 25 coefficients for the prototype South Australian state table, using three criteria, output multipliers, income multipliers and employment multipliers, is given in Table 5.1.

The above analysis can be extended into a cost optimization model by deriving an error function which relates the average proportional multiplier error remaining after say X cells have been re-estimated. By assigning a cost, implicit or otherwise, to the possibility of a 100% proportional multiplier error occuring, the total cost function of re-estimation and remaining multiplier error can be minimized to find the optimal value of X. However this extension of the model was not explicitly included in this study. A full explanation of the procedures, with an example, is given in Appendix V.

TABLE 5.1

SOUTH AUSTRALIA : OPTIMAL RANKING : PROPORTIONAL COEFFICIENT ERROR - AVERAGE MULTIPLIER ERROR

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OUTPUT MULTIPLIERS

RANK : DIRECT COEFFICIENT (COORDINATES)

1: .2710 (17,17)	2: .2995 (17,19)	3: .2425 (16,16)	4: .2813 (11,11)	5: .1055 (16,31)
6: .2240 (22,22)	7: .2076 (13,13)	8: .1451 (19,16)	9: .1790 (18,18)	10: .1615 (5, 5)
11: .2734 (1, 6)	12: .1880 (11,12)	13: .2585 (2, 9)	14: .1009 (15,15)	15: .1634 (15,32)
16: .1612 (8, 8)	17: .1045 (24,24)	18: .0898 (17,15)	19: .0782 (19,19)	20: .1199 (5,18)
21: .1192 (33,30)	22: .1205 (6, 6)	23: .0665 (16,30)	24: .1086 (20,20)	25: .0684 (31,17)

INCOME MULTIPLIERS

RANK : DIRECT COEFFICIENT (COORDINATES)

1: .2710 (17,17)	2: .2995 (17,19)	3: .1055 (16,31)	4: .2425 (16,16)	5: .2813 (11,11)
6: .2240 (22,22)	7: .1615 (5, 5)	8: .1451 (19,16)	9: .2076 (13,13)	10: .1880 (11,12)
11: .0890 (33,33)	12: .1634 (15,32)	13: .1612 (8, 8)	14: .1192 (33,30)	15: .1009 (15,15)
16: .0684 (31,17)	17: .1045 (24,24)	18: .1074 (31,20)	19: .0898 (17,15)	20: .0782 (19,19)
21: .1086 (20,20)	22: .0381 (30,31)	23: .0274 (31,31)	24: .1790 (18,18)	25: .0938 (31,11)

EMPLOYMENT MULTIPLIERS

RANK : DIRECT COEFFICIENT (COORDINATES)

1: .2425 (16,16)	2: .2734 (1, 6)	3: .2710 (17,17)	4: .2995 (17,19)	5: .2813 (11,11)
6: .1055 (16,31)	7: .1451 (19,16)	8: .2240 (22,22)	9: .1880 (11,12)	10: .1634 (15,32)
11: .1192 (33,30)	12: .0700 (2, 1)	13: .1612 (8, 8)	14: .2585 (2, 9)	15: .0665 (16,30)
16: .1009 (15,15)	17: .0616 (1,22)	18: .2076 (13,13)	19: .1615 (5, 5)	20: .0749 (19,29)
21: .0782 (19,19)	22: .0381 (30,31)	23: .1045 (24,24)	24: .0449 (30,30)	25: .0227 (29,31)

5.3 Modifications to the Aggregation Scheme

The original GRIT system employed a two-tier weighting aggregation scheme to obtain the non-uniform and uniform transactions tables. The non-uniform tables are derived using an employment weighted aggregation scheme, by necessity, as reliable output data are not available at the 109 sector regional level. The uniform tables were then derived from the non-uniform tables by an output weighted aggregation scheme.

This two-tier system thus creates problems. If the non-uniform tables are not of the same dimension, then the tables are not directly comparable, as weights have been applied to different numbers of sectors. This is particularly true at the uniform table level, as different weighting systems have been applied over different sectors. Thus, even though all the uniform tables are of the same dimension and contain the same sectors, an individual transaction in one table cannot be compared with the corresponding transaction in another table. Although each individual table is representative of that region, comparisons across regions, or with the state, are not possible, and this is further complicated by regional imports and exports.

To overcome the aggregation problem, several alternative schemes were hypothesised and empirically tested. The problem arises that there is no simple benchmark for comparison between differently derived tables for a given region. It was finally decided, in the interests of consistency and ease of manipulation, to continue the aggregation from the non-uniform stage to the uniform tables using employment weights. The study team felt that the output weighting system is marginally superior, but were concerned with the possibility that users of the tables could become disconserted by the inevitable across table inconsistencies, despite the fact that across table comparisons of <u>any</u> input-output tables requires extreme caution.

The present GRIT II system may still produce some minor inconsistencies, but to a lesser extent. Wholly mechanically produced tables should not be inconsistent, but the GRIT system depends on operator manipulation at various stages of the procedure, with the insertion of superior data, etc. Very often superior estimates are available for a particular industry at a regional level but not at the state level, or vice versa, or the two estimates are inconsistent but cannot be verified. It is virtually impossible to verify transactions across tables in any case, as each regional transaction between industries contains an element of imports and/or exports. It is maintained, however, that every effort is taken to ensure obvious inconsistencies are minimized.

CHAPTER 6

EMPIRICAL APPLICATION OF THE GRIT SYSTEM

Previous chapters have outlined relevant regional input-output economics, the objectives of the GRIT II system, and have described in detail the GRIT II methodology. This chapter provides some of the empirical results of the application of the GRIT II system to the regions and the state of South Australia.

With the metropolitan provincial and rural regions categorized as in Chapter 3, the aggregation system as shown in Appendix II combines the national sectors listed in the right hand column to sectors defined for the metropolitan region. The aggregation procedure for the metropolitan region ceases at this stage, defining 36 sectors for the Adelaide region table. For the non-metropolitan regions the aggregation proceeds until the 19 sectors for the Provincial regions have been formed. The aggregation continues until 11 sectors have been formed for the rural regions. This method was designed to cater for the detail required for the different economy types and also to produce comparability of definition of the sectors between regions of different types. The latter is achieved by the fact that sectors in the smaller tables are aggregates of identifiable sectors in the larger tables, as indicated by the alpha numeric sector identification system in Appendix II.

The GRIT II computer program allows for the aggregation procedure to be continued to produce uniform tables as required by the analyst. The uniform tables are aggregations of adjusted tables.

The aggregation system described above produced the following variety of tables.

TABLE 6.0 SUMMARY OF TYPES OF GRIT II TABLES IN THIS REPORT

Input-Output Tables of:	Non-uniform Tables	Uniform Tables
State of South Australia	36-sector	11-sector
Adelaide region	36-sector	11-sector
Northern region	19-sector	11-sector
Central region	19-sector	11-sector
Eastern region	19-sector	11-sector
South-eastern region	19-sector	11-sector

Two sets of transactions tables with accompanying tables of coefficients and multipliers were produced. A series of 11-sector tables, termed uniform tables was produced for the regional and state economies. Secondly, a series of non-uniform tables was produced, including 36-sector tables for the Adelaide region and the state of South Australia, and 19-sector tables for the remaining regions. The presentation of the tables of transactions, coefficients and multipliers required the preparation of approximately ninety tables. The disposition of these tables throughout this report is itemised in Table 6.0.1 to assist the reader with ready reference to the results of the study.

These tables contain an enormous amount of information relating to the economic structure of the state and regions of South Australia. The sheer volume of the information prevents comment in detail on each table. This chapter therefore is restricted to general comment on the 11-sector uniform transactions tables and associated multipliers. Non-uniform transactions tables and multipliers, and all coefficient tables have been presented in appendices. However, the general comment on the uniform tables in this chapter is relevant also to the non-uniform tables which should, of course, be considered simply as providing more detail relating to those sectors which are shown in a more disaggregated form.

TABLE 6.0.1 LIST AND LOCATION OF GRIT II INPUT-OUTPUT RESULTS FOR THE STATE OF SOUTH AUSTRALIA

Form of Results	Uniform Tables (11-Sector Tables for State and Regions)	Non-Uniform Tables (36-Sector Tables for State and Metropolitan Region, 19-Sector Tables for Provincial Regions)
Transactions Tables	Chapter 6 (Tables 6.1 to 6.6)	Appendix VI (Tables VI-1 to VI-6)
Direct Coefficients	Appendix VIII (Tables VIII-1 to VIII-6)	Appendix IX (Tables IX-1 to IX-6)
Direct and Indirect Coefficients (Inverse of Open Model)	Appendix X (Tables X-1 to X-6)	Appendix XII (Tables XII-1 to XII-6)
Direct, Indirect and Induced Coefficients (Inverse of Closed Model)	Appendix XI (Tables XI-1 to XI-6)	Appendix XIII (Tables XIII-1 to XIII-6)
Output Multipliers	Chapter 6 (Tables 6.7; 6.10; 6.13; 6.16; 6.19; 6.22)	Appendix VII (Tables VII-1 to VII-6)
Income Multipliers	Chapter 6 (Tables 6.8; 6.11; 6.14; 6.17; 6.20; 6.23)	Appendix VII (Tables VII-7 to VII-12)
Employment Multipliers	Chapter 6 (Tables 6.9; 6.12; 6.15; 6.18; 6.21; 6.24)	Appendix VII (Tables VII-13 to VII-18)

In both the uniform and non-uniform transactions and coefficient tables, sectors are represented by numbers in the interests of space. These numbers represent sectors as defined in Appendix II. It will be noted that the same sector number is retained throughout uniform and non-uniform tables, the numbering is modified to denote disaggregation for non-uniform tables. For example Sector 4 in the uniform tables refers to the Manufacturing sector; in the 19-sector tables of provincial regions, Sector 4 is disaggregated to Sectors 4A-4F. In the 36-sector tables, these may be further disaggregated as 4A1-4A5, and so on.

For convenience in the reading of this chapter the sector titles for the eleven-sector tables are provided below:

Sector No.	Title
1	Animal industries
2	Other primary industries
3	Mining
4	Manufacturing
5	Electricity, gas and water
6	Building and construction
7	Trade
8	Transport and communication
9	Finance
10	Public Administration and defence
11	Community services and entertainment, recreation

6.1 Eleven-Sector Tables for the Regions of South Australia

The discussion is now focussed on the uniform transactions tables for the regions of South Australia. These are presented as tables 6.1 to 6.6 for the six regions of the state.

TABLE 6.1 11-SECTOR TRANSACTIONS TABLE: ADELAIDE REGION, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	1	0	0	5200	0	0	0	0	0	0	0	0	0	2785	7986
2	195	847	12	13518	8	0	0	89	8	1	247	4081	0	18719	37725
3	0	3	14613	20245	83	3008	76	112	28	1	121	0	0	24682	62971
4	613	2384	6389	815652	7475	114903	130831	69876	6355	22140	50489	332229	230139	1011275	2800750
5	204	615	830	30497	2757	1125	7798	2474	15563	1317	29351	27162	17093	7508	144294
6	41	113	293	6316	2725	0	5838	8509	7271	4824	5781	29526	232969	54658	358864
7	261	717	965	29830	826	6248	61877	18525	23180	653	12579	150809	688344	325653	1320467
8	153	826	2146	95191	2735	11018	42790	17053	13653	3836	7317	46237	114028	226829	583812
9	4	31	846	29764	216	2886	160277	4154	79950	10246	13157	336228	0	221851	859612
10	0	0	0	673	0	0	0	0	106	0	0	24623	197838	61201	284441
11	62	21	181	1016	144	33	3185	763	15229	94	8097	171908	482823	119957	803513
H-H	4288	27501	19528	768867	55883	117277	353739	262324	326867	206491	458387	0	0	0	2603151
O.V.A.	260	2725	8226	218102	54225	47579	391479	112518	319522	9717	129815	0	0	0	1294168
IMPORTS	1904	1942	8942	765080	17218	54787	162577	87415	51880	23119	98172	605919	0	0	1869755
TOTAL	7986	37725	62971	2800750	144294	358864	1320467	583812	859612	284441	803513	1728722	1963235	2075117	0

TABLE 6.2 11-SECTOR TRANSACTIONS TABLE: NORTHERN REGION, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	1	0	0	2954	0	0	0	0	0	0	0	0	0	49122	52077
2	3179	2285	87	1354	10	0	0	147	0	0	10	3613	0	89343	100028
3	0	5	2519	12491	656	258	171	216	6	8	120	0	0	42839	59289
4	1078	2661	1152	93677	983	4500	963	5140	88	650	651	22417	71285	179802	385847
5	1292	1278	1378	6753	799	121	1126	829	201	152	4168	5087	9215	3283	35682
6	251	317	224	502	445	0	493	3048	426	323	586	2299	19557	0	28471
7	1742	1708	302	1701	118	301	5217	2075	1441	51	896	19550	96157	27121	158380
8	965	1382	1435	20228	619	838	3818	2324	1069	295	641	6229	51799	20564	112206
9	11	3	608	1317	20	21	7080	452	2116	340	714	11058	0	42397	66137
10	0	0	2	0	0	0	0	0	5	0	0	2691	20462	2529	25689
11	416	127	142	17	23	3	329	34	646	11	304	19830	51908	7748	81538
H-H	27007	64118	12835	96362	13812	9512	45289	59185	26403	18394	47730	0	0	0	420647
O.V.A.	1611	8247	28584	43957	15285	3746	44709	15247	24735	658	12489	0	0	0	199268
IMPORTS	13724	17897	10021	104534	2912	9171	49185	23509	9001	4907	13229	149303	0	0	407293
TOTAL	52077	100028	59289	385847	35682	28471	158380	112206	66137	25689	81538	242077	320383	464748	0

TABLE 6.3 11-SECTOR TRANSACTIONS TABLE: EASTERN REGION, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	119	0	0	31265	0	0	0	0	0	0	0	0	0	46528	77912
2	8263	13043	85	22995	6	0	0	123	2	0	71	3498	1	76076	126163
3	2	10	936	1189	46	341	36	24	3	1	33	0	0	13054	15675
4	4742	3847	513	46595	211	6090	4211	1905	166	470	1584	32191	16846	193143	312514
5	1670	1709	90	1795	225	88	379	152	435	52	2107	2934	1862	276	13774
6	346	366	47	930	299	0	421	1005	477	130	594	3073	32056	0	39654
7	2396	2201	146	2633	61	544	4986	1636	1425	39	914	20446	65133	23764	126324
8	1445	2729	444	14261	181	1212	3509	1073	1246	211	603	6198	20013	2652	55977
9	11	26	31	1203	5	22	6227	101	2285	321	700	16419	0	40952	68303
10	0	0	0	0	0	0	0	0	6	0	0	2160	14589	1612	18367
11	473	79	50	76	9	4	278	5	501	6	97	22034	35355	12961	71928
H-H	39958	93892	4499	73773	5454	13128	33671	26756	26662	13405	40983	0	0	0	372181
O.V.A.	4223	4063	5757	30538	4941	5244	36617	7841	25875	586	11528	0	0	0	137213
IMPORTS	14264	4198	3077	85261	2336	12981	35989	15356	9220	3146	12804	125414	0	0	324046
TOTAL	77912	126163	15675	312514	13774	39654	126324	55977	68303	18367	71928	234367	185855	413213	0

TABLE 6.4 11-SECTOR TRANSACTIONS TABLE: CENTRAL REGION, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	2	0	0	1544	0	0	0	0	0	0	0	0	0	35820	37366
2	3371	2838	4	2276	0	0	0	5	1	0	7	1135	0	75894	85531
3	0	0	1643	299	0	83	1	4	0	0	2	0	0	9497	11529
4	2672	5242	200	4722	14	821	381	734	34	21	221	2554	8517	10612	36745
5	608	769	75	353	55	23	125	96	146	12	633	995	338	32	4260
6	146	236	32	77	46	0	87	306	57	18	99	667	7619	157	9747
7	1283	1502	109	298	15	124	1130	587	450	7	255	6629	15393	4622	32404
8	701	1298	364	1304	73	297	842	500	633	33	178	2042	13443	3114	24822
9	4	2	20	85	1	4	1002	49	612	57	85	4637	2731	20038	29327
10	0	0	0	0	0	0	0	0	2	0	0	372	2561	223	3158
11	239	72	18	3	2	1	67	1	147	0	5	6102	12604	2329	21590
H-H	19971	44987	3561	9732	1656	3215	9022	11905	12333	2303	13241	0	0	0	131926
O.V.A.	367	6327	3208	3055	1828	1291	9264	3401	10745	99	3007	0	0	0	42792
IMPORTS	7802	22258	2295	12997	570	3888	10483	7234	4167	608	3857	56652	0	0	126811
TOTAL	37366	65531	11529	36745	4260	9747	32404	24822	29327	3158	21590	75985	63206	162338	0

TABLE 6.5 11-SECTOR TRANSACTIONS TABLE: SOUTH-EASTERN REGION, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	6	0	0	6657	0	0	0	0	0	0	0	0	0	36596	43259
2	3562	1012	8	9448	4	0	0	35	1	0	23	1152	0	13918	29163
3	1	20	660	243	0	149	3	4	1	0	5	0	0	2765	3051
4	1271	674	23	42744	21	2046	911	737	103	28	581	9237	20828	103077	182281
5	997	170	19	1923	108	49	375	71	254	24	1309	1543	240	76	7158
6	113	29	9	509	47	0	84	152	64	24	93	1059	1590	266	18350
7	1427	1321	51	1667	36	267	3518	834	820	11	501	9684	46338	21880	88355
8	837	512	132	8540	128	534	2237	343	565	33	312	2701	5365	607	22846
9	10	3	21	1866	5	16	5201	27	1521	140	451	9352	0	17771	36324
10	0	0	0	0	0	0	0	0	3	0	0	504	4720	246	5473
11	200	1	5	5	3	1	35	1	211	0	6	8757	22709	4961	36895
H-H	24258	11339	1244	50442	2778	5961	23492	10155	13995	4133	20660	0	0	0	168457
O.V.A.	207	6012	692	22278	2707	2442	25695	4004	13644	243	6190	0	0	0	84114
IMPORTS	10370	8070	987	36019	1321	6885	26804	6483	5142	837	6764	67016	0	0	176698
TOTAL	43259	29163	3651	182281	7158	18350	88355	22846	36324	5473	36895	111005	116101	202163	0

TABLE 6.6 11-SECTOR TRANSACTIONS TABLE: SOUTH AUSTRALIA, 1976-77 (,000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	130	0	0	118580	0	0	0	0	0	0	0	0	0	99891	218601
2	18632	20026	451	83724	114	0	0	1447	27	2	806	35707	3	217670	378609
3	3	39	22659	35877	790	3852	349	367	42	12	318	0	0	89008	153315
4	15960	21028	13065	1218045	9346	149060	175772	99269	7201	24759	62925	536532	207052	1178122	3718136
5	5142	5436	2393	44666	4120	1508	10619	3680	16599	1667	39402	51933	18003	0	205168
6	1106	1158	633	8600	3562	0	6923	13116	8296	5320	7064	50256	347343	1709	455086
7	7685	7920	1798	38058	1085	7656	77519	23958	27739	765	15323	208686	846589	461148	1725929
8	4217	7380	4664	142658	3755	13973	53720	22323	17337	4548	9100	64281	445847	5860	799663
9	102	175	2384	40505	286	2959	205647	5491	94286	11119	17428	474758	2	204572	1059704
10	0	0	4	786	0	0	0	0	132	0	0	34073	302133	0	337128
11	1804	301	446	1208	191	41	3893	806	16883	109	8509	350323	601509	29441	1015463
H-H	115483	241838	41668	999183	79583	149095	465214	370326	406260	246727	581003	0	0	0	3696330
O.V.A.	6945	30551	44234	313917	78928	60284	508126	154019	394366	11324	163051	0	0	0	1765745
IMPORTS	41392	42757	18916	672329	23409	66667	218147	104863	70536	30776	110534	585608	0	0	1985934
TOTAL	218601	378609	153315	3718136	205168	455086	1725929	799663	1059704	337128	1015463	2392157	2768481	2287421	0

The tables summarise the interindustry transactions[1] in dollar terms at basic values for 1976-77 for the regions of the state. The first eleven entries in each row indicate the sales to other sectors in the same region; the last three entries in each row indicate the sales of each sector to households, other final users in the region and to markets outside the region. For example the sales of the Animal Industries sectors in all tables are virtually restricted to the Manufacturing sector (including rural processing factories), and to exports. The proportion of the output of this sector exported reflects the type of activity in this sector which is carried out in the region. This sector in the Adelaide Region table (Table 6.1), producing mainly dairy, beef and sheep products, exports only a third of total output; the bulk of sector output is processed locally by the Manufacturing sector. On the other hand the output of Sector 1 in the Northern region (Table 6.2) is almost entirely exported in a non-processed form from the region.

A more detailed study of the rows of the regional tables draws attention to some important characteristics of South Australian regions. First, some sectors, particularly 'service' type sectors, export a relatively small proportion of total output. Sectors such as Public Administration, Community Services, Trade and Building and Construction tend to be established in each region at the level sufficient to provide the amounts of services required locally; few regions of a whole economy will reach the stage of becoming major exporters of services. Secondly, the heavy reliance on some form of primary activity for regional exports is demonstrated in these tables. The tables for the non-metropolitan regions show the relative importance of the agricultural industries, with the mining sectors being less important. Apart from the Adelaide Region,

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1. Other terms used in the literature for these tables include 'gross flows tables' or 'interindustry flows'.

where the mining sector is largely dominated by non-metalic mineral mining and mining services, the Northern Region is the only major mining area. However, the economic infrastructure of most non-metropolitan regions remains largely influenced by the requirements of the rural industries.

Thirdly, it is important to understand the different roles performed by the Manufacturing sector in each region (Row 4 in each table). The Adelaide region table (Table 6.1) shows a high level of exports of manufactured goods; these are largely exports of finished goods to the other regions of South Australia and the nation. Where non-metropolitan regions show high levels of exports from this sector these represent either processed primary products which have been locally produced (e.g. Eastern and South-Eastern Regions) or processed mining products (Northern Region).

The first eleven entries in each column show the purchases which each sector makes from other intermediate sectors in the same region; the remaining three entries show the purchases of labour (in the households row), the imports of that sector, and the components of other value added (depreciation, indirect taxes, interest, profits etc). In general terms, the relative size of the entries in the intermediate and primary inputs quadrants indicates the extent to which each sector obtains its inputs from other local sectors.

The column structure of the regional tables is important. Since the columns show the pattern of purchases of each sector, they are the basis for the calculation of tables of coefficients for the analytical application of the table described in the next section. An examination of the columns of the transactions tables is an important prerequisite to the analytical stage, and highlights some important points with respect to the South Australian regions.

<u>Firstly</u>, the column shows, within the household row, the sources by sector of the wages, salaries and supplements paid within the region, and indirectly the importance of each sector as a source of local employment. It shows, for example, the dominance of the Manufacturing sector as the source of employment in most regions but that in more isolated regions, for example the Northern Region, the dominant employing industries tend to be the Other agriculture sector, Manufacturing (processing of minerals) and Transport and Communications sectors. <u>Secondly</u>, the columns show the importance of imports by sector for the regions of the state. Almost inevitably, the highest level of imports for each region is shown by the Manufacturing sector; for the non-metropolitan regions, these represent imports of semi-finished and finished goods as inputs into the manufacturing process; the manufacturing sectors of these regions tend to comprise the lower-order manufacturing processes, and imports tend to be of the middle and higher-order, more specialised commodities.

Each cell entry in the transactions table represents, of course, the sum of the transactions between two sectors for the time period under study. Consequently each cell entry is important, it indicates whether the economic linkages between the sectors concerned are strong or weak, i.e. whether or not a change in the level of output of one sector is likely to affect the other. While it is important to identify weaker linkages, it is the stronger intersectoral linkages which are more important in identifying those characteristics of an economy which determine its response to changing economic circumstances. The relative size of each cell entry, the distribution of these relative sizes over the table, and the tendency for larger entries to appear in particular sectors are therefore important in understanding the nature of each regional economy and the variation between regional economies.

The tables of the regions of South Australia demonstrate the importance of these linkages. All the non-metropolitan tables are relatively dominated by the Agricultural and/or Manufacturing sectors. This is particularly noticeable in the Eastern Region where there are strong intrasectoral linkages between the Other Primary Industries sector (grape growing, etc.), and the Manufacturing sector (wine production, etc.). This characteristic is also reflected to a lesser extent in the South-Eastern Region and the Central Region. The Northern Region is, of course, largely dominated by the Manufacturing sector, which in this case is mainly mineral processing rather than food processing.

The Adelaide region provides a contrast to the tables of the other regions. A much larger proportion of the cell entries are relatively large in magnitude, reflecting the more numerous intersectoral linkages which are characteristic of a more diversified economy. The region contains some significant linkages between the rural and rural processing industries, of the same magnitude as many 'rural' regions, but these are relatively small compared to the activities of other sectors such as Manufacturing, Building and Construction, and Trade and Finance. If the Adelaide region table tended to be dominated by a particular sector, it would probably be Manufacturing; however, it displays numerous linkages which could be described as significant.

The important distinction between the regional tables lies in the number of 'significant' cell entries; few significant entries denotes a regional economy dominated by one or two sectors, several significant entries describe a highly developed and more complex economy with a high degree of intersectoral interaction.

6.2 A South Australian State Table

An eleven-sector transactions table for the state of South Australia is provided in Table 6.6, and a 36-sector table in Table VI-6.

Table 6.6 is in effect a summation of Tables 6.1 to 6.5, in terms of sector output levels and most non-trade components of primary inputs and final demand. Many items which comprise interregional trade in the regional tables were not components of trade at the state level and adjustments were made for these items. Those items which comprised overseas or interstate trade at the regional level were retained in the state table, and appear as state imports or exports in Table 6.6.

The South Australian state table is typical of input-output tables describing advanced economies; it shows the many significant linkages expected in a highly diversified economy. In the same way as regional tables illustrated the facets of the industrial regional economies, Table 6.6 demonstrates the feature of the State economy in terms of sources of inputs of each sector and the sales pattern of these sectors for the state as a whole.

The choice between the use of state or regional tables for an analyst will be influenced by the problem he faces and the point of view from which the study must be carried out. If the analyst is concerned with the repercussions of an event or policy on the state as a whole, Table 6.6 provides the appropriate analytical base; if the question of interest concerns the spatial incidence of the effects of an event, one or more of the regional tables will provide the appropriate base.

6.3 Regional and State Input-Output Multipliers

Chapter 2 outlined the procedures adopted in this study for the calculation of input-output multipliers, and briefly discussed the interpretation of these multipliers. Output, income and employment multipliers were calculated; these appear in Tables 6.7 to 6.24. The tables of direct coefficients, and the inverses of both open and closed versions of the uniform tables are presented in Appendices VIII, X, and XI respectively.

This section provides only a brief discussion of the multipliers derived by the GRIT II procedure for the state and regions of South Australia. The tables of multipliers provide a large volume of information with respect to output, income and employment characteristics of South Australian regions; such information has only been available previously in Australia for the Queensland economy and its constituent regions. The input-output tables and multipliers provide a sufficient empirical base for a detailed study of the spatial structure of the South Australian economy, and this would be a useful topic for future research. However, this section has more modest aims, namely the identification from the multipliers of the most significant features or regularities; detailed comment is not provided in this report.

Output Multipliers

Three types of output multiplier effects were calculated:

(i) First Round Effects (the effect of the first round of purchases by the sector providing the additional dollar of output).
This is shown in the elements of the direct coefficients matrix. For example, for the Adelaide region (Table VIII-1) the direct effect of a \$1 change in the output of Sector 1 is \$0.0001 on Sector 1, and \$0.0244 on Sector 2 and a total of \$0.1921 on all intermediate sectors of the economy (Table 6.7).
First round income effects are calculated by multiplying the first-round output effects by the appropriate HH income coefficients, as shown in Chapter 2. The total first-round

income effect (or the extent to which HH income increases in each sector due to the first-round output effects) in Sector 1 is $0.0725 (Table 6.8).

(ii) Industrial Support Effects.

This measures the "second and subsequent round" effects, as successive waves of output increases occur in the economy to provide industrial support as a response to the $1 increase in output. This does not include any increases caused by increased household consumption. Output effects are calculated from the Open Z inverse (Table X-1), as a measure of industrial response to the first round effects. The industrial support output requirements are calculated as the elements of the columns of the Z inverse, less the initial dollar stimulus and the first round effects as shown in Table 6.7. This table shows that the industrial support effects over all sectors of an increase of one dollar in the sales of Sector 1 to final demand is $0.779. The first round and industrial support effects are together the production induced effect.

(iii) Consumption Induced Effects.

The consumption induced effect is that induced by increased HH income associated with the original dollar stimulus in output. The consumption induced income effects are the consumption induced output effects multiplied by the household coefficients.

Employment multipliers are calculated by substituting the employment coefficient e_i for the household coefficient h_i.

The total output multiplier effect is the total of the production induced effect and the consumption induced effect, in addition to the initial $1 increase in sales. For the Adelaide region (Table 6.7) the total output response to a dollar increase in output is $2.1017.

The total output multiplier for sector j measures direct, indirect and induced requirements from all sectors for each dollar increase in sales of sector j to final demand. For example, each increase in the sale of output of the Animal Industries sector in the Adelaide region produces a total increase in output of $2.1017. The induced effect of the increased sales will be $2.1017-$1.2700 = $0.8317. It can also be seen that the Electricity, Gas and Water sector in the Adelaide region, as expected, purchases little in the way of industrial inputs and this sector also has the smallest total income multiplier.

The smallness of the output multiplier for the Mining sector in the Northern region suggests that although the region is significant in terms of mineral processing, the activity of mining itself is less important and a large proportion of mineral production is the processing of imported minerals.

An examination of Tables 6.7 to 6.24 provides some important information with respect to the expected output response of each sector on a regional basis. This may be summarised by three main points. First, we would expect that the regions of South Australia, ranked in size from the metropolitan to rural regions would display an overall pattern in the size of output multipliers which reflects this ranking. The 'larger' economies would be expected to be more diversified and therefore to contain stronger linkages which would contribute to higher output multipliers. In general terms the output multipliers show the expected rankings with the Adelaide Region showing consistently the highest regional multipliers and the rural regions showing the lowest. When the 'size' of the region is measured in terms of the total output of all sectors in the region there is some correspondence between the ranking of the regions and the size of the output multipliers

TABLE 6.7 TOTAL SECTOR OUTPUT MULTIPLIERS ADELAIDE REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.1921	0.0779	0.2700	0.8317	2.1017
2	1.0000	0.1473	0.0604	0.2077	1.0554	2.2631
3	1.0000	0.4173	0.2350	0.6522	0.6780	2.3303
4	1.0000	0.3742	0.1922	0.5664	0.5878	2.1542
5	1.0000	0.1176	0.0532	0.1707	0.5808	1.7516
6	1.0000	0.3879	0.2064	0.5943	0.6608	2.2551
7	1.0000	0.3125	0.1202	0.4327	0.5416	1.9742
8	1.0000	0.2082	0.1021	0.3104	0.7156	2.0260
9	1.0000	0.1877	0.0555	0.2432	0.6177	1.8609
10	1.0000	0.1516	0.0690	0.2205	1.0544	2.2749
11	1.0000	0.1582	0.0621	0.2203	0.8451	2.0654

TABLE 6.8 TOTAL SECTOR INCOME MULTIPLIERS ADELAIDE REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5369	0.0725	0.0247	0.0972	0.3003	0.9344	1.1350	1.1811	1.7403
2	0.7290	0.0566	0.0191	0.0757	0.3810	1.1857	1.0776	1.1038	1.6265
3	0.3101	0.1327	0.0741	0.2069	0.2448	0.7618	1.4281	1.6671	2.4565
4	0.2745	0.1142	0.0594	0.1737	0.2122	0.6604	1.4160	1.6326	2.4056
5	0.3873	0.0392	0.0164	0.0556	0.2097	0.6526	1.1012	1.1435	1.6850
6	0.3268	0.1133	0.0637	0.1770	0.2386	0.7424	1.3466	1.5416	2.2716
7	0.2679	0.1056	0.0394	0.1450	0.1955	0.6084	1.3942	1.5414	2.2712
8	0.4493	0.0645	0.0318	0.0963	0.2584	0.8040	1.1436	1.2144	1.7894
9	0.3802	0.0717	0.0190	0.0907	0.2230	0.6940	1.1887	1.2386	1.8251
10	0.7330	0.0493	0.0217	0.0710	0.3807	1.1846	1.0672	1.0968	1.6162
11	0.5705	0.0543	0.0196	0.0739	0.3051	0.9495	1.0951	1.1296	1.6645

TABLE 6.9 TOTAL SECTOR EMPLOYMENT MULTIPLIERS ADELAIDE REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1145	0.0104	0.0030	0.0134	0.0857	0.2135	1.0907	1.1171	1.8656
2	0.1061	0.0076	0.0023	0.0100	0.1087	0.2247	1.0720	1.0941	2.1191
3	0.0238	0.0130	0.0081	0.0211	0.0698	0.1147	1.5454	1.8837	4.8156
4	0.0322	0.0135	0.0071	0.0206	0.0605	0.1133	1.4193	1.6398	3.5208
5	0.0490	0.0057	0.0020	0.0077	0.0598	0.1165	1.1164	1.1570	2.3778
6	0.0949	0.0133	0.0076	0.0208	0.0681	0.1838	1.1398	1.2197	1.9369
7	0.0597	0.0124	0.0048	0.0172	0.0558	0.1326	1.2075	1.2884	2.2235
8	0.0420	0.0090	0.0038	0.0128	0.0737	0.1285	1.2132	1.3041	3.0583
9	0.0336	0.0092	0.0024	0.0115	0.0636	0.1088	1.2726	1.3436	3.2380
10	0.0803	0.0063	0.0026	0.0089	0.1086	0.1978	1.0783	1.1110	2.4633
11	0.1025	0.0074	0.0024	0.0098	0.0871	0.1994	1.0725	1.0960	1.9454

TABLE 6.10 TOTAL SECTOR OUTPUT MULTIPLIERS NORTHERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.1869	0.0391	0.2261	0.3530	1.5791
2	1.0000	0.0976	0.0238	0.1214	0.3954	1.5168
3	1.0000	0.1324	0.0271	0.1595	0.1551	1.3146
4	1.0000	0.3654	0.1432	0.5086	0.2328	1.7414
5	1.0000	0.1029	0.0271	0.1301	0.2469	1.3769
6	1.0000	0.2122	0.0889	0.3011	0.2431	1.5441
7	1.0000	0.1212	0.0186	0.1398	0.1947	1.3345
8	1.0000	0.1271	0.0394	0.1665	0.3342	1.5007
9	1.0000	0.0907	0.0132	0.1039	0.2530	1.3569
10	1.0000	0.0712	0.0211	0.0923	0.4290	1.5214
11	1.0000	0.0992	0.0173	0.1165	0.3607	1.4772

TABLE 6.11 TOTAL SECTOR INCOME MULTIPLIERS NORTHERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5186	0.0835	0.0132	0.0967	0.1381	0.7533	1.1609	1.1864	1.4526
2	0.6410	0.0402	0.0078	0.0480	0.1546	0.8437	1.0628	1.0749	1.3162
3	0.2165	0.0450	0.0089	0.0539	0.0607	0.3310	1.2078	1.2488	1.5290
4	0.2497	0.1114	0.0447	0.1560	0.0911	0.4968	1.4459	1.6248	1.9894
5	0.3871	0.0346	0.0086	0.0431	0.0965	0.5268	1.0893	1.1114	1.3608
6	0.3341	0.0620	0.0276	0.0895	0.0951	0.5187	1.1855	1.2680	1.5525
7	0.2860	0.0467	0.0066	0.0534	0.0761	0.4155	1.1635	1.1866	1.4529
8	0.5275	0.0426	0.0124	0.0550	0.1307	0.7132	1.0808	1.1043	1.3521
9	0.3992	0.0370	0.0047	0.0417	0.0989	0.5399	1.0926	1.1045	1.3523
10	0.7160	0.0250	0.0067	0.0317	0.1678	0.9155	1.0350	1.0443	1.2786
11	0.5854	0.0375	0.0057	0.0433	0.1411	0.7697	1.0641	1.0739	1.3149

TABLE 6.12 TOTAL SECTOR EMPLOYMENT MULTIPLIERS NORTHERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1184	0.0085	0.0015	0.0100	0.0544	0.1829	1.0718	1.0846	1.5442
2	0.0403	0.0042	0.0009	0.0051	0.0609	0.1063	1.1046	1.1270	2.6403
3	0.0215	0.0049	0.0011	0.0060	0.0239	0.0514	1.2295	1.2797	2.3943
4	0.0274	0.0119	0.0050	0.0169	0.0359	0.0802	1.4351	1.6186	2.9293
5	0.0479	0.0050	0.0010	0.0060	0.0381	0.0919	1.1040	1.1251	1.9200
6	0.1426	0.0065	0.0031	0.0096	0.0375	0.1897	1.0454	1.0670	1.3297
7	0.0457	0.0048	0.0008	0.0057	0.0300	0.0814	1.1058	1.1239	1.7803
8	0.0421	0.0074	0.0014	0.0088	0.0515	0.1025	1.1763	1.2097	2.4324
9	0.0250	0.0046	0.0006	0.0052	0.0390	0.0693	1.1853	1.2090	2.7675
10	0.0749	0.0037	0.0008	0.0045	0.0661	0.1455	1.0498	1.0601	1.9436
11	0.1075	0.0052	0.0007	0.0059	0.0556	0.1690	1.0482	1.0549	1.5723

TABLE 6.13 TOTAL SECTOR OUTPUT MULTIPLIERS EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2499	0.0711	0.3210	0.5086	1.8296
2	1.0000	0.1903	0.0498	0.2401	0.6631	1.9032
3	1.0000	0.1494	0.0378	0.1872	0.2678	1.4549
4	1.0000	0.3934	0.1400	0.5334	0.3578	1.8911
5	1.0000	0.0757	0.0198	0.0955	0.3264	1.4219
6	1.0000	0.2093	0.0908	0.3001	0.3251	1.6253
7	1.0000	0.1587	0.0365	0.1951	0.2547	1.4499
8	1.0000	0.1076	0.0330	0.1406	0.3990	1.5396
9	1.0000	0.0958	0.0152	0.1110	0.3285	1.4396
10	1.0000	0.0670	0.0201	0.0870	0.5773	1.6643
11	1.0000	0.0919	0.0219	0.1138	0.4633	1.5771

TABLE 6.14 TOTAL SECTOR INCOME MULTIPLIERS EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5129	0.1246	0.0327	0.1573	0.1965	0.8667	1.2430	1.3068	1.6899
2	0.7442	0.1059	0.0236	0.1295	0.2561	1.1298	1.1423	1.1740	1.5182
3	0.2870	0.0508	0.0150	0.0658	0.1034	0.4563	1.1769	1.2293	1.5897
4	0.2361	0.1713	0.0640	0.2353	0.1382	0.6096	1.7257	1.9969	2.5824
5	0.3960	0.0265	0.0075	0.0341	0.1261	0.5561	1.0670	1.0860	1.4044
6	0.3311	0.0581	0.0392	0.0974	0.1256	0.5540	1.1756	1.2941	1.6735
7	0.2665	0.0545	0.0145	0.0691	0.0984	0.4340	1.2046	1.2591	1.6282
8	0.4780	0.0345	0.0132	0.0477	0.1541	0.6798	1.0722	1.0998	1.4222
9	0.3903	0.0370	0.0055	0.0425	0.1269	0.5598	1.0948	1.1090	1.4341
10	0.7298	0.0226	0.0083	0.0308	0.2230	0.9837	1.0309	1.0423	1.3478
11	0.5698	0.0319	0.0088	0.0407	0.1790	0.7895	1.0561	1.0715	1.3856

TABLE 6.15 TOTAL SECTOR EMPLOYMENT MULTIPLIERS EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1090	0.0139	0.0040	0.0179	0.0716	0.1985	1.1278	1.1640	1.8213
2	0.0707	0.0112	0.0028	0.0139	0.0934	0.1781	1.1579	1.1972	2.5183
3	0.0177	0.0051	0.0019	0.0070	0.0377	0.0624	1.2883	1.3938	3.5273
4	0.0208	0.0228	0.0079	0.0307	0.0504	0.1019	2.0986	2.4791	4.9065
5	0.0516	0.0042	0.0010	0.0052	0.0460	0.1028	1.0822	1.1008	1.9915
6	0.0906	0.0059	0.0051	0.0110	0.0458	0.1474	1.0651	1.1216	1.6274
7	0.0614	0.0062	0.0019	0.0081	0.0359	0.1054	1.1015	1.1320	1.7162
8	0.0515	0.0055	0.0017	0.0071	0.0562	0.1149	1.1061	1.1386	2.2293
9	0.0201	0.0047	0.0007	0.0054	0.0463	0.0718	1.2335	1.2685	3.5691
10	0.0788	0.0024	0.0011	0.0035	0.0813	0.1636	1.0308	1.0444	2.0766
11	0.1065	0.0042	0.0011	0.0054	0.0653	0.1772	1.0397	1.0505	1.6632

TABLE 6.16 TOTAL SECTOR OUTPUT MULTIPLIERS — CENTRAL REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2416	0.0513	0.2928	0.2909	1.5838
2	1.0000	0.1398	0.0339	0.1737	0.2638	1.4375
3	1.0000	0.2138	0.0500	0.2638	0.1780	1.4418
4	1.0000	0.2983	0.0799	0.3782	0.1842	1.5623
5	1.0000	0.0484	0.0063	0.0546	0.1834	1.2380
6	1.0000	0.1388	0.0393	0.1781	0.1740	1.3521
7	1.0000	0.1122	0.0151	0.1272	0.1459	1.2731
8	1.0000	0.0919	0.0191	0.1110	0.2315	1.3425
9	1.0000	0.0710	0.0074	0.0784	0.2025	1.2810
10	1.0000	0.0469	0.0066	0.0535	0.3355	1.3890
11	1.0000	0.0688	0.0091	0.0779	0.2870	1.3649

TABLE 6.17 TOTAL SECTOR INCOME MULTIPLIERS — CENTRAL REGION: 11 SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5345	0.0966	0.0194	0.1159	0.1217	0.7721	1.1807	1.2169	1.4446
2	0.5260	0.0508	0.0129	0.0637	0.1103	0.7000	1.0966	1.1211	1.3309
3	0.3089	0.0717	0.0173	0.0890	0.0744	0.4723	1.2321	1.2881	1.5292
4	0.2649	0.1163	0.0305	0.1469	0.0770	0.4887	1.4392	1.5545	1.8454
5	0.3887	0.0190	0.0022	0.0213	0.0767	0.4867	1.0490	1.0547	1.2521
6	0.3298	0.0442	0.0150	0.0592	0.0728	0.4618	1.1341	1.1795	1.4002
7	0.2784	0.0420	0.0057	0.0476	0.0610	0.3871	1.1507	1.1710	1.3902
8	0.4796	0.0307	0.0071	0.0378	0.0968	0.6142	1.0639	1.0788	1.2807
9	0.4205	0.0294	0.0028	0.0322	0.0847	0.5374	1.0700	1.0765	1.2780
10	0.7293	0.0183	0.0025	0.0208	0.1404	0.8904	1.0251	1.0285	1.2210
11	0.6133	0.0249	0.0034	0.0283	0.1201	0.7616	1.0405	1.0461	1.2419

TABLE 6.18 TOTAL SECTOR EMPLOYMENT MULTIPLIERS — CENTRAL REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1145	0.0105	0.0023	0.0127	0.0554	0.1825	1.0913	1.1110	1.5947
2	0.0361	0.0056	0.0015	0.0071	0.0502	0.0934	1.1543	1.1961	2.5868
3	0.0168	0.0058	0.0016	0.0074	0.0339	0.0581	1.3421	1.4394	3.4522
4	0.0251	0.0133	0.0035	0.0168	0.0350	0.0770	1.5294	1.6685	3.0622
5	0.0481	0.0029	0.0003	0.0031	0.0349	0.0862	1.0593	1.0653	1.7905
6	0.0988	0.0047	0.0017	0.0065	0.0331	0.1384	1.0477	1.0653	1.4005
7	0.0776	0.0053	0.0007	0.0060	0.0278	0.1114	1.0680	1.0772	1.4348
8	0.0438	0.0049	0.0009	0.0058	0.0440	0.0936	1.1120	1.1316	2.1363
9	0.0146	0.0035	0.0004	0.0038	0.0385	0.0570	1.2387	1.2636	3.9042
10	0.0785	0.0018	0.0003	0.0021	0.0638	0.1445	1.0230	1.0269	1.8399
11	0.1145	0.0035	0.0004	0.0039	0.0546	0.1730	1.0305	1.0343	1.5113

TABLE 6.19 TOTAL SECTOR OUTPUT MULTIPLIERS SOUTH-EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.1947	0.0397	0.2344	0.3792	1.6137
2	1.0000	0.1283	0.0288	0.1571	0.2597	1.4168
3	1.0000	0.2410	0.0639	0.3049	0.2512	1.5561
4	1.0000	0.4035	0.1586	0.5620	0.2760	1.8381
5	1.0000	0.0492	0.0073	0.0565	0.2409	1.2974
6	1.0000	0.1669	0.0714	0.2383	0.2359	1.4742
7	1.0000	0.1399	0.0225	0.1624	0.1903	1.3527
8	1.0000	0.0965	0.0281	0.1246	0.2848	1.4094
9	1.0000	0.0975	0.0133	0.1108	0.2510	1.3618
10	1.0000	0.0475	0.0081	0.0556	0.4565	1.5121
11	1.0000	0.0889	0.0162	0.1052	0.3514	1.4565

TABLE 6.20 TOTAL SECTOR INCOME MULTIPLIERS SOUTH-EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5608	0.0701	0.0135	0.0836	0.1411	0.7854	1.1250	1.1490	1.4007
2	0.3888	0.0426	0.0098	0.0524	0.0966	0.5379	1.1096	1.1349	1.3834
3	0.3230	0.0821	0.0217	0.1038	0.0935	0.5203	1.2541	1.3213	1.6107
4	0.2767	0.1380	0.0542	0.1923	0.1027	0.5717	1.4988	1.6947	2.0659
5	0.3881	0.0188	0.0025	0.0213	0.0896	0.4990	1.0485	1.0548	1.2858
6	0.3249	0.0517	0.0244	0.0760	0.0878	0.4887	1.1591	1.2341	1.5043
7	0.2659	0.0496	0.0079	0.0574	0.0708	0.3941	1.1864	1.2160	1.4823
8	0.4445	0.0298	0.0096	0.0394	0.1060	0.5899	1.0671	1.0887	1.3271
9	0.3853	0.0365	0.0047	0.0411	0.0934	0.5198	1.0946	1.1068	1.3491
10	0.7552	0.0176	0.0028	0.0204	0.1698	0.9454	1.0233	1.0271	1.2520
11	0.5600	0.0314	0.0056	0.0370	0.1307	0.7277	1.0561	1.0662	1.2996

TABLE 6.21 TOTAL SECTOR EMPLOYMENT MULTIPLIERS SOUTH-EASTERN REGION: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1310	0.0103	0.0018	0.0121	0.0573	0.2003	1.0787	1.0923	1.5298
2	0.0618	0.0063	0.0012	0.0076	0.0392	0.1086	1.1021	1.1223	1.7574
3	0.0226	0.0073	0.0021	0.0094	0.0380	0.0700	1.3238	1.4172	3.0978
4	0.0251	0.0178	0.0071	0.0249	0.0417	0.0917	1.7100	1.9926	3.6540
5	0.0492	0.0025	0.0003	0.0028	0.0364	0.0884	1.0512	1.0574	1.7976
6	0.0588	0.0054	0.0031	0.0086	0.0357	0.1030	1.0926	1.1456	1.7519
7	0.0500	0.0053	0.0009	0.0063	0.0288	0.0851	1.1066	1.1253	1.6998
8	0.0542	0.0041	0.0012	0.0053	0.0430	0.1026	1.0761	1.0982	1.8917
9	0.0239	0.0041	0.0006	0.0046	0.0379	0.0664	1.1714	1.1944	2.7832
10	0.0881	0.0016	0.0003	0.0020	0.0690	0.1590	1.0186	1.0225	1.8058
11	0.1014	0.0038	0.0007	0.0045	0.0531	0.1590	1.0372	1.0442	1.5678

TABLE 6.22 TOTAL SECTOR OUTPUT MULTIPLIERS SOUTH AUSTRALIA: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2506	0.1086	0.3592	1.2138	2.5730
2	1.0000	0.1676	0.0762	0.2438	1.3244	2.5682
3	1.0000	0.3163	0.1618	0.4781	0.7586	2.2368
4	1.0000	0.4660	0.2950	0.7610	0.9355	2.6965
5	1.0000	0.1133	0.0610	0.1743	0.8028	1.9771
6	1.0000	0.3934	0.2736	0.6670	0.9556	2.6226
7	1.0000	0.3097	0.1406	0.4502	0.7596	2.2098
8	1.0000	0.2132	0.1318	0.3450	1.0309	2.3759
9	1.0000	0.1779	0.0550	0.2330	0.8481	2.0810
10	1.0000	0.1433	0.0807	0.2240	1.4500	2.6740
11	1.0000	0.1584	0.0747	0.2332	1.1727	2.4059

TABLE 6.23 TOTAL SECTOR INCOME MULTIPLIERS SOUTH AUSTRALIA: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5283	0.1085	0.0371	0.1456	0.4506	1.1245	1.2053	1.2757	2.1286
2	0.6388	0.0706	0.0259	0.0965	0.4916	1.2269	1.1105	1.1511	1.9208
3	0.2718	0.0972	0.0522	0.1494	0.2816	0.7028	1.3578	1.5497	2.5860
4	0.2687	0.1524	0.0983	0.2506	0.3473	0.8666	1.5669	1.9326	3.2248
5	0.3879	0.0381	0.0197	0.0578	0.2980	0.7437	1.0982	1.1491	1.9174
6	0.3276	0.1129	0.0900	0.2029	0.3547	0.8853	1.3446	1.6194	2.7022
7	0.2695	0.1046	0.0476	0.1522	0.2820	0.7037	1.3881	1.5646	2.6107
8	0.4631	0.0660	0.0432	0.1092	0.3827	0.9550	1.1425	1.2359	2.0623
9	0.3834	0.0684	0.0190	0.0875	0.3148	0.7857	1.1785	1.2282	2.0493
10	0.7318	0.0465	0.0266	0.0732	0.5383	1.3433	1.0636	1.1000	1.8354
11	0.5722	0.0542	0.0247	0.0789	0.4353	1.0864	1.0947	1.1379	1.8988

TABLE 6.24 TOTAL SECTOR EMPLOYMENT MULTIPLIERS SOUTH AUSTRALIA: 11-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1166	0.0129	0.0045	0.0174	0.1145	0.2485	1.1104	1.1488	2.1307
2	0.0611	0.0081	0.0031	0.0112	0.1250	0.1973	1.1319	1.1832	3.2269
3	0.0217	0.0099	0.0061	0.0160	0.0716	0.1093	1.4561	1.7349	5.0296
4	0.0302	0.0186	0.0120	0.0306	0.0883	0.1491	1.6179	2.0152	4.9402
5	0.0490	0.0054	0.0024	0.0078	0.0757	0.1325	1.1099	1.1591	2.7058
6	0.0961	0.0127	0.0110	0.0237	0.0902	0.2100	1.1326	1.2470	2.1849
7	0.0584	0.0117	0.0058	0.0175	0.0717	0.1475	1.2004	1.2997	2.5280
8	0.0431	0.0089	0.0053	0.0142	0.0973	0.1546	1.2074	1.3294	3.5859
9	0.0313	0.0084	0.0023	0.0107	0.0800	0.1221	1.2683	1.3425	3.8970
10	0.0799	0.0058	0.0033	0.0090	0.1368	0.2257	1.0720	1.1127	2.8245
11	0.1034	0.0072	0.0030	0.0102	0.1107	0.2242	1.0693	1.0987	2.1689

for each sector.

Secondly, it is noticeable that the output multipliers relating to each sector in the state table are larger than those of the corresponding sectors in the regions. As outlined in Section 6.2, the state table incorporates all of the linkages of the regional tables. From another point of view, the regional multipliers for each sector should be seen as the disaggregation of the spatial incidence of the state multiplier effects.

Thirdly, some similarities occur in the rankings of multipliers across the regions. For instance the Manufacturing sector shows the highest output multiplier in those regions which have rural or mineral processing industries, an indication of the importance of these industries in the regional economies. In the Adelaide region the largest total output multiplier is that of the Mining sector (non-metalic minerals and mining services), with Public Administration and Defence in second place. On the other hand, the total output multiplier of the Manufacturing sector is large in virtually all regions. This draws attention to the importance of this sector as a leading component of all the regional economies.

Income Multipliers

Table 6.7 to 6.24 also provides the GRIT II income multipliers for the regions and state of South Australia. These are provided in three forms namely: (i) the initial impact or direct income effect, indicating the initial effect on household income of an increase in output of each sector. For instance an increase of one dollar in output of the Animal Industries sector in the Adelaide region would increase household income in that sector within the region by $0.0725; (ii) the production induced income effect, which is the first round and industrial support effects (excluding the initial impact) in response to an increase in sales of one dollar to final demand by each sector. For instance the production induced income effect of the Animal Industries sector in the Adelaide region would be \$0.0972 as a result of industrial support requirements. Finally (iii) the initial, production and consumption induced effect is listed; this figure is \$0.9344 for the example quoted.

The direct income effects indicate the labour intensity of each sector in each region. These show, as expected, a high degree of similarity between regions with slight variations reflecting the efficiency of labour use in particular sectors. There is, however, within each region a wide disparity in this coefficient between sectors, reflecting the differences in labour intensity. This ranges, for example, from \$0.2679 to \$0.7330 per dollar of output in the Trade and Public Administration and Defence sectors in the Adelaide Region. These differences have an important effect on the calculation of both direct and indirect, and total income multipliers.

The total income effect shows a consistency between regions in the upper and lower rankings. Those sectors with the highest direct coefficients, namely Public Administration and Defence, show variable but consistently the highest total income effects over all regions. This is further evidence of the contribution made by these sectors to the personal income of the South Australian regions. Each increase of one dollar in the value of output of the Public Administration sector destined for final demand in the Adelaide region, adds an additional \$1.1846 to regional household income; the same dollar increase in the same sector in the Central region would increase this income by only \$0.8904.

Type I and Type II Income Multipliers

As described above, income multipliers refer to changes in income per dollar initial change in output. Income multipliers are conventionally converted to a "per unit measurement" by the calculation of Type I and Type II multipliers as described in Chapter 2. These were also calculated for all regions (Tables 6.7 to 6.24).

The Type IA income multiplier illustrates, for the Adelaide region, that for each dollar of initial income effect, the total initial plus first round income effect in Sector 1 (as a result of increased output) will be \$1.135, for Sector 2, \$1.077 etc. When industrial support effects are included (Type IB), associated income effects for Sector 1 will be \$1.181 and when consumption induced effects are included (Type II) associated income will be \$1.740.

From Table 6.8: Type I and II Income Multipliers, Adelaide Region, 1976-77.

$$\text{Type IA} = \frac{I + F}{I} =$$

Sector 1	1.1350
2	1.0776
3	1.4281

$$\text{Type IB} = \frac{I + P}{I} =$$

Sector 1	1.1811
2	1.1038
3	1.6671

$$\text{Type II} = \frac{I + P + C}{I} =$$

Sector 1	1.7403
2	1.6265
3	2.4565

where:

I = Initial effect

F = First round effect

P = Production induced effect

C = Consumption induced effect.

Employment Multipliers

Tables 6.7 to 6.24 also present the GRIT II employment multipliers for the state and regions of South Australia. These also are provided in three forms, parallel to those described above for income multipliers. In general terms, if the wage rate between sectors is constant, employment multipliers would be expected to reflect income multipliers in terms of ranking between sectors and between regions. The extent to which the income multipliers and employment multipliers vary in ranking highlights difference in personal income levels between sectors. For example, while the Trade sector showed the lowest requirements for the direct income component in Table 6.8, its direct requirement in terms of employment (Table 6.9) is relatively high. On the other hand the mining sectors show low labour usage in terms of employment, but higher contributions to household income, reflecting higher levels of wages and salaries in this sector.

The column of initial employment effects show variations both between regions for the same sector and between sectors in the same region. The former is an indication of the differences in technology which exist between regions in the same sector. For example, in the Animal Industries sector which varies considerably in enterprise mix throughout the state, in the South-Eastern Region requires 0.1310 units of labour per unit[2] of output - the same sector in the Adelaide region requires only 0.1145 employees to produce the same level of output. These differences in technology, both between sectors and between regions produce several changes in the rankings of total employment multipliers when compared overall of the regions of the state. These sectors, namely the Animal Industries, Community Services, and Public Administration and Defence sectors show the highest-ranked employment multipliers, but the ranking of these three sectors changes between regions. For instance the Animal Industries sector shows the highest total employment multiplier in the Central, Eastern and South-Eastern regions, but is replaced in the first rank by the Other agriculture sector in the Adelaide region, and the Building and Construction sector in the Northern region.

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2. I.e. per thousand dollars of output.

General Comment on Regional Multipliers

The multipliers assembled in Tables 6.7 to 6.24 provide a wealth of information relating to the response which can be expected within the regions and state of South Australia to a change in economic circumstances. Several important points need to be established at this stage. First, although the uniform tables presented in this chapter enable comparisons of multipliers between regions without difficulty, it should be remembered that the industry content of some sectors will vary substantially between regions in a state like South Australia which encompasses several climatic and physical zones. This is so particularly with respect to the rural industries which vary from vineyards to dairying to sheep, with different combinations and technologies between regions. This variation is accompanied by variations in the Manufacturing sector, which is dominated in various regions by wine production, mineral production, or the production of dairy products, or simply by highly-developed industrial complexes. Although the industry content of other sectors, for example the Trade, Public Administration and Finance sectors could be expected to be reasonably constant between regions, it may be necessary to consult the non-uniform tables and multipliers to obtain a sufficient understanding of the response of a particular region to a change in economic circumstances. The analysis of this response should be interpreted in the knowledge of the nature of the industries which comprise the regional economy.

Second, the multipliers offer significant advantages and improvements in the regional planning process or in the formation of regional policy. They provide an opportunity to isolate those sectors which will contribute the highest additional output income and employment in each region and thereby indicate those sectors which might receive special attention if regional economic growth is to be encouraged.

They provide also a basis of estimating the likely decrease in economic activity associated with the closure or contraction of an industry.

Comparisons of sector multipliers between regions provide measures of the response which can be expected in each region to the establishment of a new industry or the expansion of any sector, and thereby provide guidance to location policy. For instance, if it was desired to locate an industry to maximise the increase in regional output resulting from the establishment of that industry, the regions showing the highest relevant output multipliers would be considered as the appropriate location.

Third, although the tables of multipliers offer a convenient method of selecting regional economic growth strategies, it should be remembered that the multipliers are relevant only in the context of the transactions table from which they are derived and should be interpreted in this light. It often transpires, for example, that the ranking of multipliers suggests that one or two sectors offer the most promising avenues of regional expansion, but that the linkages shown in the transactions tables suggest that expansion of these sectors is not feasible. The Manufacturing sector in many South Australian regions illustrates this point; it shows consistently high output multipliers throughout the regions and appears as a promising sector for expansion of regional output levels. This sector is dominated in many regions by rural processing factories. The transactions tables indicate strong linkages between the Manufacturing sector and the rural industries, suggesting that the output of this sector cannot be increased without concurrent increases in rural production.

Fourth, it is an advantage to consider all of the multipliers for a region in determining regional development strategies, and to consider these multipliers in terms of criteria for regional development.

It is possible that the multipliers can indicate different directions of development according to the development criteria, i.e. that sectors with the highest output multipliers are not necessarily those which would contribute the highest additional employment or income. Also by considering separately the magnitudes of the initial and production induced effects, and the consumption induced effects it is possible to determine whether the expansion of any sector in a region will confer advantages on the local sectors primarily through increased demand for industrial support requirements or through increased household expenditures.

6.4 Summary

This chapter, with accompanying appendices, has provided the empirical results of the GRIT II system for the state and the regions of South Australia. The large volume of results has allowed only a highly selective discussion of the input-output tables and multipliers. This discussion has been cast only in explanatory terms; the potential contribution in understanding the structure and spatial response pattern of the South Australian economy is enormous, but has not been considered in this report.

APPENDIX I

NATIONAL INPUT-OUTPUT CLASSIFICATION IN TERMS OF ASIC

1968-69

00	Agriculture, Forestry and Fishing		
	01.01	Sheep	0111, 0113 (part)
	01.02	Cereal grains	0112, 0113 (part)
	01.03	Meat cattle	0121
	01.04	Milk cattle and pigs	0122, 0123
	01.05	Poultry	013
	01.06	Other farming	014, 015, 016, 017
	02.00	Services to agriculture	020
	03.00	Forestry and logging	030
	04.00	Fishing, trapping and hunting	041, 042
10	Mining		
	11.01	Iron	1104
	11.02	Other metallic minerals	110 (excl. 1104)
	12.00	Coal and crude petroleum	120, 130
	14.00	Non-metallic n.e.c.	140, 150
	16.00	Services to mining	160
21-22	Food, Tobacco		
	21.01	Meat products	211
	21.02	Milk products	212
	21.03	Fruit and vegetable products	213
	21.04	Margarine, oils and fats	214
	21.05	Flour mill and cereal food products	215
	21.06	Bread, cakes, and biscuits	216
	21.07	Confectionery and cocoa products	2181
	21.08	Food products n.e.c. (including fish and sugar)	2182, 2183, 2184, 217
	21.09	Soft drinks, cordials and syrups	2191
	21.10	Beer and malt	2192, 2193
	21.11	Alcholic beverages n.e.c.	2194, 2195
	22.01	Tobacco products	2210
23-24	Textile and Clothing		
	23.01	Prepared fibres (cotton ginning, wool scouring, top-making)	2311 to 2313
	23.02	Man-made fibres, yarns and fabrics	2314, 2315
	23.03	Cotton, silk and flax yarns, fabrics and household textiles	2316, 2319, 2322
	23.04	Wool and worsted yarns and fabrics	2317, 2318
	23.05	Textile finishing	2321
	23.06	Textile floor covering, felt and felt products	2331,2332
	23.07	Textile products n.e.c. (incl. canvas, rope, etc.)	2333-2335
	24.01	Knitting mills	241
	24.02	Clothing	242
	24.03	Footwear	243

25	**Wood**		
	25.01	Sawmill products	2511, 2512, 2515
	25.02	Plywood, veneers and manufactured boards	2513
	25.03	Joinery and wood products n.e.c.	2514, 2516
	25.04	Furniture, mattresses, brooms and brushes	252, 3443
26	**Paper**		
	26.01	Pulp, paper and paperboard	2611
	26.02	Fibreboard and paper containers	2612-2614
	26.03	Paper products n.e.c.	2615
	26.04	Newspapers and books	2621
	26.05	Commercial and job printing and printing trade services	2622, 2623
27	**Chemicals**		
	27.01	Chemical fertilisers	2711
	27.02	Industrial chemicals n.e.c. (plastic materials, synthetic resins, industrial gases, synthetic rubber, other basic chemicals)	2712-2715
	27.03	Paints, varnishes and lacquers	2722
	27.04	Pharmaceutical and veterinary products, agricultural chemicals	2723, 2724
	27.05	Soap and other detergents	2725
	27.06	Cosmetic and toilet preparations	2726
	27.07	Chemical products n.e.c. (incl. ammunition, explosives and fireworks)	2721, 2727, 2728
	27.08	Petroleum and coal products	273, 274
28	Non-metallic Mineral Products		
	28.01	Glass and glass products	281
	28.02	Clay products	282
	28.03	Cement	2831
	28.04	Ready-mixed concrete	2832
	28.05	Concrete products	2833, 2834, 2835
	28.06	Gypsum, plaster and other non-metallic mineral products	2841-2843
29,31	**Metals, Metal Products**		
	29.01	Basic iron and steel	291
	29.02	Non-ferrous metal basic products	292-295
	31.01	Fabricated structural metal products	311
	31.02	Metal containers, sheet metal products	312
	31.03	Cutlery and hand tools, metal coating and finishing and metal products n.e.c.	313

32 Transport Equipment

32.01	Motor vehicles and parts and transport equipment n.e.c.	321, 3225
32.02	Ship and boat building and repair	3221, 3222
32.03	Locomotives, rolling stock and repair	3223
32.04	Aircraft building and repair	3224

33 Machinery and Household Appliances

33.01	Photographic, scientific equipment etc.	331
33.02	Television sets, radios, communication and electronic equipment n.e.c.	3321
33.03	Household appliances n.e.c.	3322, 3323
33.04	Electrical machinery and equipment n.e.c.	3324-3326
33.05	Agricultural machinery and equipment	3331
33.06	Construction, earthmoving and materials handling machinery and equipment	3332, 3333
33.07	Other machinery and equipment	3334-3339

34 Leather, Rubber and Plastic Products

34.01	Leather tanning, leather and leather substitute products n.e.c.	341
34.02	Rubber products	342
34.03	Plastic and related products	343
34.04	Signs, advertising displays, writing and marking equipment	3444, 3446
34.05	Ophthalmic articles, jewellery, silverware and other manufacturing	3441, 3442, 3445, 3447

36,37 Electricity, Gas and Water

36.01	Electricity generation and distribution	361
36.02	Gas production and distribution	362
37.01	Water, sewerage and drainage	370

41,42 Building and Construction

41.01	Residential buildings	411 (part), 42 (part).
41.02	Other building and construction	411 (part), 412, 42 (part)

45-46 Trade, Transport, Storage and Communication

46.01	Wholesale trade	46-47 (excl.repairs)
48.01	Retail trade	48 (excl.repairs)
48.02	Motor vehicle repairs	Re-definitions
48.03	Other repairs	Re-definitions
51.01	Road transport	51
52.01	Railway transport, other transport and storage	52, 55
53.01	Water transport	53
54.01	Air transport	54
55.01	Communication	56

61-63 <u>Finance etc.</u>

61.01	Banking	611
61.02	Finance and life insurance	612, 621
61.03	Other insurance	622
61.04	Investment, real estate and leasing	613, 631, 632 (part), 636
61.05	Technical and other business services	633-635
61.06	Ownership of dwellings	632 (part) and imputed rent

71-94 <u>Public Administration, Community Services, Entertainment etc.</u>

71.01	Public administration	71, 8451-3
72.01	Defence	72
81.01	Health	81
82.01	Education, libraries, etc.	82
83.01	Welfare services, religious and community organisations	83, 841 (part), 842, 843, 844, 8454
91.01	Entertainment and recreational services	91
92.01	Restaurants, hotels and clubs	921, 922
93.01	Personal services	93, 94

99 <u>Business Expenses</u>

99.01	Business expenses	Dummy industry, No ASIC equivalent

APPENDIX II

Sector Classification

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included	
1. Animal industries	1. Animal industries	1. Animal industries	01.01	Sheep
			01.03	Meat cattle
			01.04	Milk cattle and pigs
2. Other primary industries	2A. Other agriculture	2A. Other agriculture	01.02	Cereal grains
			01.05	Poultry
			01.06	Other farming
			02.00	Services to agriculture
	2B. Forestry, fishing	2B. Forestry, fishing	03.00	Forestry and logging
			04.00	Fishing, trapping and hunting
3. Mining	3A. Coal and crude petroleum mining	3A. Coal and crude petroleum mining	12.00	Coal and crude petroleum mining
	3B. Other mining	3B. Other mining	11.01	Iron
			11.02	Other metallic minerals
			14.00	Non-metallic n.e.c.
			16.00	Services to mining
4. Manufacturing	4A. Food manufacturing	4A1. Meat and milk products	21.01	Meat products
			21.02	Milk products
		4A2. Fruit and vegetable products, oils and fats	21.03	Fruit and vegetable products
			21.04	Margarines, oils and fats
		4A3. Flour, cereals, bread	21.05	Flour mill and cereal food products
			21.06	Bread, cakes and biscuits
		4A4. Confectionery and other food n.e.c.	21.07	Confectionery and cocoa products
			21.08	Food products n.e.c. (including fish and sugar)

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included	
		4A5. Beverages and tobacco	21.09	Soft drinks, cordials and syrups
			21.10	Beer and malt
			21.11	Alcoholic beverages n.e.c.
			22.01	Tobacco products
	4B. Wood and paper manufacturing	4B1. Sawmills, plywoods	25.01	Sawmill products
			25.02	Plywood, veneers and manufactured boards
		4B2. Joinery, furniture	25.03	Joinery and wood products n.e.c.
			25.04	Furniture, mattresses, brooms and brushes
		4B3. Paper products	26.01	Pulp, paper and paper-board
			26.02	Fibreboard and paper containers
			26.03	Paper products n.e.c.
		4B4. Newspapers, printing	26.04	Newspapers and books
			26.05	Commercial and job printing and printing trade services
	4C. Machinery, appliances, equipment	4C1. Household appliances, machinery and equipment	33.01	Photographic, scientific equipment etc.
			33.02	Television sets, radios, communication and electronic equipment n.e.c.
			33.03	Household appliances n.e.c
			33.04	Electrical machinery and equipment n.e.c.
			33.05	Agricultural machinery and equipment
			33.06	Construction, earthmoving and materials handling machinery and equipment
			33.07	Other machinery and

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included	
		4C2. Motor vehicles, ships, locomotives and aircraft	32.01	Motor vehicles and parts and transport equipment n.e.c.
			32.02	Ship and boat building and repair
			32.03	Locomotives, rolling stock and repair
			32.04	Aircraft building and repair
	4D. Metals, metal products	4D1. Basic iron and steel	29.01	Basic iron and steel
		4D2. Non-ferrous metal basic products	29.02	Non-ferrous metal basic products
		4D3. Fabricated and other metal products	31.01	Fabricated structural metal products
			31.02	Metal containers, sheet metal products
			31.03	Cutlery and hand tools, metal coating and finishing and metal products n.e.c.
	4E. Non-metallic mineral products	4E. Non-metallic mineral products	28.01	Glass and glass products
			28.02	Clay products
			28.03	Cement
			28.04	Ready-mixed concrete
			28.05	Concrete products
			28.06	Gypsum, plaster and other non-metallic mineral products
	4F. Other manufacturing	4F1. Chemicals, petroleum products	27.01	Chemical fertilisers
			27.02	Industrial chemicals n.e.c. (plastic materials, synthetic resins, industrial gases, synthetic rubber, other basic chemicals)
			27.03	Paints, varnishes and lacquers
			27.04	Pharmaceutical and veterinary products, agricultural chemicals

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included
			27.05 Soap and other detergents
			27.06 Cosmetic and toilet preparations
			27.07 Chemical products n.e.c. (incl. ammunition, explosives and fireworks)
			27.08 Petroleum and coal products
		4F2. Textiles	23.01 Prepared fibres (cotton ginning, wool scouring, top-making)
			23.02 Man-made fibres, yarns and fabrics
			23.03 Cotton, silk and flax yarns, fabrics and household textiles
			23.04 Wool and worsted yarns and fabrics
			23.05 Textile finishing
			23.06 Textile floor covering, felt and felt products
			23.07 Textile products n.e.c. (incl. canvas, rope,etc)
		4F3. Knitting mills, clothing, footwear	24.01 Knitting mills
			24.02 Clothing
			24.03 Footwear
		4F4. Leather, rubber and plastic products	34.01 Leather tanning, leather and leather substitute products n.e.c.
			34.02 Rubber products
			34.03 Plastic and related products
		4F5. Other manufacturing	34.04 Signs, advertising displays, writing and marking equipment
			34.05 Ophthalmic articles, jewellery, silverware and other manufacturing

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included
5. Electricity, gas, and water	5. Electricity, gas and water	5A1. Electricity	36.01 Electricity generation and distribution
		5A2. Gas	36.02 Gas production and distribution
		5A3. Water, sewerage	27.01 Water, sewerage and drainage
6. Building and construction	6. Building and construction	6. Building and construction	41.01 Residential buildings
			41.02 Other building and construction
7. Trade	7. Trade	7. Trade	46.01 Wholesale trade
			48.01 Retail trade
			48.02 Motor vehicle repairs
			48.03 Other repairs
8. Transport and communication	8. Transport and communication	8A1. Transport	51.01 Road transport
			52.01 Railway transport, other transport and storage
			53.01 Water transport
			54.01 Air transport
		8A2. Communication	55.01 Communication
9. Finance	9. Finance	9A1. Finance	61.01 Banking
			61.02 Finance and life insurance
			61.03 Other insurance
			61.04 Investment, real estate and leasing
			61.05 Technical and other business services
			61.06 Ownership of dwellings
10. Public administration and defence	10. Public administration and defence	10. Public administration and defence	71.01 Public administration
			72.01 Defence
11. Community services, entertainment	11A. Community services	11A. Community services	81.01 Health
			82.01 Education, libraries, etc.
			83.01 Welfare services, religious and community organisations

Rural Regions	Provincial Regions	Metropolitan Region & State	National Sectors Included
	11B. Entertainment etc.	11B. Entertainment etc.	91.01 Entertainment and recreational services
			92.01 Restaurants, hotels and clubs
			93.01 Personal services

APPENDIX III

TECHNICAL APPENDIX

Australian Input-Output Table

After consultations with the Australian Bureau of Statistics (ABS) Input-Output Section, the latest national table that could be made available was the 1974-75 preliminary 109 sector absorption matrix. Input is by industry and final demand category and output by commodity group, with transactions measured in basic values, indirect allocation of competing imports, and recording intra-industry flows.

This provided the study team with a dilemma. The methodology required the national table to be in the form of industry by industry, in basic values, and with direct allocation of imports. Several alternatives presented themselves, none of which the study team were over enthusiastic about:

(i) The 1968-69 national input-output table could be used. This was the least appropriate alternative.

(ii) The 1968-69 national table could be updated to the 1974-75 output figures by applying an RAS based technique. Although this is part of the procedure used by the ABS in their updates, it was not considered appropriate in this case as the research team lacked substantial superior data to account for the many structural shifts in the economy during the period 1968-69 to 1974-75.

(iii) The 1974-75 preliminary table could be modified to convert it to an industry by industry and direct allocation of imports basis.

Although the study team expresses reservations about the suitability of any of the above options, it was eventually decided to opt for the modification of the 1974-75 table. The conversion to industry by industry format was accomplished by the use of superior data and estimates where available, using the breakdown of the difference betwen total commodity supply and industry supply supplied with the preliminary table, and the make matrix of the 1968-69 table where it appeared appropriate. To reconcile any remaining differences, an RAS procedure was applied to the altered table, but this produced some unacceptable changes in many coefficients that were considered accurate. As the remaining differences between total outputs and inputs were minimal (all less than one percent), the RAS procedure was dropped.

The next step was to convert the table to direct allocation of competing imports.[1] Imports are said to be directly allocated when recorded in the table as an import to the sector which uses them, and indirectly allocated when recorded as an import to the sector producing similar commodities, i.e. that sector which would have produced the commodities if local production occurred.

When competing imports are indirectly allocated they are usually explicitly assigned in the table as an addition to the output of the sector indirectly importing them; when allocated directly they are incorporated as a direct cost to the sector consuming the commodity. Each intermediate cell of the transactions table includes both locally produced and competitively imported commodities with indirect allocation, and only the former with direct allocation. Thus with indirect allocation, competing imports are counted twice, both explicitly as an import by the 'indirect' sector and implicitly in the value of the commodities distributed from that sector, whereas with direct allocation they are counted only once. It also follows that with indirect allocation sector output totals for each sector are explicitly inclusive of competitive imports, for distribution to

1. See Jensen, R.C., 'Some Accounting Procedures and their Effects on Input-Output Multipliers', Annals of Regional Science, forthcoming.

other sectors, but also inclusive of competing imports for use by that sector.

It is necessary, therefore, to identify within each cell that component representing competing imports indirectly allocated through sector i, i.e.

$$X'_{ij} = X_{ij} + m_{ij}$$

where X'_{ij} = transactions with indirect allocation of competing imports,

X_{ij} = transactions with direct allocation of competing imports, and

m_{ij} = competing imports indirectly allocated through sector i.

If $M_i = \sum_j m_{ij}$ is the total competing imports allocated through sector i, then M_i must be disaggregated into its components m_{ij} across row i. This was performed on a proportional basis to the elements of row i. Within each column these were summed to produce $M'_i = \sum_i m_{ij}$ which replaced the appropriate M_i entry in the competitive imports row. The calculated m_{ij}'s were subtracted from the transactions with indirect allocation to provide an estimate of transactions with direct allocation. New output totals were then obtained by column addition of the X_{ij}'s.

With respect to the national table used, one additional point needs to be mentioned. The resultant 1974-75 table is a gross table in that intrasectoral transactions are recorded, whereas the national table used in the original GRIT system was a net table. The resultant regional tables are therefore fully gross tables, rather than hybrid gross/net tables.

Superior Data Collection

A major characteristic of the GRIT procedure is the utilization of superior data where this is considered appropriate. Subject to the format of the available data, superior information can be inserted into the system in four stages:

(i) disaggregated superior data - where data is available at the disaggregated 109 sector regional level.

(ii) disaggregated/aggregated data - where data is available in a form disaggregated by column and aggregated by rows.

(iii) aggregated superior data - where data is available at the non-uniform aggregation level.

(iv) transactions superior data - where data is available in transactions form at the various levels of aggregation.

The study team utilized all four stages of superior data insertion.

Superior data was obtained from various sources. Extensive consultations occurred between the study team and the various ABS departments, both at the state and national levels. All available standard and non-standard publications were perused, and some detailed information was obtained in the areas of agriculture, manufacturing, retail, mining, and building and construction. The major input at the disaggregated level were wages and salaries, and where possible these were verified from several sources e.g. payroll tax data.

The study team also consulted with various state government departments, in order to isolate those industries which are peculiar to the region. This resulted in the drawing up of a list of industries which were considered not to conform to the national 'average', and consequently the active seeking out of information about these industries. Major firms in these various industry groups were surveyed directly in order to obtain representative cost coefficients. The areas surveyed included the motor vehicle industry, clothing industry, agriculture machinery, white goods industry (washing machines, refrigerators, etc.), and paper and timber industries. The data thus obtained was utilized at both the disaggregated/aggregated and aggregated stages of the GRIT procedure. A copy of the questionnaire appears at the end of this appendix. Where possible initial contact was made with the firms on a personal basis to explain exactly what information was required.

At the transactions stage of the procedure, various superior data sources were utilized. Household consumption expenditure for the state was obtained from the ABS household expenditure survey 1975-76, and reduced to the sub-state regional level by the use of location quotients. Export data was obtained with the help of interstate trade statistics supplied by the ABS. In this study other final demand was obtained as a residual.

Other superior transactions data was inserted in the light of additional information obtained after the preliminary and revised preliminary tables were circulated. Members of the various state government departments and the ABS were asked to critically evaluate the preliminary tables. Anomalies discovered in the course of this evaluation occurred primarily in the agricultural sectors and sales to final demand in the state table, and the basic non-ferrous metal products sector in the Northern region, where it was found that the influence of mining in the Broken Hill area was distorting the corresponding South Australian regional sector.

1. Name of firm ____________________

Location of activity in S.A. ____________________

Business address ____________________

2. Number of persons employed ____________________

3. Total value of output ex factory ____________________

4. Year for which information is supplied (preferably 1976/77) ____________________

5. PERCENTAGE (%) BREAKDOWN OF TOTAL EXPENDITURE

TOTAL OF COLUMNS A + B = 100%

	OPERATING COSTS (OUGOINGS) A % Spent in S.A.	B % Spent Outside S.A.
(1) Manufactured food, drink, tobacco		
(2) Manufactured wood and paper products		
(3) Machinery equipment appliances (incl. vehicle parts)		
(4) Other metal products		
(5) Other manufactured products, e.g. cement, paint, etc.		

OPERATING COSTS (ONGOINGS)

	A % Spent in S.A.	B % Spent outside S.A.
(6) Fuels, oils		
(7) Electricity (only if purchased from electricity authority)		
(8) Building - construction		
(9) Motor vehicle repairs		
(10) Payments to transport operators freight and personnel travel		
(11) Communications (telephone, postage, etc.)		
(12) Finance: Bank and insurance charges and business services		
(13) Payments to Governments for services, e.g. water, sewerage, rates, etc. (excluding taxes)		
(14) Community services, entertainment, accommodation expenses, etc.		
(15) Wages, salaries		

OPERATING COSTS (ONGOINGS)

	A % Spent in S.A.	B % Spent outside S.A.
(16) Gross operating surplus (including interest, dividends, depreciation and profits, etc.) (17) Other (please specify)	A	B
TOTAL		

A + B = 100%

APPENDIX IV

SOME REFLECTIONS ON INPUT-OUTPUT MULTIPLIERS

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ABSTRACT

It is possible to identify some important inconsistencies in the definition of the components of input-output multipliers derived in the conventional manner. This paper identifies these inconsistencies which occur in output, income and employment multipliers, with the result that valid comparison of direct and indirect effects between multipliers is not possible. A suggested re-definition of input-output multipliers, considered to be free of these inconsistencies, is provided and illustrated.

This note is concerned with the interpretation of input-output multipliers. Over many years and many empirical applications of input-output analysis, methods of calculating multipliers have been derived and some have been accepted as 'conventional'. They are conventional in that they are taken for granted by most analysts, and within certain limits are accorded the status of both theoretical and empirical legitimacy. Our concern is not with the multiplier concepts, nor with the general methods of multiplier derivation, but rather with the specific meaning of some of the components of the multipliers and some apparent inconsistencies in interpretation. This note briefly reviews the methods of calculation of the conventional input-output multipliers in Part 1; Part 2 illustrates the inconsistencies in interpretation in the components of these multipliers. Part 3 suggests a multiplier format which we believe to be free of these inconsistencies and simpler to interpret.

1. THE CONVENTIONAL MULTIPLIERS

It is possible from a study of the input-output literature (particularly at the regional level) to recognise a conventional concensus calculation format and terminology.[1] This conventional format is described below in algebraic terms is illustrated using a 3 x 3 simplified table of the Queensland economy (Table 1), and its attendant A matrix, defined by heavy lines in Table 2.

Output Multipliers

The multiplier logic is usually cast in terms of response to the stimulus of a dollar increase in output or sales of each sector. Because of the linearity conditions, the arguments apply equally to each dollar of output or a dollar increase or decrease in output. For simplicity

1. This is described, for example in the two 'classics' of Chenery and Clark [1] and Miernyk [2] and many other publications.

we follow the convention of assuming an increase in output, and refer as an example to Sector 1. The initial stimulus of a dollar increase in output of Sector 1 calls for first round increases in output of a_{11} (\$0.071) from Sector 1 (in addition to the dollar stimulus), of a_{21} (\$0.133) from Sector 2 and so on. These a_{i1} are the separate industry or disaggregated first round intersectoral effects. The total first round effect from Sector 1 (conventionally termed the direct effect), following the dollar stimulus to Sector 1 is $\sum_i a_{i1}$, (or \$0.327). We should note that the first round effects exclude the initial dollar stimulus.

Now proceed from the A matrix to the general solution $B = (I-A)^{-1}$. Each element b_{ij} of B is a multiplier and indicates the direct and indirect requirement of sector i per dollar (increase) in sales by sector j to final demand. For example, the direct and indirect requirements from Sector 1 (Table 3) per dollar (increase) of sales to final demand by Sector 1 is \$1.116, from Sector 2 is \$0.205 and so on, giving a direct and indirect output multiplier of $\sum_i b_{i1}$ of 1.509. Note that this includes the initial dollar stimulus. The same reasoning applies to the direct, indirect and induced output effects taken from the augmented inverse $B^* = (I-A^*)^{-1}$ (Table 5), obtained after closing A with respect to households to obtain A* (Table 4). The total direct, indirect and induced output multipliers, obtained in this three-sector case as $\sum_{i=1}^{3} b^*_{ij}$ are respectively 1.999, 2.625, and 2.395. Note that these multipliers also include the original dollar stimulus. The sector output multipliers are shown in the conventional format in Table 6; the sectoral incidence of the output effects of Sector 1 are shown through disaggregated output multipliers for Sector 7, in Table 7.

Income Multipliers

Input-output income multipliers are calculated from output multipliers i.e. income increases in a sector are assumed to be linearly dependent on output. Income, usually defined as household (HH) income is represented via the HH coefficients, in the HH row of Table 4. These coefficients are termed the direct income change associated with an increase of sales of one dollar to final demand by each sector i.e. $0.105 in the case of Sector 1. The direct and indirect (DI) income effects are calculated by multiplying the elements of each column of the B matrix by the corresponding HH coefficient e.g. for Sector 1 the calculation is given in Table 8. The $b_{ij}\ h_i$ provide the disaggregated income effects, and the $\sum_i b_{ij}\ h_i$, or sum of these, provides the direct and indirect income multiplier, which is parallel in interpretation to the direct and indirect output multiplier from which it is obtained.

The direct, indirect and induced (DII) income multiplier is taken in total from the HH row of the augmented inverse (Table 5) or calculated in a disaggregated form for Sector 1 in Table 9. The $b_{ij}^*\ h_i$ are parallel in interpretation to the output elements of the B* matrix. It is a feature of the input-output matrices that they sum to equal the corresponding entry in the HH row of the B* matrix.

The sector income multipliers for this example are summarised in conventional form in Table 10. The format is similar to that of the output multipliers in Table 6, except that Type I and II multipliers are added. The sectoral incidence of income effects of Sector 1 are illustrated in Table 11; note that the direct income effects are restricted to that sector which incurred the initial increase of sales of one dollar to final demand.

2. MULTIPLIER INCONSISTENCY

Inconsistencies in Output Multipliers

It would be conventional for the output multipliers in the Queensland example to be published in the form similar to that shown in Table 6. The total direct effects (Column 1) and the direct and indirect effects (Column 4) do not have consistent definitions; the former excludes the original dollar stimulus, the latter includes it. The difference, which is conventionally termed the indirect effect (Column 2) therefore includes the actual indirect or industrial support effects, plus the original dollar stimulus. The induced effect obtained from columns (4) and (5), excludes the dollar stimulus since both of these columns contain the stimulus and it is netted out in subtraction. Clearly, to be consistent all three effects should exclude the initial dollar effect.

When considering disaggregated output effects so that the sectoral incidence of the stimulus of the jth sector can be identified, the above inconsistency is true only for the jth sector. For instance, the sectoral incidence of the output stimulus to sector 1 is given in Table 7, where the original dollar stimulus is included in the first row of Column (2). For all other sectors the direct, and direct and indirect effects are consistently defined.

Inconsistencies in Income Multipliers

As mentioned earlier, income multipliers are effectively calculated from output multipliers by multiplication of the disaggregated output multipliers by HH coefficients. There is however a major inconsistency in the terminology used in output and income multipliers. This inconsistency lies in the use of the term 'direct'. In the common usage of output multipliers the term 'direct' refers to the direct or technical coefficients which represent the first round effect on all sectors in the table, in response to an initial stimulus of one dollar increase in final demand. With income multipliers the term 'direct' is confined to the HH income increase in own sector which accompanies the initial stimulus of one dollar increase in sales. For the direct income effect to be defined consistently with the use of the term in output multipliers, it would need to represent the HH income increases in all sectors, associated with the first round output effect, to be obtained by multiplying first round output effects (a_{ij}) by the corresponding HH coefficients (h_i). This is shown in Table 13 for Sector 1; note that these exclude the initial income effect. This means in effect that although the parallel usage of terms has developed, the inconsistent definition of these terms has become common practice. In effect while columns (1), of Tables 6 and 10 are similarly named, they have quite different meanings. Similarly, columns (1) of Tables 7 and 11 are not symmetrical; the single entry in column (1) of Table 11 represents the own-sector income effect.

The inconsistency is compounded when we consider the direct and indirect income effects shown in column (4) of Tables 10 and 11. These are conventionally obtained, as shown in Table 8, by multiplying the elements of each column of matrix B by the appropriate HH coefficients. The total direct and indirect (DI) income effect from a dollar increase in sales by Sector 1 is $\Sigma\, b_{i1} \cdot h_i$ (0.243), which now includes the initial effect (0.105) since the unity is retained on the main diagonal of the B matrix during the calculation of DI effects. The subtraction of the conventional direct income effect (own sector) from the conventional DI income effect (which includes the own-sector, first-round and subsequent round effects), provides an indirect effect (in column (2) of Tables 10 and 11) which is actually similar in content to the direct and indirect effect in output multipliers, by including both first round and subsequent-round effects. Consistency in DI output and income multipliers could be obtained only by deleting the unity from the diagonal of B matrix before calculating the DI effects.

The calculation of DII income multipliers, shown in Table 9, and the subsequent calculation of induced effects by subtracting DI from DII multipliers produces no inconsistencies in definition of induced effects between output and income multipliers, provided both are calculated on the same basis, i.e. with the presence or absence of the unity on the main diagonal.

Employment Multipliers

Conventional methods for the calculation of employment multipliers are parallel to those for the calculation of income multipliers. Clearly, the inconsistencies noted in the interpretation of income multipliers will extend also to employment multipliers.

3. A CONSISTENT PRESENTATION OF INPUT-OUTPUT MULTIPLIERS

This section provides a re-definition of input-output multipliers, one which is consistent from output to income multipliers, and which retains essence of the conventional multipliers. The discussion below avoids use of the terms "direct" and "indirect" because of the confusion of meaning attached to these terms as evident in Section 2 above.

A multiplier is essentially a measurement of response to an economic stimulus. In the case of input-output multipliers the stimulus is normally assumed to be an increase of one dollar in sales to final demand by a sector, and we are interested in the major categories of response in terms of output and income increases. These major categories of effect/response are listed below and illustrated in Table 12. They are:

(i) The Initial Effect. This refers to the assumed dollar increase in sales; it is the stimulus. It is the unity base for the output multiplier and provides the identity matrix of the Leontief matrix. Associated directly with this dollar increase in output is an own-sector increase in HH income in wages, salaries etc. used in the production of that dollar of output. This is the household coefficient h_i ($0.105 for Sector 1).

(ii) The First-Round Effect. This refers to the effect of the first round of purchases by the sector providing the additional dollar of output. Clearly, in the case of the output multiplier this will be a_{ij} as the individual sectoral effect, and the column sum of the elements of the A matrix, i.e. $\sum_i a_{ij}$ as the total first round effects of a dollar increase in sales to final demand by sector i. In the case of the income multipliers this will be the HH income increases occasioned by the first round requirements, i.e. $a_{ij}\ h_i$ for any individual sectoral effect, or $\sum_i a_{ij}\ h_i$ for the total effect of sector i. (Table 13)

(iii) Industrial Support Effect. This term is applied here to 'second and subsequent round' effects as successive waves of necessary output increases occur in the economy following the first-round impacts. The term specifically excludes household consumption induced effects; it is calculated from the open inverse B, as a measure of industrial support requirements associated with a given set of first-round effects. The industrial support output requirements must be calculated as the elements of the columns of the B matrix, less the initial dollar stimulus and the first-round requirements, i.e. $\sum_i b_{ij} - 1 - \sum_i a_{ij}$. The income effects for each sector will be defined consistently with this, i.e. $\sum_i b_{ij}\ h_i - h_i - \sum_i a_{ij}\ h_i$. The first round and industrial support can together be described as the production induced effect to distinguish them from the consumption induced effect.

(iv) The Consumption Induced Effect. As mentioned in Section 2, no inconsistencies in the definition of the induced effect in output and income multipliers were apparent. The induced effect here is therefore defined in the conventional way, namely as that induced by increased income associated with increased output. This is recorded as the difference between the columns of the open inverse B and the closed inverse B*, i.e. as $\sum_i b^*_{ij} - \sum_i b_{ij}$ for output effects and $\sum_i b^*_{ij} h_i - \sum_i b_{ij} h_i$ for income effects.

These effect categories avoid inconsistencies between multipliers by defining the income effects symmetrically with output effects.[2] Revised output multipliers for the Queensland example are shown in Tables 14 and 15, and revised income multipliers of consistent definition in Tables 16 and 17. These multipliers indicate for example that a dollar increase in sales of Sector 1 to final demand results in:

(i) an initial income increase to the workers/staff/owners in Sector 1 of $0.105.

(ii) a first-round output effect on all sectors of $0.327 ($0.071 in Sector 1, $0.133 in Sector 2, and $0.123 in Sector 3), accompanied by a first round income increases of $0.089, being $0.007, $0.031, and $0.051 in each sector.

(iii) industrial support output effect of $0.182 (being $0.045, $0.072 and $0.065 in the three sectors), which in turn is accompanied by an income increase of $0.049, (being $0.005, $0.017 and $0.027 respectively).

(iv) consumption induced output effect of $0.490 ($0.049, $0.173 and $0.268 respectively in the sectors) and an accompanying consumption-induced income increase of $0.156, being in each sector $0.005, $0.040, and $0.110 respectively.

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2. Table 12 provides opportunity for a useful summary of the inconsistencies noted in Section 2. In terms of the nomenclature of Table 12, the conventional system defines the effect as:

	Output Multipliers	Income Multipliers
Direct	(ii)	(i)
Indirect	(i)&(iii)	(ii)&(iii)
Induced	(iv)	(iv)

Type I and II Multipliers

The question of Type I and Type II multipliers deserves attention. The output multipliers are calculated both in the conventional system and the system suggested in this paper, on a 'per unit of initial effect' basis - i.e. output responses to a dollar change in output. Income multipliers as described above refer to changes in income per dollar initial change in output. Income multipliers are conventionally converted to a 'per unit' measurement by the calculation of Type I and II multipliers as:

$$\text{Type I} = \frac{\text{Direct \& indirect effect}}{\text{Direct effect}}; \quad \text{Type II} = \frac{\text{Direct, indirect \& induced effect}}{\text{Direct effect}}$$

Type I and II multipliers therefore measure the DI and DII income effects per unit of income generated within the sector expanding production, on an 'own-sector' basis, as a result of an increase in sales to final demand. The output multipliers and the Type I and II income multipliers therefore have a common structure, measuring a response per unit of initial effect.

The redefinition of multiplier components to produce consistency suggests a re-examination of Type I and II multipliers. Analysts are likely to be interested in income generated per unit of initial effect - in this case it is probably useful to retain the general Type I-Type II format, but to distinguish between the first-round, industrial support and consumption induced effect in this manner:

$$\text{Type IA Income Multiplier} = \frac{\text{Initial + First Round effect}}{\text{Initial effect (I)}} = \frac{IF}{I}$$

$$\text{Type IB Income Multiplier} = \frac{\text{Initial + Production Induced Effect}}{\text{Initial effect (I)}} = \frac{IP}{I}$$

$$\text{Type II Income Multiplier} = \frac{\text{Initial + Production Induced \& Consumption Induced Effect}}{\text{Initial effects (I)}} = \frac{IPC}{I}$$

These are shown for the Queensland example in Table 18.

CONCLUDING REMARKS

The suggested multiplier format has two advantages. First, it ensures that the terms used in defining the component effects of multipliers are consistently applied in both output and income multipliers; this is not a feature of the multiplier format in conventional use. Secondly, procedures for income (and employment) multiplier calculation are considerably simplified; output effects can simply be multiplied by appropriate income (or employment) coefficients to obtain corresponding multiplier components. This also is not a feature of the conventional format. The system suggested in this paper has replaced the conventional format in our input-output studies.

REFERENCES

[1] Chenery, H.B. and Clark, P.G. (1962), Interindustry Economics, Wiley.

[2] Miernyk, W.H. (1965), The Elements of Input-Output Analysis, Random House.

TABLE 1: TRANSACTIONS TABLE, QUEENSLAND, 1973-4($m)

	Intermediate Sectors 1	2	3	Household Consumption	Other Final Demand	Total Output
Intermediate Sectors 1	129.1	703.5	20.6	102.4	864.3	1819.9
2	242.5	778.6	359.2	762.2	1897.3	4039.8
3	224.0	503.2	536.7	1434.2	1325.5	4023.6
Households	191.6	946.9	1660.4	-	-	2798.9
Other Primary Inputs	1032.7	1107.6	1446.7	500.1	429.2	4516.3
Total	1819.9	4039.8	4023.6	2798.9	4516.3	17198.5

TABLE 2: DIRECT COEFFICIENTS MATRIX, QUEENSLAND, 1973-4

	1	2	3
1	.071	.174	.005
2	.133	.193	.089
3	.123	.125	.133
Total Intermediate	.327	.492	.227
Households	.105	.234	.413
Other Primary Inputs	.568	.274	.360
Total	1.000	1.000	1.000

TABLE 3: $B = (I-A)^{-1}$, QUEENSLAND, 1973-4

	1	2	3
1	1.116	.246	.032
2	.205	1.304	.136
3	.188	.222	1.178
Total	1.509	1.772	1.346

TABLE 4: A* MATRIX, CLOSED WITH RESPECT TO HOUSEHOLDS, QUEENSLAND, 1973-4

	1	2	3	Households
1	.071	.174	.005	.036
2	.133	.193	.089	.273
3	.123	.125	.133	.512
Households	.105	.234	.413	-

TABLE 5: $B^* = (I-A^*)^{-1}$, QUEENSLAND, 1973-4

	1	2	3	Households
1	1.165	.332	.138	.204
2	.378	1.604	.505	.710
3	.456	.689	1.752	1.102
(Total)	(1.999)	(2.625)	(2.395)	
Households	.399	.695	.856	1.643

TABLE 6: SECTOR OUTPUT MULTIPLIERS, QUEENSLAND, 1973-4

Sector	Direct[(a)]	Indirect[(b)]	Induced[(c)]	Direct[(d)] and Indirect	Direct[(e)] Indirect and Induced
	(1)	(2)	(3)	(4)	(5)
1	.327	1.182	.490	1.509	1.999
2	.492	1.280	.853	1.772	2.625
3	.227	1.119	1.049	1.346	2.395

(a) From Table 2
(b) Column (4) less column (1)
(c) Column (5) less column (4)
(d) From Table 3
(e) From Table 5

TABLE 7: DISAGGREGATED OUTPUT MULTIPLIERS, SECTOR 1, QUEENSLAND, 1973-4

Sector	Direct[(a)]	Indirect[(b)]	Induced[(c)]	Direct[(d)] and Indirect	Direct[(e)] Indirect and Induced
	(1)	(2)	(3)	(4)	(5)
1	.071	1.045	.049	1.116	1.165
2	.133	.072	.173	.205	.378
3	.123	.065	.268	.188	.456
	.327	1.182	.490	1.509	1.999

(a) From Table 2
(b) Column (4) less column (1)
(c) Column (5) less column (4)
(d) From Table 3
(e) From Table 5

TABLE 8: CALCULATION OF DIRECT & INDIRECT INCOME EFFECTS, SECTOR 1

Sector	b_{i1}	h_i	$b_{i1}\ h_i$	
	(1)	(2)	(3)	
1	1.116	.105	.117	
2	.205	.234	.048	.... (1)
3	.188	.413	.078	
DI Income Multiplier =			.243	

TABLE 9: CALCULATION OF DIRECT, INDIRECT & INDUCED INCOME EFFECTS, SECTOR 1

Sector	b^*_{i1}	h_i	$b^*_{i1}\ h_i$	
	(1)	(2)	(3)	
1	1.165	.105	.122	
2	.378	.234	.088	.... (2)
3	.456	.413	.188	
DII Income Multiplier =			.398	

TABLE 10: SECTOR INCOME MULTIPLIERS, QUEENSLAND, 1973-4

Sector	Direct[(a)]	Indirect[(b)]	Induced[(c)]	Direct and Indirect[(d)]	Direct Indirect & Induced[(e)]	Type I[(f)]	Type II[(g)]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	.105	.138	.156	.243	.399	2.31	3.80
2	.234	.189	.272	.423	.695	1.81	2.97
3	.413	.108	.335	.521	.856	1.26	2.07

(a) From the Households row of Tables 2 or 4
(b) Column (4) less column (1)
(c) Column (5) less column (4)
(d) Calculated as shown in Section 1
(e) Calculated as shown in Section 1 or taken as the HH row of Table 5
(f) Column (4) divided by column (1)
(g) Column (5) divided by column (1)

TABLE 11: DISAGGREGATED INCOME MULTIPLIERS, SECTOR 1, QUEENSLAND, 1973-4

Sector	Direct	Indirect[(a)]	Induced[(b)]	Direct and Indirect	Direct, Indirect & Induced
	(1)	(2)	(3)	(4)	(5)
1	.105	.012	.005	.117	.122
2	-	.048	.040	.048	.088
3	-	.078	.110	.078	.188
	.105	.138	.155	.243	.398

(a) Column (3) of Table 8, less column (1) of this table.
(b) Column (3) of Table 9, less column (3) of Table 8.

TABLE 12: OUTPUT AND INCOME EFFECTS OF AN INCREASE IN SALES TO FINAL DEMAND

	Output Multipliers		Income Multipliers	
	General Case	Example	General Case	Example
(i) Initial Effect	1	1	h_i	.105
Production Induced Effect				
(ii) First Round Effect	$\sum_i a_{ij}$	.327	$\sum_i a_{ij} h_i$	.089
(iii) Industrial Support Effect	$\sum_i b_{ij} - 1 - \sum_i a_{ij}$	.182	$\sum_i b_{ij} h_i - h_i - \sum_i a_{ij} h_i$	.049
(iv) Consumption Induced Effect	$\sum_i b^*_{ij} - \sum_i b_{ij}$	.490	$\sum_i b^*_{ij} h_i - \sum b_{ij} h_i$	.155
Total	$\sum_i b^*_{ij}$	1.999	$\sum_i b^*_{ij} h_i$	.398

TABLE 13: FIRST ROUND INCOME EFFECTS, SECTOR 1, QUEENSLAND, 1973-4

Sector	a_{i1}	h_i	$a_{i1} h_i$
1	.071	.105	.007
2	.133	.234	.031
3	.123	.413	.051
First Round Income Effect =			.089

TABLE 14: SECTOR OUTPUT MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, QUEENSLAND, 1973-4

Sector	Initial	First Round[a]	Industrial[b] Support	Consumption Induced	Total
1	1.000	.327	.182	.490	1.999
2	1.000	.492	.280	.853	2.625
3	1.000	.227	.119	1.049	2.395

(a) from Table 2.
(b) from Table 2 & 3, using formula (iii) of Table 12.
(c) from Table 6.

TABLE 15: SECTORAL INCIDENCE OF OUTPUT MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, SECTOR 1, QUEENSLAND, 1973-4

Sector	Initial	First Round[a]	Industrial Support	Consumption Induced	Total
1	1.000	.071	.045	.049	1.165
2	-	.133	.072	.173	.378
3	-	.123	.065	.268	.456
	1.000	.327	.182	.490	1.999

(a) from Table 2.

TABLE 16: SECTOR INCOME MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, QUEENSLAND, 1973-4

Sector	Initial	First Round	Industrial Support	Consumption Induced	Total
1	.105	.089	.049	.156	.399
2	.234	.115	.074	.272	.695
3	.413	.077	.032	.335	.857

TABLE 17: SECTORAL INCIDENCE OF INCOME MULTIPLIERS BY FOUR CATEGORIES OF EFFECT, SECTOR 1, QUEENSLAND, 1973-4

Sector	Initial	First Round	Industrial Support	Consumption Induced	Total
1	.105	.007	.005	.005	.122
2	-	.031	.017	.040	.088
3	-	.051	.027	.110	.188
	.105	.089	.049	.155	.398

TABLE 18: TYPE I AND TYPE II MULTIPLIERS, QUEENSLAND EXAMPLE

Conventional Multipliers		Suggested Consistent Multipliers	
Type I = $\frac{DI}{D}$		Type IA = $\frac{IF}{I}$	
Sector 1	2.31	Sector 1	1.85
2	1.81	2	1.49
3	1.26	3	1.19
		Type IB = IP	
		Sector 1	2.31
		2	1.81
		3	1.26
Type II		Type II = $\frac{IPC}{I}$	
Sector 1	3.80	Sector 1	3.80
2	2.97	2	2.97
3	2.07	3	2.07

APPENDIX V

A PROCEDURE FOR ACCURACY OPTIMIZATION IN INPUT-OUTPUT COEFFICIENTS

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ABSTRACT

Analysts constructing and applying regional input-output tables will normally have limited budget resources. Once a prototype table has been produced, it would be inefficient for the analyst to spread these resources evenly over every cell in the table, in order to obtain superior or updated estimates. This paper demonstrates that it is possible to rank the coefficients in order of the importance that errors in these coefficients have on the input-output multipliers. A selection of criteria to choose from in determining this ranking is provided. It is then demonstrated how this ranking can be used as an input to an optimization model to determine exactly which coefficients the analyst should concentrate on in order that multiplier accuracy is maximized subject to limited budget resources.

I Introduction

In both the derivation and application stages of input-output analysis, it would be of interest to the analyst if he could rank the direct coefficients in terms of the relative importance of their effects on the input-output multipliers.

In the construction stage, for example, prototype tables are usually compiled and progressively updated in the 'critical' areas until the analyst is satisfied with the final transactions table. In the application stage, if the analyst is interested in particular sectors, he should give these sectors, together with other strongly interconnected sectors, close scrutiny before proceeding with the impact analysis. Therefore if the analyst can rank the coefficients in order of their relative importance in terms of the magnitude of the effect errors in the direct coefficients have on the final multipliers, he can get some idea as to which coefficients and sectors he should concentrate on in order to minimize the final multiplier errors, subject to the limited resources available.

No previous work has been published on this specific aspect to the author's knowledge. Previous work has been done on some aspects of coefficient error, but the analysis has not been carried through to the extent of explicitly ranking the direct coefficients in order of their importance, nor to the ultimate end of using this ranking in a mathematical optimization model. This paper attempts to fill this gap. In Section II, some background work is presented. Section III develops the mathematical formulation of multiplier errors, and Section IV suggests a possible optimization model. Section V presents an empirical example, and finally Section VI outlines the important conclusions.

II Background

An analyst compiling regional input-output tables will normally have limited resources available in terms of money and time. It will be very likely not possible for the analyst to give very close scrutiny to all of the coefficients in the prototype table. The question then arises: which coefficients should he give first priority to, and which coefficients should he pay less attention, if any, to. Previous work has provided some hints to the answer of this question.

Evans [2] was concerned with the suspicion that relatively small errors in the direct coefficients (a_{ij}) might cumulate to relatively large errors in estimates of sector output. He concludes that two errors opposite in sign could be compensating in their effect on the Leontief inverse, and that the I/O model has an "inherent ability to minimize the undesirable effects of data imperfections" (p. 461). However Evans concerned himself solely with the output vector, and did not consider the effects of errors on multipliers. Similarly, Quandt [6, 7] was concerned with the output vectors and used shocking techniques on the a_{ij}'s to test the relationship between the distribution of the errors and the distribution of the solution. Quandt showed that the skewness of the a_{ij} errors tends to be transmitted to the solution vectors, and suggests the lognormal can be used as an approximate distribution of the solution.

More recently, Stevens and Trainer [8] argue that errors in the a_{ij}'s do not have serious effects on outputs and multipliers, and that household and regional purchase coefficients exert the most important effects on overall accuracy. Burford and Katz [1] also support this view. They suggest the distribution of coefficients in the columns has a relatively small role in the determination of multiplier values, and that the main determinant of multiplier values is the column totals of the A matrix. However both Stevens and Trainer and Burford and Katz concerned themselves with the specific case of fixed absolute errors in the direct coefficients.

On the other hand, West and Jensen [9] used shocking techniques to examine the effects of proportional error in the a_{ij}'s on the multipliers, and conclude "that the instability of output multipliers varies directly with both the size of the multiplier and the extent to which individual coefficients dominate their respective columns in the technology matrix. This suggests that greater attention should be given to sectors showing larger multipliers, particularly if their columns are relatively dominated by a small number of cells" (p. 25).

Jensen and West [5], in an attempt to nail down the effects of coefficient size on the multipliers, performed experiments on 14 empirical tables by progressively removing the coefficients in order of their magnitude, from low to high, both cumulatively and with replacement. They conclude that there is "some empirical support for the notion that the relatively larger coefficients exert relatively more influence on multipliers; it also provides empirical support for an accuracy-maximizing approach to multiplier derivation. This notion, implied in most operational circumstances and probably accepted generally by analysts, is that budget resources available to the analyst should be directed to ensuring accuracy in the relatively large coefficients, and allocated in decreasing amounts to progressively smaller coefficients" (p. 14).

Both the West and Jensen and Jensen and West conclusions are correct, but they do not go far enough. The West and Jensen paper possibly comes closest to the correct answer by claiming that size and distribution of coefficients within columns, together with the size of the corresponding output multiplier, are the main determinants of multiplier values, but do not take account of the distribution of coefficients across columns. The same is true for the income multipliers. The Jensen and West paper acknowledges that coefficient size is important, but does not realize that the internal distribution of the coefficients is also a major factor. That is, neither of the above papers take into account the level of interconnectedness of the table, nor its level of aggregation. The following model explicitly takes account of these factors.

Before the model is presented, one additional point needs to be mentioned. An efficiency optimization technique based on principles similar to the above, depends on the notion of what can be called holistic accuracy, in the sense that the table should be as representatively accurate as possible in the overall sense, i.e. in the operational sense of applying the table. The normal concept of accuracy, partitive accuracy, on the other hand, is where each individual cell, regardless of its relative importance, is deemed accurate. However an input-output table, per se, doesn't mean much; the test is in the empirical application of the table. Thus it is important that the overall picture is representative of the economy, i.e. the major sectors and linkages are reproduced accurately, but the less important cells which exert little influence on the multipliers, etc., need not be reproduced with the same degree of accuracy. This concept of accuracy was explicit in the work of Jensen, Mandeville, and Karunaratne [4], and is a necessary concept in any technique used to develop regional input-output tables within a reasonable time (and money) horizon. For a comprehensive discussion on the concept of accuracy, see Jensen [3].

III Errors in Multipliers - Mathematical Formulation

Suppose we have an initial estimate of an input-output direct coefficient matrix, A. Then it is likely that all, or some, of the direct coefficients, a_{ij}, contain errors, d_{ij}, either absolute or proportional. If the errors are absolute errors, what we in fact have are first estimates of the true coefficients $(a_{ij} + d_{ij})$. On the other hand the errors in the coefficients may be proportional errors, in which case

$d_{ij} = a_{ij}p_{ij}$, and we have first estimates of $(a_{ij} + a_{ij}p_{ij})$.

The aim of this section is to find what affect, if any, the coefficient errors have on the various input-output multipliers. The analysis that follows is based on the assumption that the initial coefficient error is proportional, but this does not restrict the analysis in any way. In fact the assumption of absolute coefficient errors is more restrictive, and the following theory can easily be converted to the analysis of absolute errors by substituting d_{ij} for $a_{ij}p_{ij}$. In the empirical sense, there is little to suggest either error format is more likely to occur, and one can find arguments in favour of both propositions. Given that a decision had to be made, however, the author is marginally inclined towards the proportional error theory, primarily on the basis that we would expect, ceteris paribus, larger coefficients to contain larger errors.

All the input-output multipliers are calculated from the Leontief inverse, $B = (I-A)^{-1}$. Therefore we need to know how the error matrix $D = [d_{ij}] = [a_{ij}p_{ij}]$ affects B. In other words, if we apply the usual theory to the coefficient matrix (A), we obtain $(I-A)^{-1}$ which is not equal to the 'true' inverse $(I-A-D)^{-1}$. The question we therefore need to answer is: how is $(I-A-D)^{-1}$ related to $(I-A)^{-1}$?

Let us write:

$$(I-A-D) = (I-A)(I-\theta) \quad (1)$$

$$= I-A - (I-A)\theta$$

and we have

$$D = (I-A)\theta \quad (2)$$

From (1):

$$(I-A-D)^{-1} = (I-\theta)^{-1}(I-A)^{-1}$$
$$= (I+\theta+\theta^2+\theta^3+ \ldots)(I-A)^{-1}$$
$$= (I-A)^{-1} + \theta(I-A)^{-1} + \theta^2(I-A)^{-1} + \ldots$$
$$= B + \theta B + \theta^2 B + \ldots \quad (3)$$

But, from (2):

$$\theta = (I-A)^{-1}D$$
$$= BD$$

and therefore (3) becomes:

$$(I-A-D)^{-1} = B + BDB + (BD)^2B + (BD)^3B + \ldots$$
$$= B + BDB + BDBDB + BDBDBDB + \ldots$$
$$= B + E1 + E2 + E3 + \ldots$$
$$= B + E \quad (4)$$

where $E = E1 + E2 + E3 + \ldots$ is the error induced into $(I-A)^{-1}$ in response to an initial error D introduced into A.

Consider the error component E1 first:

Now the $(i,j)^{th}$ element of BD is $\sum_k b_{ik}a_{kj}p_{kj}$

and the $(i,j)^{th}$ element of $E1 = (BD)B$ is $\sum_{\ell}(\sum_k b_{ik}a_{k\ell}p_{k\ell})b_{\ell j}$

The error in the j^{th} output or column multiplier is therefore

$$\varepsilon 1(OM_j) = \sum_i\sum_{\ell}\sum_k b_{ik}a_{k\ell}p_{k\ell}b_{\ell j}$$
$$= \sum_{\ell}\sum_k OM_k a_{k\ell}p_{k\ell}b_{\ell j} \quad (5)$$

and the total absolute error over all j output multipliers is

$$\varepsilon 1 = \sum_j \varepsilon 1(OM_j) = \sum_j\sum_{\ell}\sum_k OM_k a_{k\ell}p_{k\ell}b_{\ell j}$$
$$= \sum_{\ell}\sum_k OM_k a_{k\ell}p_{k\ell}RM_{\ell} \quad (6)$$

where RM_{ℓ} denotes the ℓ^{th} row total of B i.e. the ℓ^{th} row multiplier, which represents the change in output of the ℓ^{th} sector in response to a one dollar change in final demand of all sectors. $\varepsilon 1$ denotes a scalar formed from the summation of elements in the matrix E1.

Equations (5) and (6) throw an interesting light on the coefficient error problem. For example, suppose an error occurs in one cell $a_{k\ell}$. The subsequent error in the j^{th} output multiplier depends not on the size of the j^{th} output multiplier, but the magnitude of the output multiplier corresponding to the row sector where the original error lies i.e. OM_k. If errors exist in more than one (but not necessarily all) of the direct coefficients, the error in the j^{th} output multiplier depends on the sum of the output multipliers of the errored row sectors. The error in the j^{th} output multiplier in response to an error in the direct coefficient $a_{k\ell}$ is found by weighting the error in $a_{k\ell}$ by the output multiplier of industry k and the sectoral output multiplier from industry ℓ into industry j. The error over all output multipliers is the sum of the errors in $a_{k\ell}$ weighted by the output multiplier from industry k and the row multiplier of industry ℓ.

Not only does this give an estimate of the total error over all output multipliers, but it also tells us the relative importance of the a_{ij} coefficients in which errors occur. For a given proportional error in any a_{ij}, we would want to reduce the error in those cells which correspond to large a_{ij}'s, combined with large row and column multipliers.

Equation (6) is a summation of terms, and can be rewritten as

$$e1 = [OM_{k1}a_{k1.\ell1}p_{k1.\ell1}RM_{\ell1} + OM_{k2}a_{k2.\ell2}p_{k2.\ell2}RM_{\ell2} + \dots +$$

$$+ OM_{ki}a_{ki.\ell i}p_{ki.\ell i}RM_{\ell i} + \dots \quad] \qquad (7)$$

where the terms in the series [ ] can be written in sequential order from high to low. We then have a sequential list of cells which contribute, in order of importance, to the overall multiplier error. In terms of relative efficiency, therefore, we should concentrate firstly on reducing the error in the coefficient $a_{k1.\ell1}$, secondly in the coefficient $a_{k2.\ell2}$, and so on.

Also note from equation (6) that the total multiplier error is a function of several factors; (a) the size of the original error $p_{k\ell}$, (b) the magnitude of the corresponding direct coefficient $a_{k\ell}$, (c) the level of interconnectedness (the values of OM_k and RM_ℓ), and (d) the level of aggregation (the range of values of k and ℓ). Thus errors in the coefficients give rise to relatively larger multiplier errors in more interconnected tables and more disaggregated tables. Within any given table, cells which contain large direct coefficients and also correspond to large row and column multipliers have a larger effect on multiplier error than other cells.[1]

In an operational sense, we need to make the broad assumption that the proportional error in each coefficient is roughly of the same magnitude. We need not specify a particular value. In situations where more detailed knowledge of the local economy is available, one may be able to obtain rough ratios of these errors e.g. one may be led to believe that the error in one particular coefficient is approximately twice as large as in other coefficients. Remember, the above model does not aim to tell us what the errors are (although in some circumstances it can provide a rough estimate). It only gives us a pointer which indicates which cells we should be concentrating on, in the light of all the prior available information.

If we assume that $p_{k\ell} \simeq p$ for all k, ℓ , then equation (6) (and (7)), becomes[2]

$$\epsilon 1 = p\sum_{\ell}\sum_{k} OM_k a_{k\ell} RM_\ell \qquad (8)$$

1. These cells need not necessarily correspond to cells containing just large a_{ij}'s. In the case of the five sector Queensland input-output Table [4] the rank correlation coefficient between the rankings of the a_{ij}'s and the $OM_k a_{k\ell} RM_\ell$'s listed in order of magnitude from high to low is 0.97. The slight difference between the rankings can be accounted for by the level of interconnectedness (i.e. the positioning of the large a_{ij}'s relative to each other in the table) which is not taken into account when simply ranking the a_{ij}'s from high to low.

2. The assumption of constant coefficient error (either absolute or proportional) is also implicit in the partitive accuracy concept, i.e. looking at each cell in turn without any prior ranking procedure.

Each term in the summation can be arranged in a matrix format, and these elements can easily be calculated. All that is required are the matrices A and B.

$$E1' = p \begin{bmatrix} OM_1 a_{11} RM_1 & OM_2 a_{21} RM_1 & \cdots & \\ OM_1 a_{12} RM_2 & & & \\ \vdots & & & \\ OM_1 a_{1n} RM_n & \cdots & & OM_n a_{nn} RM_n \end{bmatrix} \qquad (9)$$

where E1′ denotes the matrix of absolute multiplier error components, as distinct from E1 which is the matrix of errors in the elements of B. Once the error matrix E1′ has been obtained, the elements can simply be ranked. The transpose of these elements in the A matrix then gives the relatively important coefficients.

In the simple case where $a_{k\ell} \cdot p_{k\ell} = d_{k\ell}$ is assumed to be constant, i.e. there is a constant absolute coefficient error, equation (8) reduces to

$$\epsilon 1 = d \sum_{\ell} \sum_{k} OM_k RM_\ell$$

$$= dT^2 \qquad (10)$$

Where T denotes the sum of the elements of the Leontief inverse, B

i.e. $\quad T = \sum_i \sum_j b_{ij}$

In this case, all that is required to rank the coefficients is the matrix B.

The analysis so far has concentrated on absolute multiplier error. This may not be a satisfactory criterion, as multiplier size is not taken into account. A more appropriate measure would be average proportional multiplier error.

Proportional output multiplier error can be measured in two ways: (a) the error as a proportion of the total multiplier, or (b) the error as a proportion of that portion of the multiplier above unity. Again there are advantages and disadvantages in each approach, and the analysis can easily accommodate either method. For the sake of consistency with previous analysis and uniformity across multipliers, we will use the former approach, stressing that it is not necessarily more correct.

The proportional multiplier error in the j^{th} output multiplier is, from equation (5):[3]

$$\frac{\varepsilon 1(OM_j)}{OM_j} = \sum_{\ell} \sum_{k} OM_k \, a_{k\ell} \, p_{k\ell} \left(\frac{b_{\ell j}}{OM_j}\right) \qquad (12)$$

and the average proportional multiplier error is thus

$$\frac{1}{n} \sum_{j} \left(\frac{\varepsilon 1(OM_j)}{OM_j}\right) = \frac{1}{n} \sum_{\ell} \sum_{k} OM_k \, a_{k\ell} \, p_{k\ell} \sum_{j} \left(\frac{b_{\ell j}}{OM_j}\right) \qquad (13)$$

where $\frac{b_{\ell j}}{OM_j}$ is the proportion of the column total which lies in cell (ℓ, j) of B, and n is the number of intermediate sectors.

Again using the broad assumption that $p_{k\ell}$ is constant for all k, ℓ we have

$$\frac{1}{n} \sum_{j} \left(\frac{\varepsilon 1(OM_j)}{OM_j}\right) = \frac{p}{n} \sum_{\ell} \sum_{k} OM_k \, a_{k\ell} \sum_{j} \left(\frac{b_{\ell j}}{OM_j}\right) \qquad (14)$$

and each term in the series can be compiled into an error matrix as previously,[4] viz:

---

3. Using the second measure, we would have

$$\frac{\varepsilon 1(OM_j)}{(OM_j - 1)} = \sum_{\ell} \sum_{k} OM_k \, a_{k\ell} \, p_{k\ell} \left(\frac{b_{\ell j}}{OM_j - 1}\right).$$

Also note that we need to measure the error relative to the estimated multiplier.

4. Average proportional multiplier error is the criterion used by Jensen and West [5]. As noted previously, their results imply that the a_{ij} coefficients should be ranked from high to low. Comparing this simple ranking with the ranking obtained from equation (14) for the Queensland table, results in a rank correlation coefficient of 0.98.

$$\overline{E1} = \frac{p}{n} \begin{bmatrix} OM_1 \; a_{11} \sum_j \left(\frac{b_{1j}}{OM_j}\right) & OM_2 \; a_{21} \sum_j \left(\frac{b_{1j}}{OM_j}\right) & \cdots & \\ OM_1 \; a_{12} \sum_j \left(\frac{b_{2j}}{OM_j}\right) & & & \\ OM_1 \; a_{1n} \sum_j \left(\frac{b_{nj}}{OM_j}\right) & & & OM_n \; a_{nn} \sum_j \left(\frac{b_{nj}}{OM_j}\right) \end{bmatrix} \quad (15)$$

where $\overline{E1}$ is used to distinguish the error matrix from $E1'$, as now each element is a measure of an error component in the average proportional multiplier error, rather than the absolute multiplier error.

Simplifing further by assuming constant absolute coefficient errors reduces equation (5) to

$$\varepsilon 1(OM_j) = d \sum_k OM_k \sum_\ell b_{\ell j}$$

$$= d \; T \; OM_j \quad (16)$$

and thus

$$\frac{\varepsilon 1(OM_j)}{OM_j} = dT \quad (17)$$

i.e. the proportional output multiplier error is constant, irrespective of the sector number. The average proportional multiplier error is thus also

$$\frac{1}{n} \sum_j \left(\frac{\varepsilon 1(OM_j)}{OM_j}\right) = dT \quad (18)$$

It should be noted that the above analysis is equally applicable to income and employment multipliers. Income multipliers are obtained by the scalar multiplication of B by the household coefficients, i.e. $h_i^{\cdot} B$; the employment multipliers by the employment coefficients, i.e. $e_i \; B$. (The output multipliers involve scalar multiplication by 1.) Summing the columns, of course, gives the multipliers. Equation (4) thus becomes, for example,

$$h_i(I-A-D)^{-1} = h_iB + h_iE$$

Let us now consider briefly the error component E2; Now from equation (4) we have

$$E2 = (BD)(BDB) = (BD)E1$$

and therefore the (i, j)th element of E2 is $\sum_m (\sum_q b_{iq}\, a_{qm}\, p_{qm})(\sum\sum_{\ell k} b_{mk}\, a_{k\ell}\, p_{k\ell}\, b_{\ell j})$

The error in the jth output multiplier is then

$$\varepsilon 2(OM_j) = \sum_i \sum_m (\sum_q b_{iq}\, a_{qm}\, p_{qm})\, (\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, p_{k\ell}\, b_{\ell j})$$

$$= \sum_m (\sum_q OM_q\, a_{qm}\, p_{qm})(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, p_{k\ell}\, b_{\ell j}) \qquad (19)$$

Again summing over the j multipliers gives

$$\varepsilon 2 = \sum_j \varepsilon 2(OM_j) = \sum_m (\sum_q OM_q\, a_{qm}\, p_{qm})(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, p_{k\ell}\, RM_\ell) \qquad (20)$$

Assuming $p_{k\ell}$ is constant for all k and ℓ gives

$$\varepsilon 2 = p^2 \sum_m (\sum_q OM_q\, a_{qm})(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, RM_\ell) \qquad (21)$$

and under the further assumption of constant absolute errors,

$$\varepsilon 2 = d^2 \sum_m (\sum_q OM_q)(\sum_\ell \sum_k b_{mk}\, RM_\ell)$$

$$= d^2\, T^3 \qquad (22)$$

In a similar manner, we can show that

$$\varepsilon 3 = d^3\, T^4 \qquad (23)$$

and the total multiplier error over all multipliers under the assumption of constant coefficient error is

$$\varepsilon = \varepsilon 1 + \varepsilon 2 + \varepsilon 3 + \ldots..$$

$$= dT^2 + d^2T^3 + d^3T^4 + \ldots..$$

$$= dT\,[1 + dT + (dT)^2 + (dT)^3 + \ldots..] \qquad (24)$$

i.e. in terms of the total multiplier sum we can write:

A gives rise to T

and (A+D) gives rise to $T + dT^2 + d^2T^3 + \ldots..$

$$= T[1 + dT + (dT)^2 + \ldots..\ ] \qquad (25)$$

This may give us a very rough estimate of total multiplier error.

Getting back to the more realistic situation of proportional multiplier error, we get from equation (19):

$$\frac{\varepsilon 2(OM_j)}{OM_j} = \sum_m \left(\sum_q OM_q\, a_{qm}\, p_{qm}\right)\left(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, p_{k\ell}\left(\frac{b_{\ell j}}{OM_j}\right)\right) \qquad (26)$$

and the average proportional multiplier error is

$$\frac{1}{n}\sum_j\left(\frac{\varepsilon 2(OM_j)}{OM_j}\right) = \frac{1}{n}\sum_m \left(\sum_q OM_q\, a_{qm}\, p_{qm}\right)\left(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\, p_{k\ell}\sum_j\left(\frac{b_{\ell j}}{OM_j}\right)\right) \qquad (27)$$

$$= \frac{p^2}{n}\sum_m \left(\sum_q OM_q\, a_{qm}\right)\left(\sum_\ell \sum_k b_{mk}\, a_{k\ell}\sum_j\left(\frac{b_{\ell j}}{OM_j}\right)\right) \qquad (28)$$

under the assumption of constant proportional error. The terms in this equation can also be expressed in the form of an error matrix.:

$$\overline{E2} = \frac{p^2}{n}\begin{bmatrix} \left(\sum_m \sum_q OM_q\, a_{qm}\, b_{m1}\right) a_{11}\sum_j\left(\frac{b_{1j}}{OM_j}\right) & \left(\sum_m \sum_q OM_q\, a_{qm}\, b_{m2}\right) a_{21}\sum_j\left(\frac{b_{1j}}{OM_j}\right)\cdots \\ \left(\sum_m \sum_q OM_q\, a_{qm}\, b_{m1}\right) a_{12}\sum_j\left(\frac{b_{2j}}{OM_j}\right) & \\ \vdots & \\ \left(\sum_m \sum_q OM_q\, a_{qm}\, b_{m1}\right) a_{1n}\sum_j\left(\frac{b_{nj}}{OM_j}\right) & \end{bmatrix} \qquad (29)$$

In a similar manner it can be shown that, under the same conditions, the $(i,j)^{th}$ cell of the third error matrix has the following form.

$$\overline{E3} = \frac{p^3}{n}\left[\left(\sum_r \sum_s \sum_m \sum_q OM_r\, a_{rs}\, b_{sm}\, a_{mq}\, b_{qj}\right) a_{ji}\sum_k\left(\frac{b_{ik}}{OM_k}\right)\right] \qquad (30)$$

Because we are primarily interested in the ranking of the coefficients, we can let p = 1 to obtain the complete error matrix:

$$\bar{E} = \bar{E}1 + \bar{E}2 + \bar{E}3 + \ldots = [\bar{E}_{ij}]$$

$$= \frac{1}{n} [(OM_j + \sum_m \sum_q OM_q \; a_{qm} \; b_{mj} + \ldots.) \; a_{ji} \sum_k (\frac{b_{ik}}{OM_k})] \qquad (31)$$

As the average proportional multiplier error is the sum of all the elements of $\bar{E}$, we simply need to rank the elements in order of magnitude from high to low to find which coefficients contribute relatively more to the average multiplier error. We should obviously look at those a_{ji} 's corresponding to large $\bar{E}_{ij}$'s.This leads to a more efficient process of reducing multiplier error.

IV Application to a Possible Optimization Scheme

Analysts, in compiling regional input-output tables, have usually proceeded to estimate the table coefficient by coefficient, on the assumption that overall accuracy will be maximized. However, this is not necessarily the most efficient approach in that no consideration is given (except implicitly) to maximizing accuracy and minimizing cost. The majority of analysts involved in such an exercise will have very limited resources available (e.g. money and/or time, etc.), and the analyst will probably ask himself the question as to whether he should attempt to get superior estimates of all the coefficients, or whether his time and money would be better spent concentrating on a smaller subset of coefficients.

Section III above has already answered part of that question, by ranking the coefficients in relative order of importance. The second part of the question then becomes: how far along the sequence should we continue until we reach a point where the reduction in average multiplier error is not worth the trouble and effort of superior estimation?

Given the conditions described earlier, and these restrictions can easily be relaxed if, for some reason, we think we know what the relative errors in the various coefficients are, including those cells which we think contain no error (i.e. if we can assign weights to the cells reflecting the possible size of the proportional error in that cell), the elements in the matrix $\bar{E}$ can be summed to obtain the total average proportional multiplier error.

$$\bar{\varepsilon} = \frac{1}{n}(\bar{E}_{k1.\ell1} + \bar{E}_{k2.\ell2} + \ldots + \bar{E}_{ki.\ell i} + \ldots) \qquad (32)$$

If the terms in the series are listed in sequential order from high to low, we have a sequential list of direct coefficients which contribute, in order of importance, to the average multiplier error. This implies that we should concentrate firstly on reducing the error in the coefficient $a_{\ell1.k1}$, secondly in element $a_{\ell2.k2}$, and so on.

The first step is to derive an error function.

Let X = Number of cells with an error, and Y = average proportional multiplier error resulting from X cells in error $= \frac{1}{n}\sum_{i=1}^{X} \bar{E}_{ki.\ell i}$.

We can then plot Y against X for X = 1, 2, 3, ..., n, where the cells are numbered in order of magnitude. As each subsequent term is smaller than the previous term, the curve will have a shape similar to Figure 1.

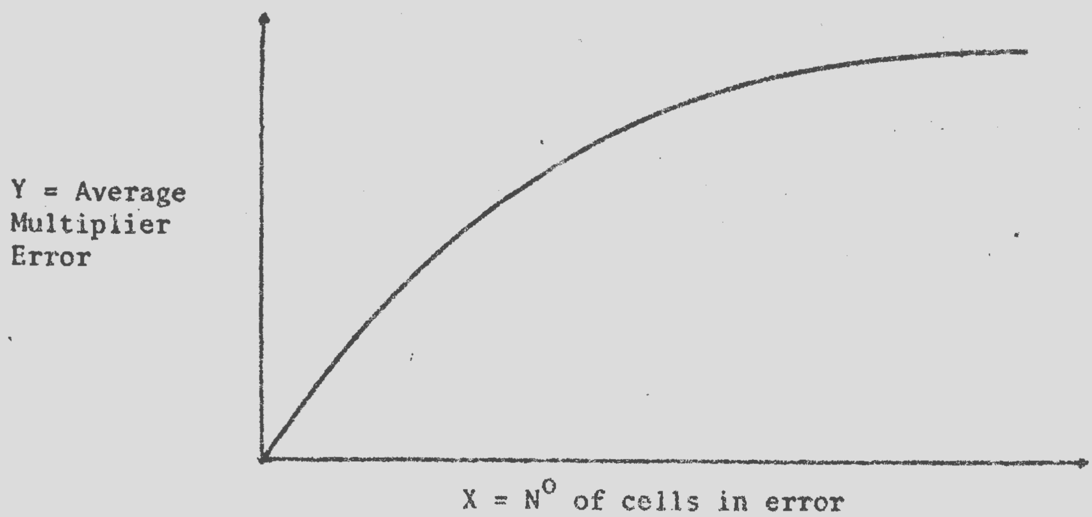

FIGURE 1

A possible mathematical function which fits this curve[5] is

$$Y = \alpha X^{\beta} \; ; \quad \alpha \geqslant 0 < \beta < 1 \qquad (33)$$

Now if we progressively re-estimate the direct coefficients in the order specified, we can obtain the function relating the average multiplier error remaining after X cells have been re-estimated i.e.

$$Y^{1} = Y_{max} - Y_{X}$$

$$= Y_{max} - \alpha X^{\beta}$$

$$= \alpha(X_{\eta}^{\beta} - X^{\beta}) \qquad (34)$$

where η refers to the number of cells in A which contain an error (which may or may not equal n^2, all the cells in the table).

In many situations, (e.g. in some Baynesian and Operations Research problems) it is common to specify a value, subjective or otherwise, to the cost of making an incorrect decision. Similarly, in input-output model estimation, it may be possible for the analyst to set a value to the cost of a certain level of error occuring. This cost will, of course, depend upon a large number of factors e.g. the relative importance of the particular region in question, the primary use for which the final table is to be put, and even the experience and personality of the analyst himself.

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5. The reason for estimating the error function in this form rather than in another form was that this form returned consistently superior regression results in empirical tests. However, this function does make several assumptions, e.g. continuity. Also note that the error function need not be specified mathematically in practice; the final results can be derived with greater accuracy by an iterative technique by the computer. We will come back to this point later.

Suppose we can specify (implicitly or otherwise) the cost of making a unit average proportional error in the multipliers, C_1.[6] Then after we re-estimate the first X cells, the total cost of the remaining multiplier error is

$$TC_1 = C_1Y^1 = C_1(Y_{max} - \alpha X^{\beta}) \qquad (35)$$

If C_2 is the average re-estimation cost per cell, the total cost of re-estimating those first X cells is [7]

$$TC_2 = C_2X \qquad (36)$$

These two cost functions are represented in Figure 2.

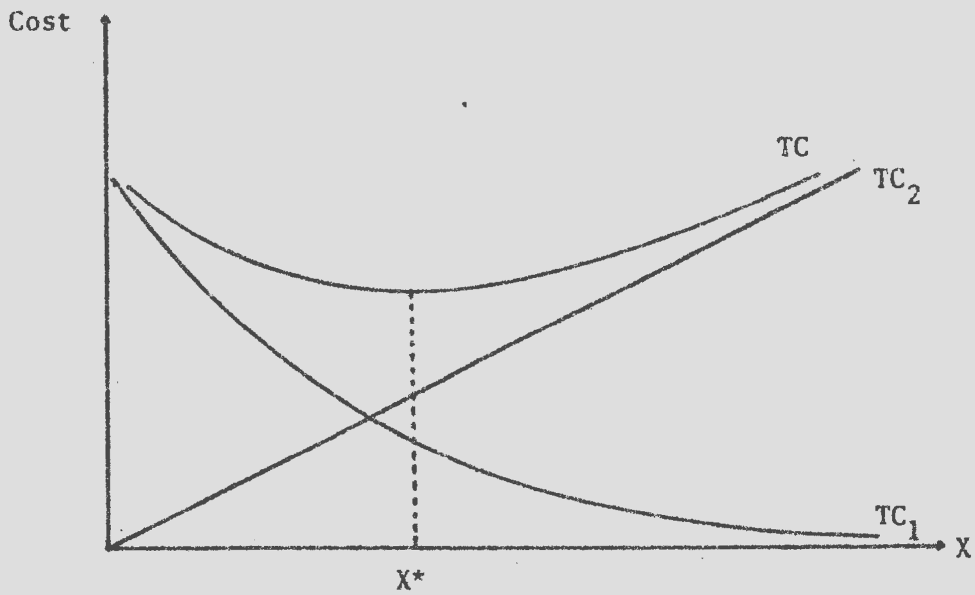

FIGURE 2

6. A proportional error of one unit is equivalent to a 100% error.

7. It may be desirable to assign a relatively higher cost per cell to the more important coefficients, in which case equation (36) should be modified accordingly.

Note that the larger the number of cells re-estimated, the lower is the cost associated with the multiplier error, but the higher is the re-estimation cost. At the point where the marginal increase in cost of estimation equals the marginal savings in reduced error, the total cost will be minimized.

Now

$$TC = TC_1 + TC_2$$

$$= C_1 Y^1 + C_2 X$$

$$= C_1 (Y_{max} - \alpha X^{\beta}) + C_2 X \qquad (37)$$

To find the value of X which minimizes total cost, we differentiate (37) w.r.t. X and equate to zero:

$$\frac{dTC}{dX} = -C_1 \alpha \beta X^{\beta - 1} + C_2$$

$$= 0 \text{ when } X^{\beta-1} = \frac{C_2}{C_1 \alpha \beta}$$

or $$X^* = \left[\frac{C_2}{C_1 \alpha \beta} \right]^{\frac{1}{\beta - 1}} \qquad (38)$$

which is the optimal number of cells to re-estimate.[8]

There are a couple of points to note about equation (38). In all cases tested, it was found that $\alpha \geq 0$ and $0 < \beta < 1$. Thus the minimization conditions are fulfilled, and the larger the value of C_2, the cost of estimation per cell, the smaller is the number of cells that should be re-estimated. Conversely, the larger the cost per unit error C_1, the larger the number of cells which should be re-estimated.

Secondly, we do not need the actual values of C_1 and C_2, only the ratio. We can thus find the range of values of this ratio which will return a value of X* between 0 and η i.e.

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8. $\frac{d^2 TC}{d X^2} = -C_1 \alpha \beta (\beta - 1) X^{\beta - 2} > 0$ when $\alpha \geq 0$, $0 < \beta < 1$ which indicates the second order condition for minimization holds.

if $\frac{C_2}{C_1} > \alpha\beta$: re-estimate no cells.

(39)

if $\frac{C_2}{C_1} < \alpha\beta\eta^{\beta-1}$: re-estimate all η cells.

However, this ratio may be fairly difficult to visualize, since they refer to different units. C_1 is the error cost <u>per unit error</u>, whilst C_2 is the estimation cost per cell. The analyst may prefer to set the cost of making an error in terms of the original cells. Then let C_1^1 be the cost of an individual cell (direct coefficient) being incorrect. C_1 and C_2 are now both expressed in terms of cost per cell, and we get

$$TC = TC_1 + TC_2$$

$$= C_1^{1\beta}(Y_{max} - \alpha X^{\beta}) + C_2 X \quad (40)$$

and

$$X^* = \left[\frac{C_2}{C_1^{1\beta}\,\alpha\beta}\right]^{\frac{1}{\beta-1}} . \quad (41)$$

Thus:

if $\frac{C_2}{C_1^{1\beta}} > \alpha\beta$: re-estimate no cells

(42)

if $\frac{C_2}{C_1^{1\beta}} < \alpha\beta\eta^{\beta-1}$: re-estimate all η cells

V An Empirical Example

The above procedures have been applied to several Queensland GRIT [4] tables, as well as the South Australian regional tables currently being compiled, comprising various levels of interconnectedness and aggregation. For the sake of simplicity, however, the results derived from the five-sector Queensland state table will be presented here.

The transactions table, direct coefficients table, inverse matrix and various error matrices are presented in Attachment 1. Also for ease of presentation, the results refer only to the output multipliers, but the analysis is equally applicable to income and employment multipliers. Obviously in a practical situation, income and employment multipliers are relatively more important than output multipliers.

The simplest criteria in terms of ease of calculation to apply is absolute coefficient error/absolute multiplier error. In this case the error matrix $E1'$ is formed simply from the product of the row and column totals of the B matrix (Table 3). This error matrix is given in Table 4, together with the ranking of the elements. The ranking of the direct coefficients using Table 4 compared with the ranking derived just from the A matrix results in a rank correlation of 0.14. This is understandable as the magnitude of the a_{ij} 's are not explicitly taken into account (since the error in each a_{ij} is assumed to be the same, irrespective of coefficient size), but only implicitly in the size of the multipliers.

A more realistic criterion is proportional coefficient error/average proportional multiplier error, and we will refer mainly to this criterion, acknowledging that other criteria could easily be applied.

The error matrix $\overline{E1}$ (equation (15)) is shown in Table 5. As noted previously, the rank correlation coefficient derived from comparing the rankings from $\overline{E1}$ and A is 0.98. When $\overline{E2}$ is added, there is a marginal change in the ranking, with a rank correlation coefficient between $\overline{E1}$ and $(\overline{E1} + \overline{E2})$ of 0.998. In no cases did the ranking change with the addition of additional error matrices, $\overline{E3}$, $\overline{E4}$, etc. Results indicate that it is of marginal value proceeding past $\overline{E2}$, but nevertheless all calculations were taken to three terms in the expansion. Remember we are primarily interested in the ranking of the coefficients; if the actual value of the error component is of interest, more terms may be required.

It is of interest to note that the error components decline dramatically with each additional error matrix. For example, it would require a coefficient error of at least 3 percent before the largest element in $\overline{E2}$ becomes non-zero, and a coefficient error of at least 32 percent would be required before any element of $\overline{E3}$ becomes non-zero. In addition, this decline is accelerated the less aggregated the table. Note, however, that these comments refer primarily to the criterion in question; absolute multiplier error would normally require additional terms in the error expansion.

From Table 8 we can now draw up a list of coefficients in order of priority, i.e. a_{33}, a_{13}, a_{35}, a_{31}, ... This is shown in Table 9. We should therefore concentrate on these coefficients, in sequence, in order to reduce average multiplier error by the largest amount in the shortest possible time, given that we normally have limited budget resources.

The next step to decide on is how far along this sequence should we proceed before it becomes uneconomical to proceed any further. We therefore need to compute the cumulative sum of elements $\bar{E}_{ij}$ listed in order of their rank. This is also done in Table 9. To derive the error function we regress Y against X. If we use the form in equation (33), we obtain:

$$Y = \alpha X^{\beta}$$

or

$$\begin{aligned} \text{Ln } Y &= \text{Ln } \alpha + \beta \text{Ln } X \\ &= \underset{(0.31)}{0.01762} + \underset{(22.00)}{0.51223} \text{ Ln } X \qquad r^2 = 0.96 \end{aligned}$$

(the values in brackets are t-values). This gives estimated values of α and β as $\hat{\alpha} = 1.01777$, $\hat{\beta} = 0.51223$.

We now need to specify the ratio C_2/C_1. Suppose, for example, we let $C_2/C_1 = 0.2$. This could mean, for example, that the cost of obtaining superior data for each cell is set at about $200, and the cost of making a 100% error in the multipliers at about $1000. Applying equation (38), we obtain

$$X^* = \left[\frac{C_2}{C_1 \hat{\alpha} \hat{\beta}} \right]^{\frac{1}{\hat{\beta}-1}}$$

$$\simeq 7$$

This means we should obtain superior estimates (if possible) of the first 7 coefficients listed above. From equation (39) we also see that if $C_2/C_1 > 0.52$ we should re-estimate no cells, or if $C_2/C_1 < 0.11$ re-estimate all 25 cells.

The above result depends on how accurately the error function can be estimated. The regression equation above would not be considered a 'good' fit in these circumstances (some error functions have returned r^2 values of 0.999). In practice therefore, it is recommended that the total cost be computed iteratively for consecutative values of Y^1 and X (from equation (37)) until the minimum value of TC is obtained. This is, in fact, a more efficient approach since values of TC can be computed as each Y^1 is computed, and these values are also shown in Table 9. It can be seen in this example that X* = 7 which coinsides with the result obtained above. Actually, the difference in cost for any value of X between 6 and 9 is so small $28) that for practical purposes one might choose any X in this interval.

This also raises an additional interesting point. The ratio C_2/C_1 is very close to its lower limit, yet only a small number of cells require re-estimation. This supports the conclusions of Jensen and West, who suggest that the lower 50 percent of coefficients have a marginal effect on multiplier values.

VI Summary

Analysts constructing and applying regional input-output tables will normally have limited resources (time and money) at their disposal. It would be extremely unlikely that these resources would allow the analyst to give very close scrutiny to every cell in the table. He will normally have to be satisfied with concentrating his attention on the more important sections (however he defines important) of the table, with less attention to the cells which he considers to have little or no effect on the multipliers and output vectors.

Up to now there have only been vague rules of thumb in this regard, the majority of which have been derived from shocking and simulation techniques. This paper has shown that there is a simple mathematical relationship between coefficient error and multiplier error. Furthermore, this relationship allows us to rank the coefficients in order of their importance (with respect to error in the coefficients affecting the multiplier values), subject to a wide range of criteria from which the analyst can choose.

This paper developed the analysis with particular attention to one of these criteria viz. proportional coefficient error/average proportional multiplier error, but explains how various other criteria can be used. It was shown that the proportional j^{th} output multiplier error is largely determined by the magnitude of the direct coefficient in which the error occurs $a_{k\ell}$, the size of the corresponding row sector output multiplier OM_k, and the sectoral output multiplier from sector ℓ to sector j as a proportion of the j^{th} output multiplier.

Once the optimal ranking of the coefficients has been obtained, the analyst should proceed to work his way down the list, removing errors, if possible, from the coefficients. The optimal point in the list to stop because the improvement in multiplier accuracy resulting from the re-estimation of an additional coefficient does not warrant the additional cost involved, can be determined by allocating values to the costs of re-estimation and making of error. Empirical evidence suggests that, as a rough guide, only the first 50 percent of the coefficients exert any significent effect on the multipliers. The error function levels off at about this point, and any additional effort to re-estimate more cells is probably not worth the resultant improvement in accuracy.

ATTACH MENT 1

The following tables are derived from the five-sector transactions table for Queensland, 1973-74, ($m). The table was adapted from Jensen, Mandeville and Karunaratne [4]. Numbers in brackets after the coefficients denote the rank of that coefficient from high to low.

TABLE 1: TRANSACTIONS TABLE

Sectors	1	2	3	4	5	H.H	O.F.D.	Exports	Total
1	102.9	11.3	624.0	0	1.9	130.8	230.8	61.3	1163.1
2	0.1	14.8	79.5	1.6	17.1	0	506.9	36.8	656.8
3	149.2	93.3	778.6	52.2	307.0	973.7	839.4	846.4	4039.8
4	51.2	48.0	236.0	41.5	114.2	572.0	0	53.5	1116.4
5	49.4	75.4	267.2	155.7	225.3	1260.3	361.0	512.9	2907.2
H.H	106.2	85.4	946.9	427.9	1232.5	0	0	0	2798.9
O.V.A.	55.5	122.9	551.2	88.7	206.1	458.3	47.1	222.9	1752.7
Imports	648.6	205.7	556.4	348.7	803.1	180.6	6.9	13.5	2763.5
Total	1163.1	656.8	4039.8	1116.4	2907.2	3575.7	1992.1	1747.3	

TABLE 2: DIRECT COEFFICIENTS MATRIX; A

0.0885 (8)	0.0172 (20)	0.1545 (2)	0.0000 (25)	0.0007(23)
0.0001 (24)	0.0225 (18)	0.0197 (19)	0.0014 (22)	0.0059 (21)
0.1283 (5)	0.1421 (3)	0.1927 (1)	0.0468 (13)	0.1056 (7)
0.0440 (14)	0.0731 (10)	0.0584 (12)	0.0372 (17)	0.0393 (16)
0.0425 (15)	0.1148 (6)	0.0661 (11)	0.1395 (4)	0.0775 (9)

TABLE 3: INVERSE MATRIX; $B = (I-A)^{-1}$

					Row Total
1.1301	0.0563	0.2209	0.0148	0.0271	1.4492
0.0046	1.0285	0.0271	0.0043	0.0098	1.0743
0.1943	0.2168	1.3000	0.0858	0.1540	1.9509
0.0669	0.1004	0.0960	1.0516	0.0565	1.3714
0.0766	0.1613	0.1213	0.1663	1.1061	1.6316
1.4725	1.5634	1.7652	1.3228	1.3534	

TABLE 4: ERROR MATRIX E1´

(d)

2.1339 (15)	2.2657 (11)	2.5581 (7)	1.9170 (18)	1.9613 (17)
1.5819 (23)	1.6796 (22)	1.8964 (19)	1.4211 (25)	1.4539 (24)
2.8727 (3)	3.0500 (2)	3.4437 (1)	2.5806 (6)	2.6403 (5)
2.0194 (16)	2.1440 (14)	2.4208 (9)	1.8141 (21)	1.8560 (20)
2.4025 (10)	2.5508 (8)	2.8801 (4)	2.1583 (13)	2.2082 (12)

TABLE 5: ERROR MATRIX $\overline{E1}$

$(\frac{p}{5})$

0.1251	0.0001	0.2174	0.0559	0.0552
0.0174	0.0242	0.1723	0.0664	0.1067
0.2698	0.0365	0.4033	0.0916	0.1061
0.0000	0.0022	0.0827	0.0492	0.1889
0.0012	0.0108	0.2175	0.0607	0.1224

TABLE 6: ERROR MATRIX $\overline{E2}$

$(\frac{p}{5})^2$

0.0624	0.0001	0.1463	0.0200	0.0222
0.0087	0.0133	0.1160	0.0237	0.0430
0.1344	0.0201	0.2716	0.0328	0.0428
0.0000	0.0013	0.0556	0.0176	0.0761
0.0006	0.0059	0.1464	0.0217	0.0493

TABLE 7: ERROR MATRIX $\overline{E3}$

$(\frac{p}{5})^3$

0.0342	0.0000	0.0805	0.0098	0.0121
0.0047	0.0071	0.0637	0.0117	0.0233
0.0740	0.0107	0.1493	0.0160	0.0232
0.0000	0.0006	0.0306	0.0086	0.0413
0.0003	0.0032	0.0806	0.0106	0.0268

TABLE 8: ERROR MATRIX $\bar{E} = \overline{E1} + \overline{E2} + \overline{E3}$ (p=1)

$(\frac{1}{5})$

0.2216 (7)	0.0002 (24)	0.4441 (4)	0.0857 (16)	0.0895 (15)
0.0308 (20)	0.0446 (19)	0.3519 (5)	0.1018 (13)	0.1730 (9)
0.4781 (2)	0.0673 (18)	0.8243 (1)	0.1404 (12)	0.1721 (10)
0.0000 (25)	0.0041 (22)	0.1688 (11)	0.0754 (17)	0.3063 (6)
0.0020 (23)	0.0198 (21)	0.4445 (3)	0.0929 (14)	0.1985 (8)

TABLE 9: CUMULATIVE SUM OF COEFFICIENTS FROM $\bar{E}$

Rank X	a_{ij}	$\bar{E}_{ij}$	$\Sigma \bar{E}ij$ Y	TC (C_2/C_1=0.2)
1	.1927	.8243	.8243	3913.4
2	.1545	.4781	1.3024	3435.3
3	.1056	.4445	1.7469	3390.8
4	.1283	.4441	2.1910	3146.7
5	.1421	.3519	2.5429	2994.8
6	.1395	.3063	2.8492	2888.5
7	.0885	.2216	3.0708	2866.9*
8	.0775	.1985	3.2693	2868.4
9	.1148	.1730	3.4423	2895.4
10	.0661	.1721	3.6144	2923.3
11	.0468	.1688	3.7832	2954.5
12	.0584	.1404	3.9236	3014.1
13	.0731	.1018	4.0254	3112.3
14	.0393	.0929	4.1183	3219.4
15	.0425	.0895	4.2078	3329.9
16	.0440	.0857	4.2935	3444.2
17	.0372	.0754	4.3689	3568.8
18	.0197	.0673	4.4362	3701.5
19	.0225	.0446	4.4808	3856.9
20	.0172	.0308	4.5116	4026.1
21	.0059	.0198	4.5314	4206.3
22	.0014	.0041	4.5355	4402.2
23	.0007	.0020	4.5375	4600.2
24	.0001	.0002	4.5377	4800.0
25	.0000	.0000	4.5377	5000.0

(* denotes minimum)

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TABLE VI-1 36-SECTOR TRANSACTIONS TABLE: ADELAIDE REGION, 1975-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	1	0	0	0	0	4249	0	0	0	0	0	0	0	0	0
2A	194	846	0	0	0	2702	2026	1645	3949	3378	0	21	0	0	0
2B	1	0	1	2	10	70	7	0	50	1	1546	11	32	0	54
3A	0	0	0	1	0	3	0	0	1	1	0	0	1	0	1
3B	0	1	2	21	14591	0	0	0	54	0	0	0	19	4	76
4A1	75	9	36	0	0	15517	997	1088	1313	0	0	368	0	0	0
4A2	0	0	0	0	0	41	1356	2021	413	1170	0	0	0	0	0
4A3	44	20	0	0	0	401	107	14848	936	62	0	0	145	0	0
4A4	101	576	33	0	0	321	531	2521	4496	4228	0	0	0	0	120
4A5	9	0	0	0	0	36	25	4	17	6476	0	0	0	0	0
4B1	0	67	5	2	3	1	0	0	3	124	5400	8637	27	0	347
4B2	0	0	32	0	0	39	0	0	0	1	41	6091	0	9	1078
4B3	25	404	0	0	57	702	156	834	355	1148	2	314	2169	1604	5119
4B4	0	0	0	0	0	21	36	51	1	9	0	0	276	1868	207
4C1	182	193	123	16	2513	128	54	47	93	231	47	80	114	460	43596
4C2	10	17	14	7	532	192	44	45	64	225	40	83	117	168	665
4D1	0	0	0	5	505	0	46	4	7	9	4	1673	63	0	19582
4D2	0	0	0	0	5	0	3	0	32	0	1	530	82	231	18093
4D3	5	7	13	21	240	1033	4079	362	1195	10600	180	2050	72	442	26453
4E	0	0	0	20	844	368	319	0	63	6085	0	1702	26	10	3077
4F1	150	525	14	1	283	89	36	65	106	109	252	287	410	331	3488
4F2	12	124	25	0	0	76	67	24	29	3	21	1376	479	75	238
4F3	0	0	0	0	0	90	0	0	10	0	0	0	6	0	1
4F4	0	3	142	0	1274	1337	841	1391	893	1352	1	3063	533	2644	14494
4F5	0	0	2	0	61	2	0	2	1	7	1	0	25	53	2
5A1	132	287	8	14	554	911	146	479	171	627	360	347	368	545	2933
5A2	0	0	0	0	6	71	8	819	46	16	1	38	31	123	1551
5A3	72	320	0	1	255	359	41	91	65	462	2	19	38	22	194
6	41	111	2	3	290	424	110	181	124	547	90	184	255	357	835
7	261	575	142	4	961	1477	377	1535	466	2694	234	1130	458	2729	6251
8A1	153	705	41	10	2127	9733	1917	2618	1912	4288	1820	3636	2032	2069	12096
8A2	0	0	0	0	1	0	0	0	0	0	90	0	0	0	64
9	4	31	0	3	843	1062	267	859	299	861	864	1606	903	2661	6161
10	0	0	0	0	0	0	0	0	0	0	4	0	0	0	21
11A	57	21	0	1	32	10	0	0	0	11	7	0	0	0	6
11B	5	0	0	0	148	0	0	0	0	7	0	0	0	23	33
H-H	4288	26752	749	275	19253	33114	4705	29711	7924	19686	4295	41873	11134	39633	139476
D.V.A.	260	1782	943	847	7379	7291	2253	9947	7612	16893	2805	8397	6196	11763	25269
IMPORTS	1904	1503	439	138	8804	72578	8492	19764	21387	29055	5785	21692	24920	39726	114591
TOTAL	7986	34959	2766	1400	61571	154448	29846	90356	54087	109774	23091	105200	51131	107550	446172

TABLE VI-1 36-SECTOR TRANSACTIONS TABLE: ADELAIDE REGION, 1976-77 (,000)

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0	0	0	0	0	0	223	0	17	0	0	0	0	0	0
2A	0	0	0	0	0	3	663	7	0	2	0	0	0	0	0
2B	0	5	0	2	5	21	1	4	2	0	9	0	0	0	0
3A	1	43	5	1	27	158	2	0	0	1	32	59	1	1	29
3B	25	1194	0	42	13400	512	0	0	112	3581	0	0	2	3007	47
4A1	0	0	0	0	9	1581	315	70	2393	3	0	0	0	0	219
4A2	0	314	0	1	0	477	1	6	105	0	0	0	0	0	238
4A3	0	0	36	0	45	467	214	0	0	0	0	0	0	0	60
4A4	0	1	0	0	6	100	0	0	0	0	0	0	0	0	0
4A5	0	10	0	0	0	240	0	0	0	0	0	0	0	0	93
4B1	635	66	40	202	71	1	5	0	113	89	0	0	0	5816	564
4B2	222	2	0	485	30	123	58	45	73	22	0	0	0	9915	6534
4B3	202	8	3	255	1146	299	482	993	209	156	0	0	9	0	12979
4B4	5	0	6	74	0	170	138	33	121	0	0	0	0	0	1340
4C1	14289	647	438	2476	1710	460	156	259	325	272	11	202	1639	24180	10286
4C2	157230	91	102	496	673	415	170	160	536	27	2494	0	0	100	79170
4D1	13791	12311	623	36263	2221	245	1	13	177	398	13	0	0	3818	127
4D2	3716	1459	8942	9693	164	569	247	9	590	1262	0	0	0	2257	2
4D3	97613	391	333	19820	833	2127	147	437	1689	877	0	204	1937	27863	5186
4E	1626	1025	713	1499	18023	606	9	5	360	5	19	0	3	36366	149
4F1	16543	482	334	655	1321	8616	838	125	4310	244	32	17	72	1220	1547
4F2	712	272	107	729	366	37	19806	7249	3569	210	0	0	0	3	788
4F3	4	38	0	6	6	0	6	1167	3	0	0	0	0	0	5
4F4	12102	20	70	2218	321	3289	631	6771	12092	2825	2	185	163	3360	9276
4F5	1	21	1	10	19	24	2	0	10	513	2	0	0	5	2268
5A1	2810	1469	1264	1664	2003	1524	934	491	1301	104	0	335	1963	564	5717
5A2	904	93	106	1410	1522	381	102	84	143	86	94	0	0	226	2048
5A3	96	112	19	179	471	272	186	71	47	10	6	4	0	335	33
6	14	80	100	704	1038	569	369	93	388	57	230	105	2003	0	5838
7	1721	422	520	2935	2160	1730	638	278	1979	368	231	287	308	6248	61877
8A1	7604	6480	3978	8112	16719	3203	1955	1463	2232	473	1771	1026	217	11010	47790
8A2	298	0	0	0	0	0	0	338	0	0	0	0	0	5	0
9	502	690	323	3711	1774	1370	1427	621	2321	563	127	119	0	2886	160277
10	695	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11A	347	0	7	0	3	1	18	339	12	0	6	0	0	5	61
11B	38	6	0	0	0	0	0	0	0	0	153	0	0	28	3124
H-H	133093	24251	10730	66953	42156	24639	20765	37316	35985	9309	29361	6242	19839	117277	353739
O.V.A.	27400	11489	10557	21310	24443	10184	5635	3740	8160	3904	39614	4370	12136	47579	391479
IMPORTS	129204	31247	31696	70148	28314	56731	23656	15149	38268	5576	3489	5161	7990	54707	162577
TOTAL	623446	94741	71053	252053	161001	121144	79800	77280	117642	30937	77696	18316	48282	358864	1320467

TABLE VI-1 36-SECTOR TRANSACTIONS TABLE: ADELAIDE REGION, 1976-77 (,000)

SECTOR	8A1	8A2	9	10	11A	11B	H-H	O.F.D.	EXPORTS	TOTAL
1	0	0	0	0	0	0	0	0	3496	7986
2A	0	0	8	1	0	243	3798	0	16073	34959
2B	101	2	0	0	4	0	283	0	542	2766
3A	22	0	1	1	9	10	0	0	989	1400
3B	109	0	27	0	24	78	0	0	24643	61571
4A1	0	0	0	7	2108	0	17497	0	110835	154448
4A2	3	0	0	0	1585	0	13365	0	7956	29046
4A3	0	0	0	0	280	0	36636	0	36055	90356
4A4	0	0	0	0	0	0	18223	0	22836	54087
4A5	0	0	42	0	0	1850	40473	0	60491	109774
4B1	469	0	0	5	0	0	1189	0	0	23881
4B2	0	0	31	1018	1934	0	11828	13045	52552	105208
4B3	1445	67	162	48	215	608	649	10374	7853	51131
4B4	0	0	2792	1881	3462	0	5580	0	89484	107550
4C1	1101	18800	1954	8540	4912	12975	62977	0	229678	446172
4C2	10333	0	74	6436	0	0	83214	155467	124095	623446
4D1	0	0	0	44	0	0	0	1119	1679	94741
4D2	0	0	0	3	0	1	0	0	23162	71053
4D3	631	3879	250	2806	3501	1707	9057	0	24005	252053
4E	0	609	40	8	1234	1157	0	25432	59591	161001
4F1	11460	6	331	197	1002	1191	458	17522	46475	121144
4F2	2657	0	57	81	2981	2306	4902	0	30414	79800
4F3	0	0	32	338	0	0	13823	0	61745	77280
4F4	7194	1360	283	716	2129	2688	5837	0	16142	117642
4F5	0	0	307	12	575	0	6521	7735	12760	30937
5A1	1351	346	7271	1087	6875	7658	13356	6975	2744	77696
5A2	474	0	28	195	2926	443	1923	1428	990	18316
5A3	351	40	8264	35	6430	5019	11883	8700	3779	48282
6	9565	229	7271	4824	5460	321	29526	232069	54447	358864
7	19312	1297	23180	653	7687	4092	150809	687011	325022	1320467
8A1	13749	3180	6272	3563	4899	1840	16394	55964	209279	469397
8A2	0	142	7381	273	0	578	29843	57992	17415	114415
9	4510	196	79950	10248	672	12485	336228	0	222188	859612
10	0	0	106	0	0	0	24623	197802	61190	284441
11A	489	1	3881	89	732	0	86995	399818	64593	557542
11B	406	0	11348	5	246	7119	84913	83030	55345	245971
H-H	201816	56216	326867	208491	381689	76698	0	0	0	2566380
O.V.A.	88169	23265	319522	9717	56785	73030	0	0	0	1302125
IMPORTS	93680	4772	51880	23119	57186	30986	605919	0	0	1902313
TOTAL	469397	114415	859612	284441	557542	245971	1728722	1961483	2080533	0

TABLE VI-2 19-SECTOR TRANSACTIONS TABLE: NORTHERN REGION, 1976-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	N-M	G.F.D.	EXPORTS	TOTAL
1	1	0	0	0	0	2951	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	49122	52077
2A	3163	2283	0	0	0	639	0	0	0	0	3	0	0	0	0	0	0	0	7	3283	0	86365	95743
2B	16	0	2	56	31	51	300	1	41	0	21	10	0	0	147	0	0	3	0	330	0	2970	4285
3A	0	3	0	75	4	9	4	7	971	25	126	455	6	165	196	4	8	43	601	0	0	8836	11285
3B	0	1	1	100	2340	3	2	6	10112	1027	199	1	252	6	28	2	0	2	71	0	0	34003	48084
4A	607	392	141	0	1	1510	6	0	40	2	120	0	0	30	0	1	1	152	0	7946	0	5300	14245
4B	11	31	21	12	9	5	1090	319	151	6	4	0	418	167	57	54	30	112	41	709	19627	5082	27747
4C	327	275	44	43	273	15	30	2009	460	24	20	853	279	498	4184	20	503	42	125	12573	13528	13271	50126
4D	15	56	7	121	383	16	286	5009	70212	353	170	124	2040	133	66	5	104	77	19	571	37426	149820	274949
4E	0	0	0	117	166	3	13	2	557	335	2	1	1741	10	5	0	0	5	0	0	1354	4396	8917
4F	918	1670	16	0	27	5	16	10	200	0	1793	5	14	117	368	0	10	61	461	618	350	1133	7823
5	1292	1254	24	146	1232	292	274	324	3656	149	100	799	121	1126	829	201	152	1847	2321	5087	9215	3283	33682
6	251	314	1	22	282	38	97	28	270	40	35	445	0	493	3040	426	323	565	211	2299	19557	0	28471
7	1742	1557	151	18	284	132	320	226	895	79	41	118	301	5217	2075	1441	51	500	396	19550	96157	27121	158380
8	965	1328	54	137	1290	884	983	299	16736	1134	141	619	830	3818	2324	1969	295	486	235	6229	51799	20564	112206
9	11	3	0	9	599	54	249	127	826	17	44	20	21	7000	452	2116	340	40	674	11058	0	42397	66137
10	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2691	20462	2529	25689
11A	412	127	0	4	70	1	0	4	7	0	0	2	0	5	1	170	11	83	0	15252	41124	3111	56392
11B	4	0	0	0	60	1	4	0	0	0	0	21	3	324	33	476	0	23	1981	8570	10704	4637	25146
N-M	27007	63095	1023	2202	16033	3734	8959	17191	42600	1915	1063	13012	9512	45209	39183	26403	10394	39966	7744	0	0	0	424607
G.V.A.	1611	6671	1574	6794	21790	1183	3444	3331	34653	1243	79	15203	3744	44709	15247	24733	658	4078	7619	0	0	0	191268
IMPORTS	13724	16673	1224	1349	6672	4801	11504	20634	62240	2324	3123	2912	9171	49185	23509	9001	4007	7595	5634	149303	0	0	402273
TOTAL	52077	95743	4285	11265	48084	14245	27747	50126	274949	8917	7823	33682	20471	158380	112206	66137	25689	56392	25146	242077	320303	464740	0

TABLE VI-3 19-SECTOR TRANSACTIONS TABLE: EASTERN REGION, 1976-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	N-H	G.F.C.	EXPORTS	TOTAL
1	119	0	0	0	0	30630	0	0	0	0	635	0	0	0	0	0	0	0	0	0	0	46528	77912
2A	8194	13012	0	0	0	21934	1	0	0	0	65	0	0	0	0	2	0	0	68	3178	0	75544	121998
2B	69	0	31	30	55	343	545	7	2	5	93	0	0	0	123	0	0	3	6	320	1	2532	4165
3A	1	3	0	4	0	34	0	1	0	102	17	46	2	32	13	1	1	9	15	0	0	1971	2252
3B	1	2	5	17	915	14	1	12	112	799	97	0	339	4	11	2	0	2	7	0	0	11083	13423
4A	3223	1530	103	0	0	20820	10	5	5	2	1092	0	0	62	0	4	1	337	100	18179	0	166529	220802
4B	179	1141	36	5	8	1015	1099	80	37	151	72	1	1720	954	107	84	42	104	19	1687	1130	2111	11799
4C	1149	683	87	14	194	177	12	3456	47	60	19	113	966	2036	1002	51	340	90	371	9021	6415	4245	31956
4D	14	12	4	10	15	2072	22	519	465	38	119	86	1069	150	9	7	39	89	20	531	3935	2631	11976
4E	0	0	0	30	222	563	19	36	26	885	7	2	2236	9	3	2	1	70	92	3	3816	8260	15393
4F	177	239	12	0	15	427	48	108	29	15	5156	9	91	200	704	16	10	105	107	2173	2342	9367	21488
5	1470	1702	7	12	70	1108	46	142	60	328	111	225	80	379	132	435	52	983	1124	2934	1552	276	13774
6	346	361	5	5	42	765	36	22	27	114	26	299	0	421	1005	477	130	485	19	3873	30256	0	39654
7	2396	1967	234	6	140	2141	159	26	106	69	132	61	544	4906	1636	1025	39	479	435	20445	55132	23764	126324
8	1445	2662	67	29	415	11499	447	327	15	1706	267	101	1212	3509	1073	1244	211	349	254	6195	20013	2052	53977
9	11	26	0	2	29	715	106	148	78	22	134	5	22	6227	101	2285	321	35	665	16419	0	40952	68303
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2168	14539	1612	18367
11A	453	70	1	1	17	25	0	34	0	1	5	0	1	4	0	203	6	67	0	11053	33432	1434	46817
11B	20	0	0	0	32	0	1	2	6	0	0	9	3	274	5	276	0	19	11	10971	1933	11527	25111
N-H	39550	92717	1175	443	4056	44191	4004	9688	4142	4764	6984	5454	13120	33671	26756	26462	13463	33268	7723	0	0	0	372181
D.V.A.	4223	2749	1314	1366	4391	23775	1445	1300	1057	2712	241	4941	5244	36617	7541	25875	586	3996	7532	0	0	0	137213
IMPORTS	14264	3114	1004	270	2799	49756	3000	16027	5674	3700	6296	2336	12901	33909	15356	9220	3146	6253	6549	125414	0	0	324646
TOTAL	77912	121998	4165	2252	13423	220802	11799	31956	11076	15393	21480	13774	39654	126324	53977	68303	18367	46817	25111	234367	185855	413218	0

TABLE VI-4 19-SECTOR TRANSACTIONS TABLE: CENTRAL REGION, 1976-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H	G.F.D.	EXPORTS	TOTAL
1	2	0	0	0	0	1539	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	35820	37366
2A	3369	2838	0	0	0	2218	0	0	0	0	0	0	0	0	0	1	0	0	6	1031	0	74787	84250
2B	2	0	0	0	4	5	0	0	0	0	53	0	0	0	5	0	0	1	0	104	0	1107	1281
3A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3B	0	0	0	0	1643	0	0	1	101	115	82	0	83	1	4	0	0	1	1	0	0	9497	11529
4A	311	97	7	0	0	2443	0	0	0	1	106	0	0	3	0	2	0	35	0	1486	4759	6848	16098
4B	7	17	21	0	0	8	60	2	1	0	3	0	263	92	1	18	4	51	0	359	718	190	1815
4C	550	829	3	0	21	4	0	199	3	1	8	10	33	207	255	5	12	4	10	386	0	0	2540
4D	2	22	0	0	7	132	3	18	93	2	15	2	190	28	8	2	3	11	0	146	1936	1059	3679
4E	0	0	0	0	141	0	2	1	3	237	4	0	324	3	0	0	0	9	6	0	665	228	1623
4F	1002	4241	5	0	31	20	9	4	23	17	1309	2	11	46	470	7	2	51	44	177	439	2287	10990
5	608	765	4	0	75	92	7	13	19	25	197	55	23	125	96	146	12	345	288	995	338	32	4260
6	146	236	0	0	32	40	3	2	7	7	18	46	0	87	306	57	18	97	2	867	7619	157	9747
7	1283	1457	45	0	109	164	23	2	30	7	72	15	124	1130	587	450	7	174	81	6629	15393	4632	32404
8	701	1202	16	0	364	680	61	23	5	241	294	73	277	942	500	633	33	133	45	2042	13443	3114	24822
9	4	2	0	0	20	30	9	7	11	1	27	1	4	1002	49	612	57	4	81	4637	2731	20033	29327
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	372	2561	223	3158
11A	238	72	0	0	9	0	0	3	0	0	0	0	0	1	0	75	0	1	0	3663	11515	1157	16734
11B	1	0	0	0	9	0	0	0	0	0	0	2	1	66	1	72	0	3	1	2439	1689	1172	4856
H-H	19971	44710	277	0	3561	3677	721	799	1188	431	2916	1656	3215	9822	11985	12333	2303	11739	1502	0	0	0	131926
G.V.A.	567	5847	480	0	3208	2058	184	99	372	205	137	1828	1291	9264	3401	10745	99	1523	1482	0	0	0	42792
IMPORTS	7802	21835	423	0	2295	2986	733	1367	1823	333	5753	570	3688	10483	7234	4167	606	2550	1307	50652	0	0	126811
TOTAL	37366	84250	1281	0	11529	16098	1815	2540	3679	1623	10990	4260	9747	32404	24822	29327	3158	16734	4856	75965	63206	162338	0

TABLE VI-5 19-SECTOR TRANSACTIONS TABLE: SOUTH-EASTERN REGION, 1976-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	N-M	G.F.B.	EXPORTS	TOTAL
1	6	0	0	0	0	6592	0	0	0	0	65	0	0	0	0	0	0	0	0	0	0	36596	43259
2A	3463	858	0	0	0	2874	9	0	0	0	15	2	0	0	0	1	0	0	22	1000	0	2215	10453
2B	94	0	154	0	0	32	6532	0	0	0	25	4	0	0	35	0	0	1	0	152	0	11703	18710
3A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3B	1	0	20	0	660	9	74	0	1	119	28	0	149	3	4	1	0	1	4	0	0	2765	2851
4A	583	7	99	0	0	3122	18	0	0	0	34	0	0	18	0	2	0	116	16	6703	0	17042	27702
4B	0	50	116	0	0	229	37982	2	6	9	16	0	1128	429	14	87	16	107	115	1765	18271	83244	143535
4C	66	6	55	0	6	2	28	10	1	6	1	5	37	276	57	3	5	2	13	192	179	24	988
4D	4	0	5	0	2	109	34	6	16	1	5	15	130	45	1	2	5	10	4	82	403	357	1136
4E	0	0	0	0	5	61	160	0	0	25	0	0	740	1	1	0	0	1	5	0	91	580	1610
4F	673	131	285	0	10	21	381	2	4	2	518	1	11	92	464	9	2	82	100	495	1884	1610	7010
5	997	143	27	0	19	189	1643	7	12	19	53	103	49	375	71	234	24	392	717	1543	240	76	7158
6	113	14	15	0	9	31	456	0	2	0	17	47	0	84	153	64	24	69	41	1059	13901	266	18350
7	1427	152	1163	0	51	283	1315	1	13	10	45	36	267	3519	834	920	11	269	232	9684	46338	21880	86355
8	237	196	316	0	132	1309	4863	9	1	200	73	129	534	2237	343	565	33	194	122	2701	5365	697	22546
9	10	3	0	0	21	107	1600	7	13	4	75	3	16	5201	27	1321	140	10	441	9352	0	17771	36324
10	0	0	0	0	5	3	0	0	0	0	0	0	0	0	0	3	0	0	0	504	4720	246	5473
11A	181	0	1	0	1	6	1	0	0	0	0	0	0	1	0	96	0	0	0	4500	17432	1457	23678
11B	10	0	0	0	4	3	1	0	0	0	0	3	1	34	1	115	0	4	2	4240	5277	3504	13217
N-M	24258	5349	5790	0	1244	5813	40474	299	328	424	2902	2778	5961	23492	10155	13395	4133	16573	4887	0	0	0	168457
G.V.A.	287	557	5453	0	692	2463	19134	42	124	238	65	2787	2442	25695	4004	13644	243	2183	4007	0	0	0	84314
IMPORTS	18376	2755	3283	0	787	4177	26984	603	715	367	2973	1321	6885	26634	6483	5142	837	3448	3316	67616	0	0	174499
TOTAL	43259	18453	18710	0	2851	27702	143535	988	1436	1610	7010	7158	18350	86355	22546	36324	5473	23678	13217	111805	116101	282163	0

TABLE VI-6 36-SECTOR TRANSACTIONS TABLE: SOUTH AUSTRALIA, 1976-77 (,000)

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	130	0	0	0	0	99115	0	0	0	0	0	0	0	0	0
2A	18394	19838	0	0	0	8543	11775	8518	16539	37302	0	61	0	0	0
2B	238	0	188	189	262	641	69	5	369	24	9931	130	2676	2	307
3A	1	6	1	80	4	41	5	3	6	11	6	0	107	0	8
3B	2	4	28	219	22356	0	0	0	70	0	0	0	184	5	108
4A1	2043	51	379	0	0	31048	1976	1651	1900	0	0	453	0	0	0
4A2	0	0	0	0	0	100	3283	3199	645	2388	0	1	0	0	0
4A3	1195	101	0	0	0	648	236	17903	1021	66	0	0	625	0	0
4A4	1543	2479	267	0	0	492	1072	2542	4687	4773	0	0	0	0	131
4A5	199	0	0	0	3	101	60	6	32	20005	0	0	0	0	0
4B1	0	821	90	36	24	3	0	0	7	237	34684	22614	317	0	663
4B2	0	0	296	0	14	73	0	0	0	2	261	6559	0	10	1147
4B3	849	2826	0	0	69	999	330	1070	378	2245	41	364	22226	14122	5878
4B4	0	0	0	0	8	31	67	60	1	33	0	0	366	2000	255
4C1	5089	2769	1338	150	4362	206	101	56	101	406	262	90	338	485	48316
4C2	319	433	126	87	1088	319	95	56	76	503	271	96	446	190	699
4D1	0	0	0	101	1761	2	226	9	20	20	115	3837	155	0	42969
4D2	0	0	0	0	37	0	9	0	47	0	24	939	254	366	24426
4D3	148	152	97	173	393	1235	6687	380	1234	11036	1156	2158	211	473	30923
4E	0	0	0	169	1676	693	755	0	82	13316	88	2049	54	12	3193
4F1	4274	6011	166	7	429	116	51	73	86	130	1619	313	645	345	3629
4F2	301	935	266	0	12	125	75	29	38	15	178	1091	645	84	290
4F3	0	0	0	0	5	114	0	0	10	0	0	0	54	0	2
4F4	0	41	1359	4	2362	2285	1729	1710	958	1745	21	3347	667	2939	14812
4F5	0	0	23	0	95	3	1	2	1	10	17	0	61	83	2
5A1	3390	2470	84	163	1582	1665	324	647	213	1129	2312	440	1516	672	3165
5A2	0	0	0	0	11	119	19	1007	51	24	14	44	45	138	1590
5A3	1752	2892	0	11	626	584	75	112	66	769	33	22	238	25	199
6	1106	1129	30	32	601	660	219	209	139	1064	570	200	789	380	900
7	7685	6179	1741	45	1753	2374	764	1832	511	3621	1503	1280	1241	2997	6351
8A1	4217	6804	496	191	4430	16103	4256	3218	2399	9344	11561	4277	3892	2350	12372
8A2	0	0	0	0	43	0	0	0	0	1	570	0	0	0	90
9	102	175	0	28	2356	1760	562	1056	355	1545	5549	1060	1702	3006	6484
10	0	0	0	0	4	0	0	0	0	0	23	0	0	0	33
11A	1726	290	3	6	137	15	0	0	0	42	46	0	3	0	7
11B	78	0	0	0	303	0	0	0	0	28	0	0	0	26	34
H-H	115483	232023	9015	2920	38740	54091	10170	36529	9266	37276	27585	46832	23766	44890	145576
O.V.A.	6945	20373	10178	9007	35227	12320	4077	12230	8849	35722	17339	9730	12350	13450	26310
IMPORTS	41392	37722	5035	1239	17677	20129	12326	16973	13014	38026	7504	10715	31467	33017	97012
TOTAL	210601	347403	31206	14057	138458	257635	62202	111005	63970	222006	123299	120272	107048	122067	478709

TABLE VI-6 36-SECTOR TRANSACTIONS TABLE: SOUTH AUSTRALIA, 1976-77 (,000)

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0	0	0	0	0	0	5683	0	557	0	0	0	0	0	0
2A	0	0	0	0	0	9	1881	21	0	53	0	0	0	0	0
2B	2	163	5	25	57	234	6	22	17	0	126	0	0	0	0
3A	11	1032	83	9	320	1304	14	0	4	8	379	502	11	14	288
3B	31	12836	0	44	15461	675	0	0	113	3887	0	4	3	3838	61
4A1	0	0	0	0	15	2393	382	97	4102	3	0	0	0	0	330
4A2	0	1251	0	1	0	662	2	0	140	0	0	0	0	0	377
4A3	0	0	70	0	59	533	215	0	0	0	0	0	0	0	73
4A4	0	3	0	0	0	100	0	0	0	0	0	0	0	0	0
4A5	0	32	0	0	0	201	0	0	0	0	0	0	0	0	121
4B1	1698	379	140	457	71	4	10	1	244	178	0	0	0	13221	1239
4B2	977	6	0	518	37	132	61	46	97	24	0	0	0	12394	7518
4B3	210	33	59	289	1564	340	559	1020	508	331	0	0	10	0	14006
4B4	0	0	9	81	0	192	148	34	100	0	0	0	0	0	1346
4C1	17019	1887	754	2525	1783	485	157	267	328	288	13	204	1899	27953	12553
4C2	157291	287	201	533	848	522	193	105	547	29	3786	0	0	132	114690
4D1	31418	80521	2565	81597	3561	610	2	29	373	887	42	0	0	10142	326
4D2	5621	6509	25114	14956	304	881	368	14	886	1946	0	0	0	4086	4
4D3	98191	962	513	21310	785	2200	157	446	2065	888	0	210	2125	34099	6329
4E	1682	3213	1407	1664	20473	701	9	5	378	5	29	0	5	41407	184
4F1	18896	1227	539	659	1349	9303	770	106	4382	250	37	18	77	1337	1652
4F2	713	853	212	768	455	37	20655	9383	3573	218	0	0	0	10	999
4F3	5	105	0	9	9	0	8	1826	4	0	0	0	0	0	7
4F4	12188	63	137	2370	390	4307	654	7028	13053	3046	3	203	226	4279	11603
4F5	1	66	2	11	25	29	3	0	14	550	4	0	0	0	2415
5A1	2940	5059	2740	1968	2900	2012	1127	538	1474	124	0	404	2998	793	7981
5A2	1177	291	210	1512	1815	450	159	89	148	93	142	0	0	286	2597
5A3	125	331	37	193	586	313	215	77	55	11	10	4	0	429	41
6	36	260	186	712	1195	641	393	102	328	57	328	109	2616	0	6923
7	2113	1274	989	3092	2334	1898	602	311	1987	382	347	311	418	7656	77519
8A1	8160	20320	7854	8795	20256	3837	2160	1559	2353	510	2689	1126	302	13973	53720
8A2	381	0	0	0	0	0	0	368	0	0	0	0	0	0	0
9	755	2163	630	3994	1818	1549	1578	634	2429	607	193	131	0	2950	205647
10	763	0	0	0	0	0	6	0	0	0	0	0	4	0	0
11A	381	0	14	0	5	1	22	369	14	0	9	0	0	6	71
11B	40	0	0	0	0	0	0	0	0	0	202	0	0	35	3822
H-H	157536	76047	21183	72237	49691	28721	24817	39915	37950	10050	44571	6848	27580	149095	465214
O.V.A.	30360	36027	20042	22991	28032	11714	6237	3969	8750	4223	60135	4794	16371	60284	508126
IMPORTS	125790	43874	53774	29096	32337	64145	22921	14000	37887	4752	4904	5228	11982	66667	218147
TOTAL	676519	297094	140277	272416	188543	141215	92198	82381	124926	33400	117949	20696	67123	455006	1725929

TABLE VI-6 36-SECTOR TRANSACTIONS TABLE: SOUTH AUSTRALIA, 1976-77 (,000)

SECTOR	8A1	8A2	9	10	11A	11B	H-H	O.F.D.	EXPORTS	TOTAL
1	0	0	0	0	0	0	0	0	113116	218601
2A	0	0	27	2	0	776	33412	0	191229	347403
2B	1624	28	0	0	30	0	3263	2	10570	31206
3A	256	5	9	12	87	101	0	0	10129	14857
3B	159	0	33	0	32	98	0	0	78207	138458
4A1	0	0	0	10	3020	0	33214	0	174568	257635
4A2	5	0	0	0	2655	0	27563	1	19929	62202
4A3	0	0	0	0	331	0	50696	0	37313	111085
4A4	0	0	0	0	0	0	43553	1	2327	63970
4A5	0	5	56	0	0	3865	56006	0	142119	222886
4B1	1144	0	0	10	0	0	15666	29341	0	123299
4B2	0	0	31	1058	2017	0	16368	14701	55843	120272
4B3	1573	72	657	51	269	984	3033	30133	0	107048
4B4	0	0	2076	1944	3841	0	15170	1	93504	122067
4C1	1652	25135	2055	9232	5804	14764	87146	0	200657	478709
4C2	22604	0	70	7002	0	0	115149	49548	197356	676519
4D1	0	0	0	115	0	0	0	14744	20927	297094
4D2	0	0	0	6	1	2	0	0	53507	140277
4D3	678	4002	267	2910	3607	1750	21162	9779	1445	272416
4E	0	631	52	9	1531	1637	0	36572	54860	188543
4F1	17025	6	399	240	1267	1253	4406	17777	40326	141215
4F2	3659	0	86	133	3936	3257	7797	2	30568	92198
4F3	0	0	33	349	0	0	22503	0	57338	82381
4F4	8972	1829	342	875	2719	3591	8077	0	4978	124920
4F5	0	0	307	15	660	0	9823	7307	12582	33400
5A1	2121	511	7500	1396	9214	11300	32820	153	0	117949
5A2	598	0	35	228	3559	628	2661	406	0	20096
5A3	514	53	9064	43	8244	6369	16444	16551	0	67123
6	14651	290	8296	5320	6697	367	59256	345528	1700	455086
7	24617	1710	27739	765	9234	6089	208666	845399	460500	1725929
8A1	17716	4275	7779	4200	6008	2413	22985	340969	3800	645837
8A2	0	191	9558	340	0	679	41296	100293	0	153026
9	5874	264	94286	11119	871	16557	474750	2	204347	1059704
10	0	0	132	0	0	0	34073	302100	0	337129
11A	483	1	4576	103	883	0	120381	571561	0	791163
11B	448	0	12307	6	295	7331	229942	30003	29400	314300
H-H	291198	75579	406260	246727	483228	97775	0	0	0	3649000
O.V.A.	121392	31278	394366	11324	69349	93702	0	0	0	1779681
IMPORTS	106874	7966	70536	30776	71612	38922	585600	0	0	2032646
TOTAL	645837	153826	1059704	337120	781163	314306	2392157	2763034	2305136	0

APPENDIX VII

MULTIPLIERS: NON-UNIFORM TABLES FOR THE REGIONS AND STATE OF SOUTH AUSTRALIA

TABLE VII-1 TOTAL SECTOR OUTPUT MULTIPLIERS ADELAIDE REGION: 36-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'N INDUCED	TOTAL
1	1.0000	0.1921	0.0663	0.2384	0.3245	2.0820
2A	1.0000	0.1400	0.0450	0.1858	1.0915	2.2274
2B	1.0000	0.2296	0.1039	0.3335	0.4837	1.8172
3A	1.0000	0.1000	0.0480	0.1480	0.3174	1.4654
3B	1.0000	0.4245	0.2359	0.6604	0.6832	2.3436
4A1	1.0000	0.2685	0.0862	0.3547	0.4427	1.7773
4A2	1.0000	0.4681	0.1934	0.6615	0.5065	2.1680
4A3	1.0000	0.3424	0.1468	0.4892	0.6358	2.1249
4A4	1.0000	0.3173	0.1133	0.4307	0.3953	1.8260
4A5	1.0000	0.4021	0.1853	0.5874	0.4675	2.0549
4B1	1.0000	0.4604	0.2274	0.68[illegible]0	0.4002	2.1689
4B2	1.0000	0.3160	0.1543	0.4703	0.7018	2.1721
4B3	1.0000	0.1737	0.0554	0.2291	0.3791	1.6092
4B4	1.0000	0.1527	0.0509	0.2037	0.5686	1.7723
4C1	1.0000	0.3739	0.1609	0.5348	0.6111	2.1459
4C2	1.0000	0.5353	0.3562	0.8915	0.5770	2.4684
4D1	1.0000	0.2929	0.1102	0.4031	0.4963	1.8994
4D2	1.0000	0.2543	0.0851	0.3394	0.3147	1.6541
4D3	1.0000	0.3715	0.1517	0.5232	0.5407	2.0639
4E	1.0000	0.4105	0.1913	0.6018	0.5960	2.1979
4F1	1.0000	0.2443	0.0916	0.3359	0.3920	1.7279
4F2	1.0000	0.3727	0.1739	0.5467	0.5539	2.1006
4F3	1.0000	0.2727	0.1170	0.3897	0.7919	2.1817
4F4	1.0000	0.2995	0.1201	0.4196	0.5618	1.9814
4F5	1.0000	0.3927	0.1896	0.5822	0.6191	2.2014
5A1	1.0000	0.0673	0.0396	0.1070	0.5366	1.6436
5A2	1.0000	0.1388	0.0455	0.1844	0.5304	1.7147
5A3	1.0000	0.1723	0.0738	0.2461	0.6395	1.8856
6	1.0000	0.3079	0.1975	0.5854	0.6558	2.2412
7	1.0000	0.3125	0.1331	0.4456	0.5358	1.9815
8A1	1.0000	0.1826	0.0825	0.2651	0.6670	1.9321
8A2	1.0000	0.2636	0.1289	0.3925	0.8633	2.1958
9	1.0000	0.1877	0.0565	0.2442	0.3146	1.8588
10	1.0000	0.1516	0.0706	0.2221	1.0540	2.2761
11A	1.0000	0.1116	0.0415	0.1525	0.9629	2.1154
11B	1.0000	0.2653	0.0955	0.3608	0.5636	1.9244

TABLE VII-2 TOTAL SECTOR OUTPUT MULTIPLIERS **************************** NORTHERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.1869	0.0365	0.2234	0.3431	1.5665
2A	1.0000	0.0972	0.0219	0.1191	0.3933	1.5124
2B	1.0000	0.1078	0.0306	0.1384	0.1578	1.2962
3A	1.0000	0.0768	0.0203	0.0970	0.1262	1.2232
3B	1.0000	0.1453	0.0281	0.1734	0.1556	1.3290
4A	1.0000	0.3964	0.1052	0.5015	0.2527	1.7542
4B	1.0000	0.1382	0.0249	0.1632	0.2116	1.3748
4C	1.0000	0.1829	0.0805	0.2634	0.2326	1.4960
4D	1.0000	0.4195	0.1975	0.6170	0.2243	1.8413
4E	1.0000	0.3852	0.1004	0.4856	0.2096	1.6952
4F	1.0000	0.3526	0.1447	0.4972	0.2065	1.7038
5	1.0000	0.1029	0.0202	0.1231	0.2387	1.3619
6	1.0000	0.2122	0.0876	0.2998	0.2343	1.5341
7	1.0000	0.1212	0.0173	0.1385	0.1883	1.3268
8	1.0000	0.1271	0.0297	0.1569	0.3235	1.4804
9	1.0000	0.0907	0.0131	0.1038	0.2442	1.3480
10	1.0000	0.0712	0.0161	0.0873	0.4158	1.5031
11A	1.0000	0.0702	0.0130	0.0833	0.4110	1.4943
11B	1.0000	0.1642	0.0227	0.1869	0.2104	1.3973

TABLE VII-3 TOTAL SECTOR OUTPUT MULTIPLIERS **************************** EASTERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2499	0.0679	0.3178	0.4937	1.8115
2A	1.0000	0.1920	0.0457	0.2376	0.6567	1.8943
2B	1.0000	0.1421	0.0378	0.1799	0.2492	1.4291
3A	1.0000	0.0733	0.0138	0.0871	0.1666	1.2537
3B	1.0000	0.1622	0.0308	0.1930	0.2710	1.4640
4A	1.0000	0.4649	0.1654	0.6303	0.3619	1.9922
4B	1.0000	0.2087	0.0432	0.2519	0.3195	1.5713
4C	1.0000	0.1544	0.0270	0.1814	0.2669	1.4483
4D	1.0000	0.0845	0.0129	0.0974	0.2807	1.3781
4E	1.0000	0.2740	0.0512	0.3251	0.3179	1.6430
4F	1.0000	0.3745	0.1837	0.5582	0.3776	1.9358
5	1.0000	0.0757	0.0126	0.0883	0.3143	1.4026
6	1.0000	0.2093	0.0461	0.2555	0.3085	1.5640
7	1.0000	0.1587	0.0251	0.1838	0.2441	1.4279
8	1.0000	0.1076	0.0250	0.1326	0.3843	1.5169
9	1.0000	0.0958	0.0139	0.1097	0.3175	1.4272
10	1.0000	0.0670	0.0109	0.0778	0.5575	1.6353
11A	1.0000	0.0706	0.0155	0.0861	0.5450	1.6310
11B	1.0000	0.1317	0.0214	0.1531	0.2677	1.4208

TABLE VII-4 TOTAL SECTOR OUTPUT MULTIPLIERS CENTRAL REGION:
****************************** 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2416	0.0416	0.2831	0.2887	1.5718
2A	1.0000	0.1407	0.0244	0.1652	0.2635	1.4287
2B	1.0000	0.0788	0.0122	0.0910	0.1103	1.2013
3A	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
3B	1.0000	0.2138	0.0506	0.2644	0.1773	1.4417
4A	1.0000	0.4581	0.1499	0.6080	0.2127	1.8207
4B	1.0000	0.0975	0.0115	0.1090	0.1965	1.3055
4C	1.0000	0.1083	0.0127	0.1209	0.1586	1.2795
4D	1.0000	0.0805	0.0137	0.0941	0.1575	1.2517
4E	1.0000	0.4030	0.1153	0.5182	0.2008	1.7190
4F	1.0000	0.1987	0.0424	0.2412	0.1520	1.3931
5	1.0000	0.0484	0.0053	0.0536	0.1827	1.2363
6	1.0000	0.1388	0.0299	0.1687	0.1737	1.3425
7	1.0000	0.1122	0.0120	0.1242	0.1449	1.2691
8	1.0000	0.0919	0.0134	0.1053	0.2298	1.3352
9	1.0000	0.0710	0.0071	0.0781	0.2017	1.2797
10	1.0000	0.0469	0.0048	0.0517	0.3344	1.3860
11A	1.0000	0.0550	0.0070	0.0620	0.3228	1.3848
11B	1.0000	0.1164	0.0110	0.1273	0.1591	1.2864

TABLE VII-5 TOTAL SECTOR OUTPUT MULTIPLIERS SOUTH-EASTERN REGION:
****************************** 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.1947	0.0352	0.2300	0.3929	1.6229
2A	1.0000	0.1492	0.0253	0.1745	0.3637	1.5382
2B	1.0000	0.1166	0.0230	0.1396	0.2112	1.3508
3A	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
3B	1.0000	0.2410	0.0604	0.3014	0.2540	1.5554
4A	1.0000	0.5432	0.1670	0.7101	0.3155	2.0257
4B	1.0000	0.3966	0.1649	0.5615	0.2730	1.8344
4C	1.0000	0.0445	0.0047	0.0492	0.1913	1.2406
4D	1.0000	0.0481	0.0070	0.0550	0.2308	1.2858
4E	1.0000	0.2416	0.0459	0.2876	0.2219	1.5094
4F	1.0000	0.1526	0.0293	0.1820	0.2904	1.4724
5	1.0000	0.0492	0.0055	0.0547	0.2439	1.2985
6	1.0000	0.1669	0.0550	0.2218	0.2358	1.4577
7	1.0000	0.1399	0.0198	0.1597	0.1924	1.3521
8	1.0000	0.0965	0.0153	0.1118	0.2886	1.4004
9	1.0000	0.0975	0.0129	0.1104	0.2541	1.3645
10	1.0000	0.0475	0.0068	0.0543	0.4625	1.5168
11A	1.0000	0.0623	0.0117	0.0739	0.4330	1.5070
11B	1.0000	0.1367	0.0185	0.1552	0.2185	1.3737

TABLE VII-6 TOTAL SECTOR OUTPUT MULTIPLIERS SOUTH AUSTRALIA: 36-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL
1	1.0000	0.2506	0.0973	0.3479	1.1879	2.5358
2A	1.0000	0.1626	0.0600	0.2226	1.3466	2.5691
2B	1.0000	0.2236	0.1288	0.3524	0.6996	2.0520
3A	1.0000	0.1138	0.0600	0.1739	0.4402	1.6140
3B	1.0000	0.3381	0.1695	0.5075	0.7698	2.2773
4A1	1.0000	0.6610	0.3054	0.9664	1.1221	3.0885
4A2	1.0000	0.5598	0.2950	0.8548	0.8782	2.7335
4A3	1.0000	0.4083	0.2128	0.6211	0.9910	2.6120
4A4	1.0000	0.5009	0.2116	0.7124	0.8194	2.5318
4A5	1.0000	0.5019	0.2526	0.7544	0.8021	2.5565
4B1	1.0000	0.5748	0.3665	0.9413	0.8973	2.8285
4B2	1.0000	0.4406	0.3263	0.7669	1.0815	2.8484
4B3	1.0000	0.3686	0.1788	0.5474	0.6625	2.2100
4B4	1.0000	0.2516	0.1187	0.3703	0.8395	2.2087
4C1	1.0000	0.4366	0.2783	0.7149	0.8925	2.6074
4C2	1.0000	0.5363	0.4527	0.9890	0.8730	2.8620
4D1	1.0000	0.4751	0.2918	0.7669	0.8463	2.6132
4D2	1.0000	0.3171	0.1399	0.4570	0.4701	1.9271
4D3	1.0000	0.5436	0.3720	0.9156	0.9144	2.8300
4E	1.0000	0.4163	0.1990	0.6153	0.8128	2.4281
4F1	1.0000	0.2594	0.1251	0.3845	0.5585	1.9431
4F2	1.0000	0.4146	0.2088	0.6234	0.8581	2.4815
4F3	1.0000	0.2974	0.1553	0.4527	1.1153	2.5680
4F4	1.0000	0.3229	0.1730	0.4959	0.8042	2.3001
4F5	1.0000	0.4304	0.2284	0.6588	0.8614	2.5201
5A1	1.0000	0.0707	0.0447	0.1154	0.7301	1.8456
5A2	1.0000	0.1605	0.0581	0.2187	0.7318	1.9504
5A3	1.0000	0.1593	0.0866	0.2459	0.8625	2.1084
6	1.0000	0.3934	0.2674	0.6609	0.9212	2.5821
7	1.0000	0.3097	0.1510	0.4607	0.7364	2.1970
8A1	1.0000	0.1957	0.1062	0.3018	0.9560	2.2578
8A2	1.0000	0.2536	0.1655	0.4191	1.0947	2.5138
9	1.0000	0.1779	0.0558	0.2337	0.8288	2.0624
10	1.0000	0.1433	0.0817	0.2250	1.4213	2.6463
11A	1.0000	0.1098	0.0522	0.1620	1.3136	2.4756
11B	1.0000	0.2669	0.1110	0.3779	0.7699	2.1478

TABLE VII-7 TOTAL SECTOR INCOME MULTIPLIERS ADELAIDE REGION: 36-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5369	0.0709	0.0206	0.0915	0.2054	0.9130	1.1321	1.1705	1.7619
2A	0.7652	0.0526	0.0142	0.0668	0.3778	1.2098	1.0688	1.0873	1.5810
2B	0.2708	0.0668	0.0312	0.0979	0.1674	0.5361	1.2466	1.3617	1.9799
3A	0.1964	0.0313	0.0143	0.0455	0.1099	0.3518	1.1592	1.2318	1.7911
3B	0.3127	0.1353	0.0728	0.2081	0.2365	0.7573	1.4326	1.6655	2.4218
4A1	0.2144	0.0949	0.0282	0.1230	0.1532	0.4907	1.4425	1.5739	2.2885
4A2	0.1620	0.1644	0.0597	0.2241	0.1753	0.5614	2.0150	2.3835	3.4658
4A3	0.3288	0.1085	0.0473	0.1558	0.2200	0.7047	1.3299	1.4738	2.1430
4A4	0.1465	0.1174	0.0375	0.1548	0.1368	0.4382	1.8010	2.0568	2.9907
4A5	0.1793	0.1200	0.0570	0.1770	0.1618	0.5181	1.6694	1.9871	2.8893
4B1	0.1799	0.1224	0.0638	0.1862	0.1662	0.5322	1.6803	2.0351	2.9592
4B2	0.3980	0.0925	0.0445	0.1369	0.2429	0.7778	1.2323	1.3441	1.9544
4B3	0.2172	0.0544	0.0168	0.0712	0.1312	0.4202	1.2497	1.3270	1.9295
4B4	0.3685	0.0493	0.0156	0.0649	0.1968	0.6302	1.1338	1.1762	1.7102
4C1	0.3126	0.1066	0.0467	0.1532	0.2115	0.6774	1.3410	1.4902	2.1669
4C2	0.2135	0.1319	0.0945	0.2264	0.1997	0.6396	1.6178	2.0605	2.9960
4D1	0.2560	0.0891	0.0333	0.1223	0.1718	0.5501	1.3480	1.4779	2.1490
4D2	0.1510	0.0650	0.0239	0.0889	0.1089	0.3488	1.4302	1.5884	2.3096
4D3	0.2656	0.1020	0.0445	0.1466	0.1872	0.5994	1.3841	1.5518	2.2563
4E	0.2618	0.1331	0.0594	0.1925	0.2063	0.6606	1.5082	1.7352	2.5230
4F1	0.2034	0.0681	0.0273	0.0954	0.1357	0.4345	1.3348	1.4692	2.1363
4F2	0.2602	0.1100	0.0520	0.1620	0.1917	0.6140	1.4229	1.6227	2.3594
4F3	0.4829	0.0861	0.0347	0.1208	0.2741	0.8770	1.1783	1.2502	1.8178
4F4	0.3059	0.0866	0.0358	0.1223	0.1944	0.6227	1.2830	1.4000	2.0356
4F5	0.3009	0.1141	0.0570	0.1710	0.2143	0.6862	1.3790	1.5684	2.2806
5A1	0.3779	0.0205	0.0106	0.0311	0.1857	0.5947	1.0543	1.0824	1.5738
5A2	0.3408	0.0499	0.0135	0.0635	0.1836	0.5878	1.1466	1.1863	1.7249
5A3	0.4109	0.0552	0.0214	0.0766	0.2214	0.7089	1.1344	1.1864	1.7251
6	0.3268	0.1142	0.0589	0.1731	0.2270	0.7269	1.3494	1.5296	2.2242
7	0.2679	0.1011	0.0395	0.1406	0.1855	0.5939	1.3774	1.5247	2.2170
8A1	0.4299	0.0546	0.0240	0.0785	0.2309	0.7393	1.1269	1.1826	1.7196
8A2	0.4913	0.0838	0.0372	0.1210	0.2780	0.8904	1.1705	1.2463	1.8121
9	0.3802	0.0696	0.0187	0.0883	0.2127	0.6812	1.1830	1.2321	1.7916
10	0.7330	0.0500	0.0204	0.0705	0.3648	1.1602	1.0683	1.0961	1.5930
11A	0.6846	0.0368	0.0126	0.0494	0.3333	1.0673	1.0538	1.0722	1.5590
11B	0.3118	0.0884	0.0294	0.1178	0.1953	0.6247	1.2834	1.3778	2.0034

TABLE VII-8 TOTAL SECTOR INCOME MULTIPLIERS NORTHERN REGION; 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'H INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5186	0.0856	0.0129	0.0983	0.1365	0.7536	1.1650	1.1899	1.4532
2A	0.6590	0.0412	0.0072	0.0404	0.1565	0.8639	1.0625	1.0734	1.3109
2B	0.2387	0.0331	0.0120	0.0451	0.0628	0.3467	1.1386	1.1090	1.4521
3A	0.1965	0.0240	0.0064	0.0304	0.0502	0.2772	1.1223	1.1549	1.4104
3B	0.2211	0.0494	0.0092	0.0587	0.0619	0.3417	1.2235	1.2652	1.5451
4A	0.2308	0.1785	0.0451	0.2237	0.1005	0.5550	1.7736	1.9691	2.4047
4B	0.3226	0.0496	0.0004	0.0580	0.0842	0.4648	1.1538	1.1797	1.4407
4C	0.3430	0.0523	0.0232	0.0755	0.0926	0.5110	1.1525	1.2201	1.4900
4D	0.2280	0.1180	0.0574	0.1754	0.0892	0.4927	1.5178	1.7696	2.1611
4E	0.2148	0.1296	0.0327	0.1623	0.0834	0.4604	1.6036	1.7556	2.1440
4F	0.2381	0.0919	0.0414	0.1333	0.0822	0.4536	1.3861	1.5599	1.9049
5	0.3871	0.0361	0.0062	0.0423	0.0950	0.5244	1.0932	1.1093	1.3547
6	0.3341	0.0603	0.0271	0.0874	0.0932	0.5147	1.1804	1.2615	1.5406
7	0.2860	0.0465	0.0062	0.0527	0.0749	0.4136	1.1626	1.1843	1.4463
8	0.5775	0.0454	0.0090	0.0544	0.1287	0.7106	1.0860	1.1031	1.3472
9	0.3992	0.0354	0.0047	0.0401	0.0972	0.5365	1.0886	1.1004	1.3438
10	0.7160	0.0269	0.0050	0.0319	0.1654	0.9133	1.0376	1.0445	1.2755
11A	0.7067	0.0261	0.0044	0.0305	0.1635	0.9020	1.0368	1.0430	1.2738
11B	0.3038	0.0618	0.0079	0.0696	0.0837	0.4621	1.2001	1.2256	1.4967

TABLE VII-9 TOTAL SECTOR INCOME MULTIPLIERS EASTERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'H INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5129	0.1266	0.0320	0.1586	0.1864	0.8579	1.2469	1.3092	1.6727
2A	0.7600	0.1110	0.0222	0.1331	0.2479	1.1410	1.1460	1.1751	1.5014
2B	0.2821	0.0419	0.0149	0.0568	0.0941	0.4330	1.1486	1.2013	1.5340
3A	0.1962	0.0251	0.0048	0.0299	0.0629	0.2895	1.1275	1.1521	1.4717
3B	0.3022	0.0556	0.0107	0.0663	0.1025	0.4700	1.1839	1.2195	1.5501
4A	0.2009	0.2126	0.0787	0.2912	0.1366	0.6287	2.0583	2.4499	3.1301
4B	0.3461	0.0734	0.0149	0.0883	0.1206	0.5551	1.2122	1.2552	1.6037
4C	0.3032	0.0507	0.0091	0.0598	0.1008	0.4637	1.1673	1.1972	1.5296
4D	0.3488	0.0285	0.0045	0.0330	0.1060	0.4878	1.0818	1.0947	1.3986
4E	0.3095	0.1047	0.0181	0.1228	0.1200	0.5523	1.3383	1.3969	1.7847
4F	0.3213	0.1236	0.0686	0.1922	0.1426	0.6561	1.3846	1.5983	2.0420
5	0.3960	0.0272	0.0043	0.0315	0.1107	0.5462	1.0687	1.0796	1.3793
6	0.3311	0.0721	0.0145	0.0865	0.1165	0.5361	1.2176	1.2675	1.6194
7	0.2665	0.0565	0.0089	0.0654	0.0922	0.4242	1.2121	1.2455	1.5913
8	0.4780	0.0361	0.0086	0.0447	0.1451	0.6678	1.0755	1.0935	1.3971
9	0.3903	0.0365	0.0050	0.0415	0.1199	0.5517	1.0934	1.1063	1.4134
10	0.7298	0.0246	0.0038	0.0284	0.2105	0.9687	1.0337	1.0389	1.3273
11A	0.7184	0.0248	0.0059	0.0307	0.2030	0.9469	1.0349	1.0432	1.3328
11B	0.3076	0.0485	0.0080	0.0565	0.1011	0.4651	1.1576	1.1836	1.5122

TABLE VII-10 TOTAL SECTOR INCOME MULTIPLIERS CENTRAL REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5345	0.0980	0.0147	0.1127	0.1166	0.7638	1.1834	1.2109	1.4291
2A	0.5307	0.0519	0.0083	0.0602	0.1065	0.6973	1.0979	1.1134	1.3140
2B	0.2162	0.0265	0.0046	0.0311	0.0446	0.2919	1.1226	1.1439	1.3500
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.3089	0.0716	0.0172	0.0888	0.0716	0.4693	1.2317	1.2873	1.5193
4A	0.2284	0.1891	0.0595	0.2486	0.0859	0.5630	1.8280	2.0884	2.4647
4B	0.3972	0.0391	0.0042	0.0432	0.0794	0.5198	1.0983	1.1088	1.3086
4C	0.3146	0.0367	0.0043	0.0410	0.0641	0.4196	1.1166	1.1304	1.3340
4D	0.3229	0.0257	0.0046	0.0303	0.0636	0.4169	1.0796	1.0939	1.2909
4E	0.2656	0.1443	0.0404	0.1846	0.0811	0.5313	1.5433	1.6952	2.0006
4F	0.2653	0.0613	0.0141	0.0754	0.0614	0.4021	1.2308	1.2841	1.5155
5	0.3887	0.0190	0.0019	0.0209	0.0738	0.4834	1.0490	1.0538	1.2436
6	0.3298	0.0491	0.0106	0.0597	0.0702	0.4598	1.1489	1.1811	1.3939
7	0.2784	0.0421	0.0044	0.0465	0.0585	0.3835	1.1511	1.1670	1.3773
8	0.4796	0.0311	0.0046	0.0357	0.0928	0.6082	1.0649	1.0745	1.2680
9	0.4205	0.0290	0.0026	0.0316	0.0815	0.5336	1.0690	1.0752	1.2689
10	0.7293	0.0187	0.0018	0.0205	0.1351	0.8848	1.0257	1.0281	1.2133
11A	0.7015	0.0198	0.0026	0.0224	0.1304	0.8543	1.0282	1.0319	1.2178
11B	0.3093	0.0435	0.0040	0.0475	0.0643	0.4210	1.1405	1.1534	1.3612

TABLE VII-11 TOTAL SECTOR INCOME MULTIPLIERS SOUTH-EASTERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5608	0.0832	0.0148	0.0980	0.1451	0.8038	1.1484	1.1747	1.4334
2A	0.5309	0.0685	0.0104	0.0789	0.1343	0.7440	1.1290	1.1486	1.4016
2B	0.3095	0.0363	0.0084	0.0447	0.0780	0.4321	1.1171	1.1443	1.3964
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.3230	0.0821	0.0207	0.1029	0.0938	0.5197	1.2542	1.3184	1.6088
4A	0.2099	0.2468	0.0723	0.3191	0.1165	0.6455	2.1757	2.5200	3.0750
4B	0.2820	0.1236	0.0521	0.1757	0.1008	0.5585	1.4383	1.6230	1.9805
4C	0.3026	0.0165	0.0017	0.0182	0.0707	0.3914	1.0545	1.0600	1.2935
4D	0.3677	0.0168	0.0024	0.0192	0.0852	0.4721	1.0456	1.0522	1.2839
4E	0.2634	0.0927	0.0160	0.1087	0.0619	0.4539	1.3520	1.4126	1.7237
4F	0.4140	0.0614	0.0116	0.0730	0.1072	0.5942	1.1483	1.1762	1.4353
5	0.3881	0.0189	0.0019	0.0208	0.0901	0.4989	1.0487	1.0536	1.2856
6	0.3249	0.0522	0.0183	0.0705	0.0871	0.4825	1.1608	1.2171	1.4852
7	0.2659	0.0498	0.0070	0.0567	0.0711	0.3937	1.1871	1.2134	1.4807
8	0.4445	0.0337	0.0056	0.0393	0.1066	0.5904	1.0759	1.0885	1.3283
9	0.3853	0.0361	0.0046	0.0407	0.0938	0.5198	1.0937	1.1055	1.3490
10	0.7552	0.0178	0.0024	0.0202	0.1708	0.9461	1.0236	1.0267	1.2528
11A	0.6999	0.0217	0.0044	0.0261	0.1599	0.8859	1.0310	1.0373	1.2657
11B	0.3092	0.0504	0.0067	0.0571	0.0807	0.4470	1.1631	1.1846	1.4456

TABLE VII-12 TOTAL SECTOR INCOME MULTIPLIERS SOUTH AUSTRALIA: 36-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'N INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.5203	0.1095	0.0333	0.1428	0.4138	1.0849	1.2073	1.2703	2.0537
2A	0.6702	0.0706	0.0200	0.0906	0.4691	1.2298	1.1053	1.1351	1.8351
2B	0.2889	0.0654	0.0409	0.1063	0.2437	0.6389	1.2264	1.3681	2.2117
3A	0.1965	0.0346	0.0175	0.0521	0.1533	0.4020	1.1761	1.2652	2.0454
3B	0.2799	0.1042	0.0508	0.1550	0.2682	0.7031	1.3723	1.5540	2.5122
4A1	0.2131	0.2976	0.1233	0.4209	0.3909	1.0249	2.3969	2.9755	4.8104
4A2	0.1636	0.2319	0.1009	0.3328	0.3061	0.8025	2.4171	3.0337	4.9044
4A3	0.3298	0.1515	0.0795	0.2310	0.3452	0.9051	1.4607	1.7025	2.7523
4A4	0.1440	0.2358	0.0822	0.3181	0.2855	0.7484	2.6282	3.1958	5.1665
4A5	0.1672	0.1983	0.0876	0.2659	0.2794	0.7326	2.1856	2.7094	4.3802
4B1	0.2237	0.1606	0.1089	0.2775	0.3091	0.8104	1.7530	2.2405	3.6[illegible]
4B2	0.3694	0.1246	0.0970	0.2216	0.3760	0.98[illegible]6	1.3199	1.5991	2.536[illegible]
4B3	0.2220	0.1008	0.0515	0.1523	0.2308	0.6051	1.4537	1.6859	2.7276
4B4	0.3677	0.0715	0.0345	0.1059	0.2921	0.7658	1.1944	1.2881	2.0824
4C1	0.3041	0.1212	0.0789	0.2001	0.3109	0.8151	1.3995	1.6500	2.6861
4C2	0.2329	0.1373	0.1231	0.2604	0.3041	0.7974	1.5895	2.1181	3.4241
4D1	0.2560	0.1367	0.0854	0.2221	0.2948	0.7729	1.5342	1.8670	3.0196
4D2	0.1510	0.0768	0.0378	0.1146	0.1639	0.4294	1.5086	1.7589	2.8435
4D3	0.2652	0.1451	0.1064	0.2514	0.3186	0.8352	1.5470	1.9482	3.1495
4E	0.2636	0.1350	0.0607	0.1956	0.2831	0.7423	1.5121	1.7423	2.8166
4F1	0.2034	0.0723	0.0399	0.1121	0.1946	0.5101	1.3554	1.5514	2.5080
4F2	0.2692	0.1431	0.0725	0.2156	0.2989	0.7837	1.5317	1.8010	2.9116
4F3	0.4845	0.0955	0.0501	0.1456	0.3886	1.0187	1.1970	1.3005	2.1024
4F4	0.3038	0.0936	0.0569	0.1505	0.2802	0.7345	1.3081	1.4956	2.4176
4F5	0.3009	0.1168	0.0669	0.1857	0.3001	0.7867	1.3948	1.6172	2.6145
5A1	0.3779	0.0223	0.0123	0.0346	0.2544	0.6669	1.0591	1.0916	1.7647
5A2	0.3408	0.0555	0.0172	0.0727	0.2549	0.6683	1.1628	1.2132	1.9613
5A3	0.4109	0.0517	0.0247	0.0764	0.3005	0.7878	1.1258	1.1859	1.9172
6	0.3276	0.1147	0.0781	0.1928	0.3209	0.8414	1.3502	1.5886	2.5681
7	0.2695	0.1018	0.0447	0.1465	0.2565	0.6726	1.3775	1.5434	2.4951
8A1	0.4509	0.0583	0.0309	0.0892	0.3330	0.8731	1.1293	1.1978	1.9364
8A2	0.4913	0.0803	0.0468	0.1271	0.3814	0.9998	1.1634	1.2587	2.0349
9	0.3834	0.0665	0.0183	0.0848	0.2887	0.7569	1.1735	1.2213	1.9744
10	0.7318	0.0477	0.0235	0.0711	0.4952	1.2981	1.0651	1.0972	1.7738
11A	0.6892	0.0364	0.0166	0.0529	0.4576	1.1997	1.0528	1.0768	1.7408
11B	0.3111	0.0890	0.0348	0.1239	0.2682	0.7032	1.2862	1.3982	2.2604

TABLE VII-13 TOTAL SECTOR EMPLOYMENT MULTIPLIERS

ADELAIDE REGION: 36-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'N INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1145	0.0101	0.0026	0.0127	0.0390	0.1661	1.0881	1.1107	1.4514
2A	0.1079	0.0070	0.0018	0.0088	0.0516	0.1683	1.0651	1.0829	1.5606
2B	0.0832	0.0091	0.0038	0.0129	0.0229	0.1189	1.1088	1.1546	1.4296
3A	0.0315	0.0036	0.0016	0.0052	0.0150	0.0518	1.1144	1.1665	1.6432
3B	0.0236	0.0129	0.0077	0.0206	0.0323	0.0766	1.5465	1.8729	3.2396
4A1	0.0312	0.0129	0.0037	0.0166	0.0209	0.0687	1.4130	1.5332	2.2051
4A2	0.0169	0.0202	0.0074	0.0276	0.0240	0.0684	2.1981	2.4357	4.0559
4A3	0.0373	0.0127	0.0058	0.0165	0.0301	0.0839	1.3404	1.4951	2.3004
4A4	0.0163	0.0149	0.0047	0.0196	0.0187	0.0546	1.9140	2.2061	3.3554
4A5	0.0185	0.0144	0.0069	0.0212	0.0221	0.0618	1.7752	2.1409	3.3331
4B1	0.0551	0.0244	0.0108	0.0353	0.0227	0.1131	1.4432	1.6398	2.0520
4B2	0.0508	0.0134	0.0066	0.0199	0.0332	0.1039	1.2628	1.3920	2.0454
4B3	0.0217	0.0060	0.0021	0.0081	0.0179	0.0478	1.2784	1.3741	2.2000
4B4	0.0446	0.0060	0.0019	0.0079	0.0269	0.0793	1.1341	1.1770	1.7806
4C1	0.0376	0.0123	0.0054	0.0177	0.0289	0.0842	1.3268	1.4713	2.2405
4C2	0.0317	0.0173	0.0118	0.0291	0.0273	0.0880	1.5474	1.9186	2.7807
4D1	0.0344	0.0098	0.0039	0.0136	0.0235	0.0715	1.2839	1.3965	2.0790
4D2	0.0088	0.0059	0.0027	0.0086	0.0149	0.0323	1.6694	1.9724	3.6566
4D3	0.0333	0.0122	0.0052	0.0174	0.0256	0.0762	1.3670	1.5229	2.2919
4E	0.0232	0.0129	0.0066	0.0194	0.0282	0.0708	1.5565	1.8394	3.0563
4F1	0.0230	0.0080	0.0033	0.0113	0.0185	0.0528	1.3466	1.4900	2.2954
4F2	0.0262	0.0120	0.0060	0.0180	0.0262	0.0703	1.4599	1.6876	2.6895
4F3	0.0491	0.0091	0.0040	0.0131	0.0375	0.0997	1.1848	1.2661	2.0283
4F4	0.0304	0.0097	0.0043	0.0140	0.0266	0.0709	1.3210	1.4614	2.3366
4F5	0.0402	0.0113	0.0062	0.0175	0.0293	0.0870	1.2804	1.4343	2.1621
5A1	0.0443	0.0026	0.0014	0.0040	0.0254	0.0737	1.0590	1.0902	1.6631
5A2	0.0416	0.0057	0.0017	0.0075	0.0251	0.0742	1.1379	1.1794	1.7825
5A3	0.0594	0.0090	0.0025	0.0116	0.0303	0.1012	1.1521	1.1947	1.7040
6	0.0949	0.0133	0.0069	0.0203	0.0310	0.1462	1.1403	1.2135	1.5404
7	0.0597	0.0121	0.0050	0.0171	0.0253	0.1021	1.2028	1.2874	1.7123
8A1	0.0358	0.0083	0.0030	0.0113	0.0316	0.0786	1.2324	1.3155	2.1970
8A2	0.0677	0.0100	0.0044	0.0143	0.0380	0.1200	1.1472	1.2110	1.7731
9	0.0336	0.0092	0.0024	0.0116	0.0291	0.0742	1.2732	1.3443	2.2100
10	0.0803	0.0065	0.0025	0.0091	0.0499	0.1392	1.0813	1.1129	1.7332
11A	0.1129	0.0053	0.0016	0.0067	0.0455	0.1653	1.0471	1.0599	1.4644
11B	0.0790	0.0117	0.0036	0.0153	0.0267	0.1209	1.1484	1.1942	1.5318

TABLE VII-14

TOTAL SECTOR EMPLOYMENT MULTIPLIERS NORTHERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1184	0.0089	0.0018	0.0107	0.0206	0.1497	1.0755	1.0904	1.2640
2A	0.0363	0.0044	0.0010	0.0053	0.0236	0.0652	1.1202	1.1470	1.7960
2B	0.1284	0.0053	0.0019	0.0072	0.0095	0.1451	1.0416	1.0562	1.1299
3A	0.0314	0.0032	0.0007	0.0040	0.0076	0.0429	1.1019	1.1258	1.3666
3B	0.0191	0.0054	0.0012	0.0066	0.0093	0.0351	1.2641	1.3433	1.8326
4A	0.0621	0.0327	0.0065	0.0392	0.0151	0.1165	1.5265	1.6316	1.8755
4B	0.0096	0.0065	0.0012	0.0076	0.0127	0.0299	1.6770	1.7972	3.1215
4C	0.0586	0.0065	0.0024	0.0089	0.0139	0.0814	1.1102	1.1513	1.3891
4D	0.0218	0.0112	0.0060	[illegible]	0.0134	0.0524	1.5110	1.7851	2.4008
4E	0.0147	0.0117	0.0039	0.0156	0.0126	0.0429	1.7951	2.0621	2.9174
4F	0.0276	0.0116	0.0053	0.0170	0.0124	0.0570	1.4208	1.6144	2.0627
5	0.0479	0.0059	0.0008	0.0067	0.0143	0.0689	1.1233	1.1400	1.4389
6	0.1426	0.0053	0.0028	0.0082	0.0140	0.1648	1.0374	1.0572	1.1557
7	0.0457	0.0049	0.0008	0.0057	0.0113	0.0627	1.1072	1.1252	1.3720
8	0.0421	0.0087	0.0011	0.0098	0.0194	0.0713	1.2060	1.2320	1.6922
9	0.0250	0.0045	0.0006	0.0052	0.0146	0.0448	1.1815	1.2058	1.7989
10	0.0749	0.0043	0.0006	0.0049	0.0249	0.1047	1.0575	1.0655	1.3985
11A	0.1141	0.0043	0.0006	0.0049	0.0246	0.1436	1.0373	1.0426	1.2586
11B	0.0927	0.0075	0.0011	0.0086	0.0126	0.1139	1.0811	1.0932	1.2293

TABLE VII-15

TOTAL SECTOR EMPLOYMENT MULTIPLIERS EASTERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1090	0.0140	0.0038	0.0179	0.0261	0.1529	1.1288	1.1640	1.4030
2A	0.0710	0.0116	0.0026	0.0141	0.0347	0.1198	1.1632	1.1992	1.6874
2B	0.0624	0.0065	0.0019	0.0084	0.0132	0.0840	1.1043	1.1346	1.3452
3A	0.0316	0.0031	0.0006	0.0037	0.0088	0.0440	1.0980	1.1164	1.3950
3B	0.0153	0.0055	0.0012	0.0067	0.0143	0.0363	1.3559	1.4342	2.3658
4A	0.0167	0.0291	0.0097	0.0387	0.0191	0.0745	2.7414	3.3204	4.4649
4B	0.0413	0.0101	0.0020	0.0122	0.0169	0.0703	1.2453	1.2948	1.7033
4C	0.0308	0.0051	0.0010	0.0061	0.0141	0.0510	1.1660	1.1978	1.6547
4D	0.0263	0.0028	0.0005	0.0033	0.0148	0.0444	1.1054	1.1246	1.6886
4E	0.0239	0.0107	0.0022	0.0129	0.0168	0.0536	1.4472	1.5391	2.2409
4F	0.0309	0.0139	0.0082	0.0221	0.0199	0.0730	1.4504	1.7150	2.3589
5	0.0516	0.0044	0.0005	0.0049	0.0166	0.0731	1.0853	1.0955	1.4167
6	0.0906	0.0074	0.0019	0.0093	0.0163	0.1161	1.0813	1.1026	1.2824
7	0.0614	0.0066	0.0011	0.0077	0.0129	0.0820	1.1076	1.1256	1.3354
8	0.0515	0.0058	0.0010	0.0068	0.0203	0.0786	1.1128	1.1324	1.5261
9	0.0201	0.0047	0.0006	0.0053	0.0168	0.0422	1.2334	1.2648	2.0978
10	0.0788	0.0027	0.0004	0.0031	0.0294	0.1114	1.0342	1.0399	1.4134
11A	0.1140	0.0038	0.0008	0.0045	0.0288	0.1472	1.0330	1.0396	1.2920
11B	0.0927	0.0055	0.0010	0.0066	0.0141	0.1134	1.0598	1.0708	1.2232

TABLE VII-16 TOTAL SECTOR EMPLOYMENT MULTIPLIERS CENTRAL REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1145	0.0102	0.0017	0.0119	0.0184	0.1448	1.0892	1.1039	1.2646
2A	0.0344	0.0054	0.0009	0.0064	0.0168	0.0575	1.1575	1.1847	1.6731
2B	0.1483	0.0045	0.0006	0.0051	0.0070	0.1604	1.0304	1.0343	1.0817
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0168	0.0059	0.0016	0.0075	0.0113	0.0356	1.3482	1.4432	2.1148
4A	0.0235	0.0228	0.0069	0.0296	0.0136	0.0667	1.9663	2.2586	2.8344
4B	0.0485	0.0047	0.0005	0.0052	0.0125	0.0662	1.0961	1.1073	1.3656
4C	0.0339	0.0039	0.0005	0.0044	0.0101	0.0483	1.1144	1.1285	1.4270
4D	0.0247	0.0025	0.0004	0.0029	0.0100	0.0377	1.0993	1.1173	1.5233
4E	0.0296	0.0138	0.0042	0.0180	0.0128	0.0604	1.4670	1.6086	2.0409
4F	0.0211	0.0064	0.0016	0.0080	0.0097	0.0388	1.3051	1.3809	1.8396
5	0.0481	0.0029	0.0002	0.0031	0.0116	0.0629	1.0597	1.0649	1.3068
6	0.0988	0.0055	0.0011	0.0066	0.0111	0.1165	1.0558	1.0673	1.1793
7	0.0776	0.0054	0.0006	0.0060	0.0092	0.0928	1.0697	1.0772	1.1961
8	0.0438	0.0049	0.0006	0.0055	0.0146	0.0640	1.1128	1.1255	1.4596
9	0.0146	0.0035	0.0004	0.0039	0.0128	0.0313	1.2406	1.2647	2.1452
10	0.0785	0.0019	0.0002	0.0021	0.0213	0.1019	1.0238	1.0266	1.2979
11A	0.1121	0.0031	0.0003	0.0034	0.0206	0.1360	1.0273	1.0303	1.2139
11B	0.1229	0.0052	0.0005	0.0057	0.0101	0.1388	1.0424	1.0466	1.1290

TABLE VII-17 TOTAL SECTOR EMPLOYMENT MULTIPLIERS SOUTH-EASTERN REGION: 19-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1310	0.0122	0.0021	0.0144	0.0208	0.1661	1.0933	1.1096	1.2684
2A	0.0821	0.0098	0.0014	0.0112	0.0192	0.1125	1.1196	1.1365	1.3709
2B	0.0505	0.0055	0.0011	0.0066	0.0112	0.0683	1.1099	1.1313	1.3528
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0226	0.0074	0.0020	0.0094	0.0134	0.0454	1.3263	1.4160	2.0117
4A	0.0282	0.0471	0.0118	0.0589	0.0167	0.1037	2.6700	3.0877	3.6779
4B	0.0235	0.0127	0.0056	0.0183	0.0144	0.0563	1.5405	1.7778	2.3917
4C	0.1011	0.0024	0.0002	0.0026	0.0101	0.1138	1.0237	1.0257	1.1258
4D	0.0334	0.0018	0.0003	0.0021	0.0122	0.0477	1.0551	1.0631	1.4284
4E	0.0329	0.0101	0.0017	0.0118	0.0117	0.0564	1.3057	1.3577	1.7145
4F	0.0310	0.0063	0.0014	0.0077	0.0154	0.0540	1.2027	1.2482	1.7447
5	0.0492	0.0026	0.0002	0.0028	0.0129	0.0649	1.0524	1.0571	1.3195
6	0.0588	0.0059	0.0020	0.0078	0.0125	0.0791	1.1000	1.1332	1.3454
7	0.0500	0.0056	0.0008	0.0064	0.0102	0.0666	1.1113	1.1273	1.3308
8	0.0542	0.0045	0.0006	0.0051	0.0153	0.0746	1.0824	1.0940	1.3755
9	0.0239	0.0041	0.0005	0.0046	0.0134	0.0419	1.1703	1.1925	1.7557
10	0.0881	0.0017	0.0003	0.0020	0.0245	0.1145	1.0195	1.0225	1.3004
11A	0.1111	0.0029	0.0006	0.0035	0.0229	0.1375	1.0257	1.0313	1.2375
11B	0.0840	0.0056	0.0008	0.0064	0.0116	0.1020	1.0671	1.0766	1.2143

TABLE VII-18

TOTAL SECTOR EMPLOYMENT MULTIPLIERS
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SOUTH AUSTRALIA:
3[illegible]-SECTOR TABLE

SECTOR	INITIAL IMPACT	FIRST ROUND	INDUSTRIAL SUPPORT	PROD'N INDUCED	CONS'M INDUCED	TOTAL	TYPE IA	TYPE IB	TYPE II
1	0.1166	0.0127	0.0041	0.0168	0.0564	0.1898	1.1088	1.1436	1.6273
2A	0.0604	0.0077	0.0023	0.0100	0.0639	0.1343	1.1268	1.1656	2.2247
2B	0.0697	0.0091	0.0051	0.0142	0.0332	0.1171	1.1306	1.2034	1.6802
3A	0.0315	0.0043	0.0020	0.0063	0.0209	0.0587	1.1365	1.1986	1.8622
3B	0.0207	0.0102	0.0055	0.0157	0.0366	0.0730	1.4934	1.7592	3.5270
4A1	0.0278	0.0550	0.0173	0.0723	0.0533	0.1534	2.9823	3.6060	5.5206
4A2	0.0163	0.0230	0.0119	0.0349	0.0417	0.0929	2.4181	3.1485	5.7156
4A3	0.0374	0.0161	0.0092	0.0252	0.0471	0.1097	1.4298	1.6732	2.9315
4A4	0.0185	0.0229	0.0098	0.0327	0.0389	0.0901	2.2356	2.7630	4.8617
4A5	0.0176	0.0194	0.0093	0.0287	0.0381	0.0844	2.1004	2.6275	4.7882
4B1	0.0283	0.0218	0.0140	0.0359	0.0421	0.1063	1.7716	2.2600	3.7573
4B2	0.0487	0.0142	0.0120	0.0262	0.0514	0.1262	1.2927	1.5385	2.5941
4B3	0.0202	0.0114	0.0061	0.0175	0.0315	0.0691	1.5652	1.8668	3.4253
4B4	0.0433	0.0078	0.0040	0.0119	0.0398	0.0949	1.1808	1.2741	2.1944
4C1	0.0373	0.0136	0.0085	0.0221	0.0424	0.1018	1.3643	1.5919	2.7292
4C2	0.0339	0.0176	0.0140	0.0315	0.0415	0.1069	1.5173	1.9290	3.1510
4D1	0.0246	0.0129	0.0088	0.0217	0.0402	0.0865	1.5254	1.8826	3.5146
4D2	0.0159	0.0078	0.0042	0.0120	0.0223	0.0502	1.4918	1.7540	3.1570
4D3	0.0337	0.0152	0.0109	0.0261	0.0434	0.1032	1.4501	1.7735	3.0622
4E	0.0193	0.0124	0.0066	0.0190	0.0386	0.0769	1.6433	1.9869	3.9884
4F1	0.0228	0.0084	0.0050	0.0134	0.0265	0.0627	1.3693	1.5897	2.7554
4F2	0.0261	0.0184	0.0091	0.0275	0.0407	0.0944	1.7037	2.0534	3.6123
4F3	0.0488	0.0099	0.0062	0.0161	0.0530	0.1179	1.2032	1.3306	2.4165
4F4	0.0307	0.0106	0.0075	0.0182	0.0382	0.0871	1.3467	1.5916	2.8353
4F5	0.0402	0.0118	0.0073	0.0191	0.0409	0.1002	1.2937	1.4764	2.4944
5A1	0.0443	0.0029	0.0015	0.0044	0.0347	0.0833	1.0640	1.0993	1.8810
5A2	0.0416	0.0065	0.0021	0.0086	0.0348	0.0849	1.1555	1.2059	2.0413
5A3	0.0594	0.0085	0.0027	0.0112	0.0410	0.1116	1.1434	1.1890	1.8785
6	0.0961	0.0124	0.0085	0.0210	0.0437	0.1608	1.1295	1.2188	1.6730
7	0.0584	0.0118	0.0054	0.0172	0.0350	0.1105	1.2015	1.2948	1.8941
8A1	0.0373	0.0089	0.0037	0.0126	0.0454	0.0952	1.2381	1.3379	2.5566
8A2	0.0677	0.0096	0.0052	0.0148	0.0520	0.1345	1.1420	1.2192	1.9870
9	0.0313	0.0085	0.0023	0.0107	0.0394	0.0814	1.2706	1.3425	2.5988
10	0.0799	0.0061	0.0027	0.0089	0.0675	0.1563	1.0769	1.1111	1.9555
11A	0.1130	0.0052	0.0020	0.0072	0.0624	0.1826	1.0459	1.0639	1.6161
11B	0.0820	0.0113	0.0041	0.0154	0.0366	0.1340	1.1381	1.1878	1.6335

APPENDIX VIII

MATRICES OF DIRECT COEFFICIENTS: 11-SECTOR TABLES

TABLE VIII-1 DIRECT COEFFICIENTS, 11-SECTOR TABLE: ADELAIDE REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0001	0.0000	0.0000	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0244	0.0225	0.0002	0.0048	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0003	0.0024
3	0.0000	0.0001	0.2321	0.0072	0.0006	0.0084	0.0001	0.0002	0.0000	0.0000	0.0002	0.0000
4	0.0768	0.0632	0.1015	0.2912	0.0518	0.3202	0.0991	0.1197	0.0074	0.0778	0.0628	0.1922
5	0.0255	0.0163	0.0132	0.0109	0.0191	0.0031	0.0059	0.0042	0.0181	0.0046	0.0365	0.0157
6	0.0051	0.0030	0.0047	0.0023	0.0169	0.0000	0.0044	0.0146	0.0085	0.0170	0.0072	0.0171
7	0.0327	0.0190	0.0153	0.0107	0.0057	0.0174	0.0469	0.0317	0.0270	0.0023	0.0157	0.0872
8	0.0192	0.0219	0.0341	0.0340	0.0190	0.0307	0.0324	0.0292	0.0159	0.0135	0.0091	0.0267
9	0.0005	0.0008	0.0134	0.0106	0.0015	0.0080	0.1214	0.0071	0.0930	0.0360	0.0164	0.1945
10	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0142
11	0.0078	0.0006	0.0029	0.0004	0.0010	0.0001	0.0024	0.0013	0.0177	0.0003	0.0101	0.0994
H-H	0.5369	0.7290	0.3101	0.2745	0.3873	0.3268	0.2679	0.4493	0.3802	0.7330	0.5705	0.0000

TABLE VIII-2 DIRECT COEFFICIENTS, 11-SECTOR TABLE: NORTHERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0000	0.0000	0.0000	0.0077	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0610	0.0228	0.0015	0.0035	0.0003	0.0000	0.0000	0.0013	0.0000	0.0000	0.0001	0.0149
3	0.0000	0.0000	0.0425	0.0324	0.0184	0.0091	0.0011	0.0019	0.0001	0.0003	0.0015	0.0000
4	0.0361	0.0266	0.0194	0.2428	0.0275	0.1581	0.0061	0.0458	0.0013	0.0253	0.0080	0.0926
5	0.0248	0.0128	0.0232	0.0175	0.0224	0.0042	0.0071	0.0074	0.0030	0.0059	0.0511	0.0210
6	0.0048	0.0032	0.0038	0.0013	0.0125	0.0000	0.0031	0.0272	0.0064	0.0126	0.0072	0.0095
7	0.0335	0.0171	0.0051	0.0044	0.0033	0.0106	0.0329	0.0185	0.0218	0.0020	0.0110	0.0808
8	0.0185	0.0138	0.0242	0.0524	0.0173	0.0294	0.0241	0.0207	0.0162	0.0115	0.0079	0.0257
9	0.0002	0.0000	0.0103	0.0034	0.0006	0.0007	0.0447	0.0040	0.0320	0.0132	0.0088	0.0457
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0061	0.0000	0.0000	0.0111
11	0.0080	0.0013	0.0024	0.0000	0.0006	0.0001	0.0021	0.0003	0.0098	0.0004	0.0037	0.0819
H-H	0.5186	0.6410	0.2165	0.2497	0.3871	0.3341	0.2860	0.5275	0.3992	0.7160	0.5854	0.0000

TABLE VIII-3 DIRECT COEFFICIENTS, 11-SECTOR TABLE: EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0015	0.0010	0.0030	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1061	0.1034	0.0054	0.0736	0.0004	0.0000	0.0000	0.0022	0.0000	0.0000	0.0010	0.0149
3	0.0005	0.0001	0.0597	0.0038	0.0033	0.0086	0.0003	0.0004	0.0000	0.0001	0.0005	0.0000
4	0.0609	0.0305	0.0327	0.1491	0.0153	0.1536	0.0333	0.0340	0.0024	0.0256	0.0220	0.1374
5	0.0214	0.0135	0.0057	0.0057	0.0163	0.0022	0.0030	0.0027	0.0064	0.0028	0.0293	0.0125
6	0.0044	0.0029	0.0030	0.0030	0.0217	0.0000	0.0033	0.0180	0.0070	0.0071	0.0070	0.0131
7	0.0308	0.0174	0.0093	0.0084	0.0044	0.0137	0.0395	0.0292	0.0209	0.0021	0.0127	0.0872
8	0.0185	0.0216	0.0283	0.0456	0.0131	0.0306	0.0278	0.0192	0.0182	0.0115	0.0084	0.0264
9	0.0001	0.0002	0.0020	0.0038	0.0004	0.0006	0.0493	0.0018	0.0335	0.0175	0.0097	0.0701
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0092
11	0.0061	0.0006	0.0032	0.0002	0.0007	0.0001	0.0022	0.0001	0.0073	0.0003	0.0013	0.0940
H-H	0.5129	0.7442	0.2870	0.2361	0.3960	0.3311	0.2665	0.4780	0.3903	0.7298	0.5698	0.0000

TABLE VIII-4 DIRECT COEFFICIENTS, 11-SECTOR TABLE: CENTRAL REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0001	0.0000	0.0000	0.0420	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
2	0.0902	0.0332	0.0003	0.0619	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0003	0.0149
3	0.0000	0.0000	0.1425	0.0081	0.0000	0.0085	0.0000	0.0002	0.0000	0.0000	0.0001	0.0000
4	0.0715	0.0613	0.0173	0.1285	0.0033	0.0842	0.0118	0.0296	0.0012	0.0066	0.0102	0.0336
5	0.0163	0.0090	0.0065	0.0096	0.0129	0.0024	0.0039	0.0039	0.0050	0.0038	0.0293	0.0131
6	0.0039	0.0028	0.0028	0.0021	0.0108	0.0000	0.0027	0.0123	0.0019	0.0057	0.0046	0.0114
7	0.0343	0.0176	0.0095	0.0081	0.0035	0.0127	0.0349	0.0236	0.0153	0.0022	0.0118	0.0872
8	0.0188	0.0152	0.0316	0.0355	0.0171	0.0305	0.0260	0.0201	0.0216	0.0104	0.0082	0.0269
9	0.0001	0.0000	0.0017	0.0023	0.0002	0.0004	0.0309	0.0020	0.0209	0.0180	0.0039	0.0610
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0049
11	0.0064	0.0008	0.0016	0.0001	0.0005	0.0001	0.0021	0.0000	0.0050	0.0000	0.0002	0.0003
H-H	0.5345	0.5260	0.3089	0.2649	0.3887	0.3298	0.2784	0.4796	0.4205	0.7293	0.6133	0.0000

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TABLE VIII-5 DIRECT COEFFICIENTS, 11-SECTOR TABLE: SOUTH-EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0001	0.0000	0.0000	0.0365	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
2	0.0023	0.0347	0.0021	0.0518	0.0006	0.0000	0.0003	0.0015	0.0000	0.0000	0.0006	0.0104
3	0.0000	0.0007	0.1714	0.0013	0.0000	0.0031	0.0000	0.0002	0.0000	0.0000	0.0001	0.0000
4	0.0294	0.0231	0.0060	0.2345	0.0029	0.1115	0.0103	0.0323	0.0028	0.0051	0.0157	0.0832
5	0.0230	0.0058	0.0049	0.0105	0.0151	0.0027	0.0042	0.0031	0.0070	0.0044	0.0355	0.0139
6	0.0026	0.0010	0.0023	0.0028	0.0066	0.0000	0.0010	0.0067	0.0018	0.0044	0.0025	0.0095
7	0.0330	0.0453	0.0132	0.0091	0.0050	0.0146	0.0398	0.0363	0.0226	0.0020	0.0136	0.0872
8	0.0173	0.0176	0.0343	0.0469	0.0179	0.0291	0.0253	0.0150	0.0156	0.0060	0.0085	0.0243
9	0.0002	0.0001	0.0055	0.0099	0.0007	0.0009	0.0589	0.0012	0.0419	0.0256	0.0122	0.0842
10	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0045
11	0.0046	0.0020	0.0013	0.0000	0.0004	0.0001	0.0004	0.0000	0.0030	0.0000	0.0002	0.0789
H-H	0.5605	0.3688	0.3230	0.2767	0.3801	0.3249	0.2659	0.4445	0.3853	0.7552	0.5600	0.0000

TABLE VIII-6 DIRECT COEFFICIENTS, 11-SECTOR TABLE: SOUTH AUSTRALIA

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	0.0006	0.0000	0.0000	0.0319	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0052	0.0529	0.0029	0.0225	0.0006	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0149
3	0.0000	0.0001	0.1478	0.0096	0.0038	0.0085	0.0002	0.0005	0.0000	0.0000	0.0003	0.0000
4	0.0730	0.0555	0.0852	0.3276	0.0456	0.3275	0.1018	0.1241	0.0068	0.0734	0.0620	0.2243
5	0.0235	0.0144	0.0156	0.0120	0.0201	0.0033	0.0062	0.0046	0.0157	0.0049	0.0388	0.0217
6	0.0051	0.0031	0.0041	0.0023	0.0174	0.0000	0.0040	0.0164	0.0078	0.0158	0.0070	0.0210
7	0.0352	0.0209	0.0117	0.0102	0.0053	0.0168	0.0449	0.0300	0.0262	0.0023	0.0151	0.0872
8	0.0193	0.0195	0.0304	0.0384	0.0183	0.0307	0.0311	0.0279	0.0164	0.0135	0.0096	0.0269
9	0.0005	0.0005	0.0155	0.0109	0.0014	0.0065	0.1192	0.0069	0.0090	0.0330	0.0172	0.1985
10	0.0000	0.0000	0.0000	0.0002	0.0002	0.0000	0.0000	0.0002	0.0001	0.0000	0.0000	0.0142
11	0.0083	0.0008	0.0029	0.0023	0.0009	0.0001	0.0023	0.0010	0.0159	0.0003	0.0004	0.1464
H-H	0.5283	0.6388	0.2718	0.2687	0.3079	0.3276	0.2695	0.4631	0.3834	0.7319	0.5722	0.0000

TABLE IX-1 DIRECT COEFFICIENTS, 36-SECTOR TABLE: ADELAIDE REGION

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	0.0001	0.0000	0.0000	0.0000	0.0000	0.0275	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0243	0.0242	0.0000	0.0000	0.0000	0.0175	0.0678	0.0116	0.0730	0.0308	0.0000	0.0002	0.0000	0.0000	0.0000
2B	0.0001	0.0000	0.0004	0.0014	0.0002	0.0005	0.0002	0.0000	0.0009	0.0000	0.0647	0.0001	0.0006	0.0000	0.0001
3A	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0000	0.0000	0.0007	0.0150	0.2370	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0004	0.0000	0.0002
4A1	0.0074	0.0003	0.0130	0.0000	0.0000	0.1005	0.0343	0.0120	0.0243	0.0000	0.0000	0.0335	0.0000	0.0000	0.0000
4A2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0467	0.0224	0.0076	0.0127	0.0000	0.0000	0.0000	0.0000	0.0000
4A3	0.0055	0.0006	0.0000	0.0000	0.0000	0.0026	0.0037	0.1643	0.0173	0.0006	0.0000	0.0030	0.0020	0.0000	0.0000
4A4	0.0126	0.0165	0.0119	0.0000	0.0000	0.0021	0.0183	0.0279	0.0831	0.0385	0.0000	0.0000	0.0000	0.0000	0.0103
4A5	0.0011	0.0000	0.0000	0.0000	0.0000	0.0002	0.0009	0.0000	0.0003	0.0590	0.0000	0.0000	0.0000	0.0000	0.0000
4B1	0.0000	0.0019	0.0010	0.0014	0.0000	0.0000	0.0000	0.0000	0.0001	0.0011	0.2261	0.0021	0.0005	0.0000	0.0000
4B2	0.0000	0.0000	0.0115	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0017	0.0519	0.0000	0.0001	0.0024
4B3	0.0031	0.0116	0.0000	0.0000	0.0009	0.0045	0.0654	0.0092	0.0066	0.0105	0.0001	0.0030	0.0424	0.0149	0.0115
4B4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0012	0.0006	0.0000	0.0001	0.0000	0.0036	0.0054	0.0174	0.0005
4C1	0.0228	0.0055	0.0445	0.0114	0.0400	0.0008	0.0019	0.0005	0.0017	0.0021	0.0020	0.0008	0.0022	0.0043	0.0977
4C2	0.0013	0.0005	0.0051	0.0050	0.0086	0.0012	0.0015	0.0005	0.0012	0.0020	0.0017	0.0008	0.0023	0.0016	0.0015
4D1	0.0000	0.0000	0.0000	0.0036	0.0092	0.0000	0.0016	0.0000	0.0001	0.0021	0.0002	0.0159	0.0012	0.0000	0.3439
4D2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0006	0.0000	0.0000	0.0050	0.0216	0.0021	0.3406
4D3	0.0006	0.0002	0.0047	0.0150	0.0039	0.0067	0.1404	0.0040	0.0221	0.0966	0.0075	0.0195	0.0014	0.0041	0.0593
4E	0.0000	0.0000	0.0000	0.0143	0.0137	0.0024	0.0110	0.0000	0.0012	0.0554	0.0003	0.0162	0.0005	0.0001	0.0069
4F1	0.0188	0.0150	0.0051	0.0007	0.0046	0.0006	0.0012	0.0007	0.0020	0.0010	0.0106	0.0027	0.0008	0.0031	0.0070
4F2	0.0015	0.0035	0.0096	0.0000	0.0000	0.0005	0.0023	0.0003	0.0005	0.0000	0.0009	0.0131	0.0094	0.0007	0.0005
4F3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0002	0.0000	0.0050	0.0000	0.0061	0.0000	0.0000
4F4	0.0000	0.0001	0.0513	0.0000	0.0207	0.0007	0.0290	0.0154	0.0165	0.0123	0.0000	0.0291	0.0104	0.0246	0.0325
4F5	0.0000	0.0000	0.0007	0.0000	0.0010	0.0000	0.0000	0.0060	0.0000	0.0031	0.0000	0.0000	0.0005	0.0055	0.0000
5A1	0.0165	0.0082	0.0029	0.0100	0.0090	0.0059	0.0030	0.0053	0.0032	0.0057	0.0151	0.0033	0.0072	0.0051	0.0066
5A2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0003	0.0091	0.0009	0.0001	0.0000	0.0054	0.0006	0.0011	0.0035
5A3	0.0090	0.0092	0.0000	0.0007	0.0041	0.0023	0.0014	0.0010	0.0012	0.0042	0.0001	0.0002	0.0007	0.0092	0.0004
6	0.0051	0.0032	0.0007	0.0021	0.0047	0.0027	0.0038	0.0020	0.0023	0.0050	0.0035	0.0017	0.0056	0.0033	0.0019
7	0.0327	0.0164	0.0513	0.0029	0.0156	0.0076	0.0130	0.0170	0.0086	0.0191	0.0070	0.0107	0.0129	0.0254	0.0140
8A1	0.0192	0.0225	0.0148	0.0129	0.0345	0.0630	0.0666	0.0290	0.0354	0.0391	0.0754	0.0346	0.0397	0.0192	0.0271
8A2	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0030	0.0050	0.0000	0.0000	0.0001
9	0.0085	0.0009	0.0000	0.0021	0.0137	0.0069	0.0092	0.0075	0.0055	0.0078	0.0362	0.0153	0.0177	0.0247	0.0138
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000
11A	0.0071	0.0006	0.0005	0.0007	0.0005	0.0001	0.0000	0.0000	0.0000	0.0031	0.0003	0.0000	0.0000	0.0000	0.0006
11B	0.0006	0.0000	0.0000	0.0000	0.0024	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000	0.0003	0.0000	0.0002	0.0001
W-H	0.5369	0.7652	0.2788	0.1964	0.3127	0.2144	0.1630	0.3280	0.1465	0.1293	0.1799	0.3960	0.2178	0.3685	0.3126

TABLE IX-1 DIRECT COEFFICIENTS, 36-SECTOR TABLE: ADELAIDE REGION

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0028	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0083	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2B	0.0005	0.0001	0.0000	0.0000	0.0000	0.0002	0.0002	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
3A	0.0000	0.0005	0.0001	0.0000	0.0002	0.0013	0.0000	0.0000	0.0000	0.0000	0.0004	0.0032	0.0000	0.0000	0.0000
3B	0.0000	0.0126	0.0000	0.0002	0.0032	0.0042	0.0000	0.0000	0.0010	0.1158	0.0000	0.0000	0.0000	0.0004	0.0000
4A1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0131	0.0039	0.0010	0.0293	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002
4A2	0.0000	0.0033	0.0000	0.0000	0.0000	0.0039	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
4A3	0.0000	0.0000	0.0003	0.0000	0.0003	0.0039	0.0027	0.0000	0.0000	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000
4A4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0000	0.0002	0.0000	0.0000	0.0000
4A5	0.0000	0.0001	0.0000	0.0000	0.0000	0.0020	0.0000	0.0005	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0001
4B1	0.0010	0.0007	0.0036	0.0000	0.0004	0.0000	0.0001	0.0000	0.0010	0.0029	0.0000	0.0000	0.0000	0.3162	0.0004
4B2	0.0004	0.0000	0.0000	0.0019	0.0002	0.0010	0.0007	0.0006	0.0006	0.0057	0.0000	0.0000	0.0007	0.3276	0.0049
4B3	0.0003	0.0001	0.0000	0.0010	0.0071	0.0025	0.0060	0.0120	0.0010	0.0050	0.0000	0.0000	0.0002	0.0000	0.0398
4B4	0.0000	0.0000	0.0001	0.0003	0.0000	0.0014	0.0017	0.0004	0.0019	0.0000	0.0000	0.0000	0.0002	0.0000	0.0010
4C1	0.0229	0.0008	0.0062	0.0098	0.0106	0.0030	0.0320	0.0034	0.0028	0.0088	0.3001	0.0115	0.0339	0.7674	0.0078
4C2	0.2522	0.0010	0.0314	0.0020	0.0042	0.0034	0.0021	0.0013	0.0046	0.0009	0.0321	0.0000	0.0000	0.0003	0.0600
4D1	0.0221	0.1299	0.0088	0.1439	0.0130	0.0020	0.0000	0.0002	0.0015	0.0129	0.0002	0.0030	0.0000	0.0106	0.0001
4D2	0.0060	0.0154	0.1258	0.0385	0.0010	0.0047	0.0031	0.0031	0.0055	0.0498	0.0003	0.0000	0.0005	0.0063	0.0000
4D3	0.1566	0.0041	0.0047	0.0786	0.0052	0.0176	0.0010	0.0957	0.0144	0.0293	0.0000	0.0111	0.0401	0.0776	0.0039
4E	0.0026	0.0109	0.0100	0.0059	0.1119	0.0050	0.0001	0.0001	0.0031	0.0002	0.0002	0.0050	0.0001	0.1013	0.0001
4F1	0.0265	0.0051	0.0047	0.0026	0.0082	0.0711	0.0105	0.0016	0.0366	0.0079	0.0004	0.0009	0.0015	0.0034	0.0012
4F2	0.0011	0.0029	0.0015	0.0029	0.0023	0.0003	0.2402	0.0938	0.0303	0.0060	0.0000	0.0000	0.0000	0.0000	0.0006
4F3	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0001	0.0157	0.5000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000
4F4	0.0194	0.0002	0.0010	0.0060	0.0020	0.0271	0.0079	0.0876	0.1020	0.0913	0.0009	0.0101	0.0034	0.0094	0.0070
4F5	0.0000	0.0002	0.0000	0.0000	0.0001	0.0002	0.0060	0.0006	0.0001	0.0166	0.0000	0.0000	0.0005	0.0000	0.0017
5A1	0.0045	0.0155	0.0178	0.0066	0.0124	0.0126	0.0117	0.0064	0.0111	0.0034	0.0020	0.0183	0.0497	0.0016	0.0043
5A2	0.0015	0.0010	0.0015	0.0056	0.0075	0.0031	0.0013	0.0011	0.0012	0.0028	0.0012	0.0000	0.0000	0.0006	0.0016
5A3	0.0002	0.0012	0.0003	0.0007	0.0029	0.0022	0.0023	0.0009	0.0004	0.0003	0.0001	0.0002	0.0000	0.0009	0.0009
6	0.0000	0.0009	0.0014	0.0028	0.0064	0.0047	0.0046	0.0012	0.0033	0.0018	0.0030	0.0057	0.0415	0.0000	0.0044
7	0.0020	0.0045	0.0073	0.0116	0.0135	0.0143	0.0086	0.0036	0.0160	0.0119	0.0036	0.0157	0.0064	0.0174	0.0469
8A1	0.0122	0.0464	0.0569	0.0322	0.1038	0.0264	0.0245	0.0189	0.0190	0.0153	0.0228	0.0560	0.0045	0.0307	0.0324
8A2	0.0005	0.0000	0.0002	0.0000	0.0000	0.0000	0.0006	0.0044	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.2030
9	0.0060	0.5073	0.0045	0.0147	0.0110	0.0113	0.0179	0.0000	0.0197	0.0182	0.0016	0.0065	0.0005	0.0060	0.1214
10	0.0011	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0000	0.0000	0.0005
11A	0.0006	0.0000	0.0201	0.0000	0.0000	0.0000	0.0002	0.0044	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
11B	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0001	0.0024
H-H	0.2135	0.2560	0.1510	0.2636	0.2610	0.2034	0.2602	0.4029	0.3059	0.3009	0.3779	0.3405	0.4109	0.3260	0.2679

TABLE IX-1 DIRECT COEFFICIENTS, 34-SECTOR TABLE: ADELAIDE REGION

SECTOR	8A1	8A2	9	10	11A	11B	H-H
1	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000
2A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0022
2B	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0002	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000
4A1	0.0000	0.0000	0.0000	0.0002	0.0038	0.0000	0.0101
4A2	0.0000	0.0000	0.0000	0.0000	0.0028	0.0000	0.0077
4A3	0.0000	0.0000	0.0000	0.0000	0.0005	0.0500	0.0212
4A4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0135
4A5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0076	0.0234
4B1	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007
4B2	0.0000	0.0000	0.0000	0.0036	0.0035	0.0000	0.0068
4B3	0.0031	0.0006	0.0002	0.0002	0.0004	0.0026	0.0004
4B4	0.0000	0.0000	0.0032	0.0066	0.0062	0.0000	0.0032
4C1	0.0023	0.1644	0.0023	0.0300	0.0008	0.0528	0.0364
4C2	0.0220	0.0000	0.0001	0.0226	0.0000	0.0000	0.0431
4D1	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
4D2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4D3	0.0013	0.1339	0.0000	0.0099	0.0063	0.0067	0.0052
4E	0.0000	0.0053	0.0000	0.0000	0.0022	0.0047	0.0000
4F1	0.2244	0.0001	0.0004	0.0507	0.0018	0.0040	0.0043
4F2	0.0057	0.0000	0.0001	0.0003	0.0053	0.3094	0.0028
4F3	0.0000	0.0000	0.0000	0.0012	0.0005	0.0000	0.0050
4F4	0.0153	0.0119	0.0003	0.0025	0.0038	0.9169	0.0034
4F5	0.0000	0.0000	0.0004	0.0000	0.0010	0.0000	0.0038
5A1	0.0029	0.0030	0.0065	0.0030	0.0123	0.0311	0.0077
5A2	0.0010	0.0000	0.0000	0.0037	0.0257	[illegible]	0.0011
5A3	0.7007	0.0003	0.0096	0.0001	0.0115	0.0004	0.0069
6	0.5204	0.0000	0.0005	0.0170	0.0098	0.0013	0.0171
7	0.3411	0.0113	0.0270	0.0023	0.0138	0.0199	0.0872
8A1	0.0193	0.0270	0.0073	0.0125	0.0000	0.0075	0.0095
8A2	0.0000	0.0012	0.0086	0.0010	0.0000	0.0023	0.0173
9	0.0056	0.0017	0.0730	0.0360	0.0012	0.0500	0.1945
10	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0142
11A	0.0010	0.0000	0.0045	0.0003	0.0013	0.0000	0.0503
11B	0.0009	0.0000	0.0132	0.0000	0.0004	0.0289	0.0491
H-H	0.4299	0.4913	0.3902	0.7330	0.6046	0.3118	0.0000

TABLE IX-2 DIRECT COEFFICIENTS, 19-SECTOR TABLE: NORTHERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.1814	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0607	0.0238	0.0000	0.0000	0.0000	0.0393	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.9136
2B	0.0003	0.0000	0.0095	0.0050	0.0006	0.0031	0.0212	0.0000	0.0001	0.0000	0.0040	0.0003	0.0000	0.0000	0.0013	0.0000	0.0000	0.0001	0.0000	0.0014
3A	0.0000	0.0000	0.0000	0.0067	0.0081	0.0056	0.0001	0.0001	0.0035	0.0028	0.0161	0.0184	0.0002	0.0010	0.0017	0.0001	0.0003	0.0008	0.0027	0.0000
3B	0.0000	0.0000	0.0002	0.0089	0.0487	0.0002	0.0001	0.0001	0.0368	0.1152	0.0254	0.0000	0.0089	0.0000	0.0002	0.0000	0.0000	0.0000	0.0003	0.0000
4A	0.0117	0.0041	0.0329	0.0000	0.0000	0.0933	0.0002	0.0000	0.0001	0.0002	0.0153	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0027	0.0000	0.0328
4B	0.0002	0.0003	0.0049	0.0011	0.0002	0.0003	0.0395	0.0064	0.0005	0.0007	0.0085	0.0000	0.0147	0.0011	0.0009	0.0008	0.0012	0.0020	0.0002	0.0029
4C	0.0063	0.0029	0.0103	0.0038	0.0057	0.0009	0.0014	0.0560	0.0017	0.0027	0.0026	0.0239	0.0098	0.0031	0.0366	0.0003	0.0197	0.0007	0.0050	0.0519
4D	0.0003	0.0006	0.0016	0.0108	0.0080	0.0010	0.0074	0.0999	0.2845	0.0396	0.0228	0.0035	0.0719	0.0008	0.0006	0.0001	0.0040	0.0014	0.0008	0.0024
4E	0.0000	0.0000	0.0000	0.0104	0.0035	0.0002	0.0005	0.0000	0.0020	0.0600	0.0003	0.0008	0.0611	0.0001	0.0000	0.0000	0.0000	0.0001	0.0003	0.0000
4F	0.0176	0.0175	0.0037	0.0000	0.0006	0.0003	0.0006	0.0004	0.0007	0.0004	0.2177	0.0001	0.0005	0.0007	0.0077	0.0091	0.0004	0.0011	0.0018	0.0026
5	0.0248	0.0131	0.0056	0.0130	0.0256	0.0124	0.0106	0.0065	0.0206	0.0190	0.0138	0.0224	0.0042	0.0071	0.0074	0.0030	0.0059	0.0328	0.0923	0.0210
6	0.0048	0.0033	0.0002	0.0020	0.0042	0.0023	0.0031	0.0006	0.0010	0.0045	0.0045	0.0125	0.0000	0.0031	0.0272	0.0064	0.0126	0.0100	0.0008	0.0095
7	0.0335	0.0163	0.0352	0.0016	0.0059	0.0081	0.0118	0.0045	0.0033	0.0089	0.0052	0.0033	0.0106	0.0329	0.0185	0.0218	0.0020	0.0089	0.0157	0.0808
8	0.0185	0.0139	0.0126	0.0122	0.0270	0.0494	0.0325	0.0058	0.0616	0.1294	0.0180	0.0173	0.0294	0.0241	0.0207	0.0162	0.0115	0.0072	0.0093	0.0257
9	0.0002	0.0000	0.0000	0.0008	0.0125	0.0033	0.0090	0.0025	0.0030	0.0019	0.0056	0.0006	0.0007	0.0447	0.0040	0.0320	0.0132	0.0007	0.0268	0.0457
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0111
11A	0.0079	0.0013	0.0000	0.0004	0.0016	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0026	0.0004	0.0015	0.0000	0.0465
11B	0.0001	0.0000	0.0000	0.0000	0.0012	0.0001	0.0001	0.0000	0.0006	0.0000	0.0000	0.0006	0.0001	0.0020	0.0003	0.0072	0.0000	0.0004	0.0079	0.0354
H-H	0.5186	0.6590	0.2387	0.1965	0.2211	0.2300	0.3226	0.3430	0.2280	0.2148	0.2381	0.3871	0.3341	0.2860	0.5275	0.3992	0.7160	0.7087	0.3088	0.0000

TABLE IX-3 DIRECT COEFFICIENTS, 19-SECTOR TABLE: EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	0.0015	0.0000	0.0000	0.0000	0.0000	0.1392	0.0000	0.0000	0.0000	0.0000	0.0296	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.1052	0.1067	0.0000	0.0000	0.0000	0.0997	0.0001	0.0000	0.0000	0.0520	0.0030	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0627	0.0136
2B	0.0009	0.0000	0.0074	0.0133	0.0041	0.0016	0.0462	0.0002	0.0092	0.0023	0.0043	0.0004	0.0000	0.0000	0.0022	0.0000	0.0000	0.0021	0.0000	0.0014
3A	0.0000	0.0000	0.0000	0.0018	0.0000	0.0002	0.0000	0.0020	0.0020	0.0066	0.0008	0.0033	0.0001	0.0003	0.0002	0.0000	0.0001	0.0002	0.0536	0.0036
3B	0.0000	0.0000	0.0012	0.0075	0.0682	0.0001	0.0001	0.0004	0.0094	0.0519	0.0045	0.0000	0.0085	0.0000	0.0002	0.0000	0.0000	0.0000	0.0003	0.0000
4A	0.0414	0.0125	0.0247	0.0000	0.0000	0.1310	0.0008	0.0002	0.0004	0.0001	0.0508	0.0000	0.0000	0.0005	0.0000	0.0001	0.0001	0.0072	0.0040	0.0776
4B	0.0023	0.0094	0.0086	0.0022	0.0006	0.0046	0.0655	0.0028	0.0031	0.0096	0.0334	0.0001	0.0436	0.0076	0.0019	0.0013	0.0023	0.0039	0.0033	0.0072
4C	0.0147	0.0256	0.0209	0.0062	0.0145	0.0208	0.0210	0.1381	0.0040	0.0039	0.0039	0.0082	0.0244	0.0225	0.0179	0.0007	0.0109	0.0019	0.0148	0.0411
4D	0.0002	0.0001	0.0010	0.0044	0.0011	0.0374	0.0519	0.0162	0.0392	0.0025	0.0055	0.0062	0.0276	0.0012	0.0002	0.0031	0.0032	0.0019	0.0388	0.0023
4E	0.0000	0.0000	0.0000	0.0133	0.0165	0.0026	0.0016	0.0011	0.0017	0.0523	0.0003	0.0001	0.0564	0.0001	0.0031	0.0000	0.0001	0.0215	0.0337	0.0029
4F	0.0023	0.0020	0.0029	0.0000	0.0011	0.0022	0.0041	0.0034	0.0024	0.0310	0.2399	0.0007	0.0023	0.0216	0.0140	0.0002	0.0010	0.0022	0.0043	0.0093
5	0.0214	0.0140	0.0017	0.0053	0.0036	0.0050	0.0039	0.0044	0.0051	0.0213	0.0052	0.0163	0.0022	0.0035	0.0027	0.0064	0.0028	0.0210	0.0449	0.0125
6	0.0044	0.0030	0.0012	0.0022	0.0031	0.0032	0.0031	0.0007	0.0023	0.2474	0.0012	0.0217	0.0000	0.0033	0.0180	0.0078	0.0071	0.0104	0.0008	0.0131
7	0.0308	0.0161	0.0562	0.0027	0.0104	0.0097	0.0135	0.0009	0.0229	0.0045	0.0061	0.2044	0.0137	0.0395	0.0292	0.0209	0.0021	0.0102	0.0173	0.0872
8	0.0185	0.0218	0.0161	0.0129	0.0309	0.0523	0.0379	0.0102	0.0213	0.1108	0.0124	0.0131	0.0306	0.0278	0.0192	0.0182	0.0115	0.0075	0.0101	0.0264
9	0.0001	0.0002	0.0000	0.0009	0.0222	0.0032	0.0010	0.0046	0.0066	0.0014	0.0062	0.0004	0.0006	0.0493	0.0013	0.0335	0.0175	0.0007	0.0265	0.0701
10	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0008	0.0001	0.0000	0.0000	0.0000	0.0072
11A	0.0058	0.0006	0.0002	0.0004	0.0013	0.0021	0.0000	0.0011	0.0000	0.0001	0.0002	0.0000	0.0000	0.0000	0.0003	0.0030	0.0003	0.0014	0.0000	0.0472
11B	0.0003	0.0000	0.0000	0.0000	0.0024	0.0003	0.0001	0.0001	0.0004	0.0000	0.0000	0.0007	0.0001	0.0022	0.0201	0.0043	0.0000	0.0054	0.0004	0.0468
H-H	0.5129	0.7600	0.2821	0.1967	0.3022	0.2009	0.3461	0.3032	0.3483	0.3075	0.3213	0.3960	0.3311	0.2666	0.4700	0.3903	0.7295	0.7104	0.3076	0.0000

TABLE IX-4 DIRECT COEFFICIENTS, 19-SECTOR TABLE: CENTRAL REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	0.0001	0.0000	0.0000	0.0000	0.0000	0.0956	0.0000	0.0000	0.0000	0.0320	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0982	0.0337	0.0000	0.0000	0.0000	0.1378	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0136
2B	0.0001	0.0000	0.0000	0.0000	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000	0.0048	0.0000	0.0000	0.0030	0.0002	0.0000	0.0000	0.0001	0.0000	0.0014
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0000	0.0000	0.0000	0.0000	0.1425	0.0000	0.0000	0.0004	0.0275	0.0709	0.0075	0.0000	0.0005	0.0003	0.0002	0.0000	0.0000	0.0001	0.0002	0.0000
4A	0.0003	0.0012	0.0055	0.0000	0.0000	0.1518	0.0000	0.0000	0.0000	0.0006	0.0096	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0021	0.0000	0.0196
4B	0.0002	0.0002	0.0164	0.0000	0.0000	0.0005	0.0331	0.0008	0.0003	0.0000	0.0003	0.0000	0.0270	0.0023	0.0000	0.0006	0.5913	0.0030	0.0000	0.0047
4C	0.0147	0.0098	0.0023	0.0000	0.0018	0.0002	0.0000	0.0783	0.0008	0.0006	0.0007	0.0023	0.0034	0.0064	0.0193	0.0002	0.0038	0.0002	0.0021	0.0051
4D	0.0001	0.0003	0.0000	0.0000	0.0096	0.0082	0.0017	0.0071	0.0253	0.0012	0.0014	0.0005	0.0195	0.0009	0.0093	0.0001	0.0009	0.0007	0.0000	0.0019
4E	0.0000	0.0000	0.0000	0.0000	0.0122	0.0050	0.0011	0.0004	0.0008	0.1460	0.0004	0.0000	0.0332	0.0001	0.0000	0.0000	0.0000	0.0005	0.0012	0.0000
4F	0.0482	0.0503	0.0039	0.0000	0.0027	0.0012	0.0050	0.0016	0.0063	0.0105	0.1183	0.0005	0.0011	0.0015	0.0189	0.0002	0.0006	0.0030	0.0691	0.0023
5	0.0163	0.0091	0.0031	0.0000	0.0065	0.0057	0.0039	0.0051	0.0052	0.0154	0.0179	0.0129	0.0034	0.0039	0.0039	0.0050	0.0038	0.0206	0.0593	0.0131
6	0.0039	0.0028	0.0000	0.0000	0.0020	0.0025	0.0017	0.0008	0.0019	0.0043	0.0016	0.0108	0.0000	0.0527	0.0123	0.0019	0.0057	0.0058	0.0004	0.0114
7	0.0343	0.0173	0.0351	0.0000	0.0395	0.0192	0.0127	0.0008	0.0082	0.0043	0.0066	0.0035	0.0127	0.0349	0.0236	0.0153	0.0022	0.0104	0.0167	0.0872
8	0.0188	0.0152	0.0125	0.0000	0.0316	0.0422	0.0336	0.0091	0.0014	0.1485	0.0268	0.0171	0.0305	0.0260	0.0201	0.0216	0.0164	0.0079	0.0093	0.0269
9	0.0001	0.0000	0.0000	0.0000	0.0017	0.0019	0.0050	0.0028	0.0030	0.0006	0.0025	0.0002	0.0024	0.0309	0.0020	0.0209	0.0180	0.0002	0.0167	0.0610
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0049
11A	0.0064	0.0009	0.0000	0.0000	0.0008	0.0000	0.0000	0.0012	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0026	0.0000	0.0001	0.0000	0.0482
11B	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0001	0.0020	0.0000	0.0025	0.0000	0.0002	0.0002	0.0321
H-H	0.5345	0.5307	0.2162	0.0000	0.3089	0.2284	0.3972	0.3146	0.3229	0.2656	0.2653	0.3887	0.3298	0.2784	0.4796	0.4205	0.7293	0.7015	0.3093	0.0000

TABLE IX-5 DIRECT COEFFICIENTS, 19-SECTOR TABLE: SOUTH-EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	0.0001	0.0000	0.0000	0.0000	0.0000	0.2380	0.0000	0.0000	0.0000	0.0000	0.0093	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0802	0.0321	0.0000	0.0000	0.0000	0.1637	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.0090
2B	0.0022	0.0000	0.0082	0.0000	0.0021	0.0012	0.0453	0.0000	0.0000	0.0000	0.0036	0.0006	0.0000	0.0000	0.0015	0.0000	0.0003	0.0000	0.0005	0.0014
3A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0000	0.0003	0.0011	0.0063	0.1714	0.0000	0.0007	0.0000	0.0007	0.0739	0.0040	0.0000	0.0091	0.0000	0.0002	0.0003	0.0000	0.0000	0.0003	0.0000
4A	0.0116	0.0007	0.0053	0.0000	0.0000	0.1127	0.0061	0.0000	0.0000	0.0000	0.0049	0.0000	0.0000	0.0002	0.0000	0.0001	0.0000	0.0349	0.0214	0.0604
4B	0.0000	0.0048	0.0062	0.0000	0.0000	0.0082	0.2639	0.0020	0.0042	0.0056	0.0023	0.0000	0.0615	0.0054	0.0006	0.0024	0.0029	0.0045	0.0087	0.0159
4C	0.0020	0.0006	0.0029	0.0000	0.0016	0.0001	0.0002	0.0101	0.0007	0.0000	0.0001	0.0007	0.0020	0.0031	0.0025	0.0001	0.0009	0.0001	0.0010	0.0017
4D	0.0001	0.0000	0.0003	0.0000	0.0005	0.0039	0.0002	0.0061	0.0111	0.0006	0.0007	0.0021	0.0071	0.0035	0.0000	0.0001	0.0009	0.0024	0.0093	0.0007
4E	0.0000	0.0000	0.0000	0.0000	0.0013	0.0022	0.0007	0.0000	0.0000	0.0155	0.0000	0.0000	0.0403	0.0290	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000
4F	0.0157	0.0125	0.0110	0.0000	0.0026	0.0008	0.0027	0.0020	0.0028	0.0012	0.0382	0.0001	0.0006	0.0010	0.0291	0.0002	0.0004	0.0035	0.0082	0.0045
5	0.0230	0.0137	0.0014	0.0000	0.0049	0.0068	0.0114	0.0071	0.0084	0.0118	0.0076	0.0151	0.0027	0.0042	0.0031	0.0070	0.0044	0.0250	0.0542	0.0139
6	0.0026	0.0013	0.0008	0.0000	0.0023	0.0012	0.0032	0.0000	0.0014	0.0000	0.0024	0.0066	0.0060	0.0010	0.0667	0.0018	0.0044	0.0039	0.0203	0.0095
7	0.0330	0.0145	0.0625	0.0000	0.0132	0.0102	0.0092	0.0010	0.0091	0.0062	0.0064	0.0050	0.0146	0.0398	0.0365	0.0226	0.0020	0.0114	0.0176	0.0872
8	0.0193	0.0188	0.0169	0.0000	0.0343	0.0501	0.0478	0.0091	0.0007	0.1242	0.0104	0.0179	0.0291	0.0253	0.0150	0.0156	0.0060	0.2066	0.0992	0.0243
9	0.0002	0.0003	0.0000	0.0000	0.0055	0.0039	0.0111	0.0071	0.0091	0.0625	0.0107	0.0007	0.0009	0.0589	0.0012	0.0419	0.0256	0.0004	0.0334	0.0842
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0045
11A	0.0042	0.0000	0.0001	0.0000	0.0003	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0505	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0406
11B	0.0004	0.0000	0.0000	0.0000	0.0010	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0001	0.0004	0.0000	0.0032	0.0000	0.0002	0.0002	0.0383
H-H	0.5608	0.5309	0.3095	0.0000	0.3230	0.2099	0.2820	0.3026	0.3677	0.2634	0.4140	0.3881	0.3249	0.2659	0.4445	0.3853	0.7552	0.6999	0.3092	0.0000

TABLE IX-6 DIRECT COEFFICIENTS, 36-SECTOR TABLE: SOUTH AUSTRALIA

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	0.0006	0.0000	0.0000	0.0000	0.0000	0.3847	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0841	0.0571	0.0000	0.0000	0.0000	0.0332	0.1893	0.0767	0.2565	0.1674	0.0000	0.0005	0.0000	0.0000	0.0000
2B	0.0011	0.0000	0.0060	0.0127	0.0619	0.0025	0.0011	0.0000	0.0058	0.0001	0.0805	0.0011	0.0250	0.0000	0.0006
3A	0.0000	0.0000	0.0000	0.0054	0.0000	0.0002	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000
3B	0.0000	0.0000	0.0009	0.6147	0.1615	0.0000	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0017	0.0000	0.0002
4A1	0.0093	0.0001	0.0121	0.0000	0.0000	0.1205	0.0318	0.0149	0.0297	0.0000	0.0000	0.0038	0.0000	0.0000	0.0000
4A2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0528	0.0288	0.0101	0.0107	0.0000	0.0000	0.0000	0.0000	0.0000
4A3	0.0055	0.0003	0.0000	0.0000	0.0000	0.0025	0.0038	0.1612	0.0160	0.0003	0.0000	0.0000	0.0058	0.0000	0.0000
4A4	0.0071	0.0071	0.0086	0.0000	0.0000	0.0019	0.0172	0.0229	0.0733	0.0214	0.0000	0.0000	0.0000	0.0000	0.0003
4A5	0.0009	0.0000	0.0000	0.0000	0.0000	0.0004	0.0010	0.0001	0.0005	0.0898	0.0000	0.0000	0.0000	0.0000	0.0000
4B1	0.0000	0.0024	0.0029	0.0024	0.0002	0.0000	0.0000	0.0000	0.0001	0.0011	0.2813	0.1880	0.0030	0.0000	0.0014
4B2	0.0000	0.0000	0.0095	0.0000	0.0001	0.0003	0.0000	0.0000	0.0000	0.0000	0.0021	0.0545	0.0000	0.0001	0.0024
4B3	0.0039	0.0081	0.0000	0.0000	0.0005	0.0039	0.0053	0.0096	0.0059	0.0101	0.0003	0.0030	0.2076	0.1157	0.0123
4B4	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0011	0.0005	0.0030	0.0001	0.0000	0.0000	0.0034	0.0164	0.0005
4C1	0.0233	0.0080	0.0429	0.0101	0.0315	0.0008	0.0016	0.0005	0.0016	0.0018	0.0021	0.0007	0.0032	0.0040	0.1009
4C2	0.0015	0.0013	0.0040	0.0059	0.0079	0.0012	0.0015	0.0005	0.0012	0.0023	0.0022	0.0008	0.0042	0.0016	0.0015
4D1	0.0000	0.0000	0.0000	0.0068	0.0127	0.0000	0.0036	0.0001	0.0003	0.0001	0.0009	0.0319	0.0014	0.0008	0.0096
4D2	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0001	0.0000	0.0007	0.0000	0.0002	0.0076	0.0024	0.0030	0.0510
4D3	0.0007	0.0004	0.0031	0.0116	0.0028	0.0048	0.1075	0.0034	0.0193	0.0495	0.0094	0.0179	0.0020	0.0039	0.0646
4E	0.0000	0.0000	0.0000	0.0114	0.0121	0.0027	0.0121	0.0000	0.0013	0.0597	0.0007	0.0170	0.0005	0.0001	0.0067
4F1	0.0196	0.0173	0.0053	0.0005	0.0031	0.0005	0.0008	0.0007	0.0013	0.0007	0.0131	0.0026	0.0060	0.0028	0.0076
4F2	0.0014	0.0027	0.0085	0.0002	0.0001	0.0005	0.0012	0.0003	0.0006	0.0001	0.0014	0.0157	0.0060	0.0007	0.0006
4F3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000
4F4	0.0000	0.0001	0.0435	0.0003	0.0171	0.0089	0.0278	0.0154	0.0150	0.0078	0.0002	0.0278	0.0062	0.0241	0.0309
4F5	0.0000	0.0000	0.0007	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0006	0.0007	0.0000
5A1	0.0155	0.0071	0.0027	0.0110	0.0114	0.0065	0.0052	0.0058	0.0033	0.0051	0.0188	0.0037	0.0142	0.0055	0.0066
5A2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0003	0.0091	0.0008	0.0001	0.0001	0.0004	0.0004	0.0011	0.0033
5A3	0.0080	0.0083	0.0000	0.0007	0.0045	0.0023	0.0012	0.0010	0.0010	0.0035	0.0003	0.0002	0.0022	0.0002	0.0004
6	0.0051	0.0032	0.0010	0.0022	0.0043	0.0026	0.0035	0.0019	0.0022	0.0048	0.0047	0.0017	0.0074	0.0031	0.0019
7	0.0352	0.0178	0.0558	0.0030	0.0127	0.0092	0.0123	0.0165	0.0088	0.0162	0.0122	0.0106	0.0116	0.0246	0.0133
8A1	0.0193	0.0198	0.0159	0.0129	0.0320	0.0620	0.0684	0.0290	0.0375	0.0419	0.0938	0.0356	0.0364	0.0193	0.0258
8A2	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0047	0.0000	0.0000	0.0000	0.0002
9	0.0065	0.0005	0.0000	0.0019	0.0170	0.0068	0.0090	0.0095	0.0055	0.0069	0.0450	0.0155	0.0159	0.0246	0.0135
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0001
11A	0.0079	0.0009	0.0001	0.0004	0.0010	0.0001	0.0000	0.0000	0.0000	0.0002	0.0004	0.0000	0.0000	0.0000	0.0000
11B	0.0004	0.0000	0.0000	0.0000	0.0022	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0002	0.0001
H-H	0.5283	0.6702	0.2889	0.1965	0.2799	0.2131	0.1636	0.3288	0.1448	0.1672	0.2237	0.3894	0.2220	0.3677	0.3041

TABLE IX-6 DIRECT COEFFICIENTS, 36-SECTOR TABLE: SOUTH AUSTRALIA

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0616	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0204	0.0003	0.0000	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000
2B	0.0000	0.0005	0.0000	0.0001	0.0003	0.0017	0.0001	0.0003	0.0001	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000
3A	0.0000	0.0035	0.0006	0.0000	0.0017	0.0092	0.0002	0.0000	0.0000	0.0002	0.0032	0.0250	0.0002	0.0000	0.0002
3B	0.0000	0.0432	0.0000	0.0002	0.0820	0.0048	0.0000	0.0000	0.0009	0.1164	0.0000	0.0002	0.0000	0.0084	0.0000
4A1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0169	0.0041	0.0012	0.0328	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002
4A2	0.0000	0.0042	0.0000	0.0000	0.0000	0.0047	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
4A3	0.0000	0.0000	0.0005	0.0000	0.0003	0.0038	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4A4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4A5	0.0000	0.0001	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
4B1	0.0025	0.0013	0.0010	0.0017	0.0004	0.0050	0.0001	0.0000	0.0020	0.0053	0.0000	0.0000	0.0000	0.0291	0.0007
4B2	0.0014	0.0000	0.0000	0.0019	0.0002	0.0009	0.0007	0.0006	0.0008	0.0097	0.0000	0.0000	0.0000	0.0272	0.0044
4B3	0.0003	0.0001	0.0004	0.0011	0.0083	0.0024	0.0061	0.0124	0.0041	0.0099	0.0000	0.0000	0.0001	0.0000	0.0081
4B4	0.0000	0.0000	0.0001	0.0003	0.0000	0.0014	0.0016	0.0004	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008
4C1	0.0252	0.0064	0.0054	0.0093	0.0095	0.0034	0.0017	0.0032	0.0026	0.0086	0.0001	0.0102	0.0283	0.0614	0.0073
4C2	0.2325	0.0010	0.0014	0.0020	0.0045	0.0037	0.0021	0.0013	0.0044	0.0009	0.0321	0.0000	0.0000	0.0033	0.0665
4D1	0.0464	0.2710	0.0183	0.2995	0.0189	0.0043	0.0000	0.0004	0.0030	0.0266	0.0004	0.0000	0.0000	0.0223	0.0002
4D2	0.0083	0.0219	0.1790	0.0549	0.0016	0.0062	0.0040	0.0002	0.0071	0.0583	0.0000	0.0000	0.0000	0.0090	0.0000
4D3	0.1451	0.0032	0.0037	0.0782	0.0042	0.0156	0.0017	0.0054	0.0165	0.0266	0.0000	0.0104	0.0317	0.0749	0.0037
4E	0.0025	0.0100	0.0100	0.0061	0.1086	0.0050	0.0001	0.0001	0.0030	0.0001	0.0002	0.0000	0.0001	0.0910	0.0001
4F1	0.0279	0.0041	0.0030	0.0024	0.0072	0.0659	0.0084	0.0013	0.0351	0.0075	0.0003	0.0009	0.0011	0.0029	0.0010
4F2	0.0011	0.0029	0.0015	0.0028	0.0024	0.0003	0.2240	0.1139	0.0286	0.0065	0.0000	0.0000	0.0000	0.0000	0.0006
4F3	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0001	0.0222	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4F4	0.0180	0.0002	0.0010	0.0087	0.0021	0.0305	0.0071	0.0853	0.1045	0.0912	0.0000	0.0101	0.0034	0.0094	0.0067
4F5	0.0000	0.0002	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000	0.0001	0.0165	0.0000	0.0000	0.0000	0.0000	0.0014
5A1	0.0044	0.0170	0.0195	0.0072	0.0154	0.0142	0.0122	0.0065	0.0118	0.0037	0.0000	0.0201	0.0447	0.0017	0.0046
5A2	0.0017	0.0010	0.0015	0.0056	0.0096	0.0032	0.0012	0.0011	0.0012	0.0028	0.0012	0.0000	0.0000	0.0006	0.0015
5A3	0.0002	0.0012	0.0003	0.0007	0.0031	0.0022	0.0023	0.0009	0.0004	0.0003	0.0001	0.0002	0.0000	0.0009	0.0000
6	0.0001	0.0009	0.0013	0.0026	0.0063	0.0045	0.0043	0.0012	0.0031	0.0017	0.0028	0.0054	0.0390	0.0000	0.0040
7	0.0031	0.0043	0.0071	0.0114	0.0124	0.0134	0.0074	0.0038	0.0159	0.0114	0.0029	0.0155	0.0062	0.0168	0.0449
8A1	0.0121	0.0684	0.0560	0.0323	0.1074	0.0272	0.0234	0.0189	0.0188	0.0153	0.0228	0.0560	0.0045	0.0307	0.0311
8A2	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0011	0.0073	0.0045	0.0147	0.0096	0.0110	0.0171	0.0077	0.0194	0.0182	0.0016	0.0065	0.0000	0.0065	0.1192
10	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11A	0.0006	0.0000	0.0001	0.0000	0.0000	0.0000	0.0002	0.0045	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
11B	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.0000	0.0000	0.0001	0.0022
H-H	0.2329	0.2560	0.1510	0.2652	0.2636	0.2034	0.2692	0.4845	0.3038	0.3009	0.3779	0.3400	0.4109	0.3276	0.2695

TABLE IX-6 DIRECT COEFFICIENTS, 36-SECTOR TABLE: SOUTH AUSTRALIA

SECTOR	8A1	8A2	9	10	11A	11B	H-H
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0136
2B	0.0025	0.0002	0.0000	0.0000	0.0000	0.0000	0.0014
3A	0.0004	0.0000	0.0000	0.0000	0.0001	0.0003	0.0000
3B	0.0002	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000
4A1	0.0000	0.0000	0.0000	0.0000	0.0043	0.0000	0.0139
4A2	0.0000	0.0000	0.0000	0.0000	0.0038	0.0000	0.0115
4A3	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0212
4A4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0182
4A5	0.0000	0.0000	0.0001	0.0000	0.0000	0.0123	0.0234
4B1	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0065
4B2	0.0000	0.0000	0.0000	0.0031	0.0029	0.0000	0.0068
4B3	0.0024	0.0005	0.0006	0.0002	0.0004	0.0031	0.0013
4B4	0.0000	0.0000	0.0027	0.0058	0.0055	0.0000	0.0063
4C1	0.0026	0.1634	0.0019	0.0274	0.0084	0.0470	0.0364
4C2	0.0350	0.0000	0.0001	0.0231	0.0000	0.0000	0.0481
4D1	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000
4D2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4D3	0.0010	0.0260	0.0003	0.0086	0.0053	0.0056	0.0088
4E	0.0000	0.0041	0.0000	0.0000	0.0022	0.0052	0.0000
4F1	0.0264	0.0000	0.0004	0.0007	0.0018	0.0040	0.0018
4F2	0.0057	0.0000	0.0001	0.0004	0.0056	0.0104	0.0033
4F3	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000	0.0094
4F4	0.0139	0.0119	0.0003	0.0026	0.0039	0.0114	0.0034
4F5	0.0000	0.0000	0.0003	0.0000	0.0009	0.0000	0.0038
5A1	0.0033	0.0033	0.0071	0.0041	0.0131	0.0362	0.0137
5A2	0.0009	0.0000	0.0000	0.0007	0.0051	0.0020	0.0011
5A3	0.0008	0.0003	0.0086	0.0001	0.0118	0.0203	0.0069
6	0.0227	0.0019	0.0078	0.0158	0.0096	0.0012	0.0210
7	0.0381	0.0111	0.0262	0.0023	0.0132	0.0194	0.0872
8A1	0.0274	0.0278	0.0073	0.0125	0.0086	0.0077	0.0096
8A2	0.0000	0.0012	0.0090	0.0010	0.0000	0.0022	0.0173
9	0.0091	0.0017	0.0890	0.0330	0.0012	0.0527	0.1985
10	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0142
11A	0.0007	0.0000	0.0043	0.0003	0.0013	0.0000	0.0503
11B	0.0007	0.0000	0.0116	0.0000	0.0004	0.0233	0.0961
H-H	0.4509	0.4913	0.3834	0.7318	0.6892	0.3111	0.0000

APPENDIX X

INVERSE MATRICES FOR 11-SECTOR TABLES [OPEN MODEL]

TABLE X-1 INVERSE MATRIX, 11-SECTOR OPEN MODEL: ADELAIDE REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0004	0.0002	0.0004	0.0027	0.0002	0.0009	0.0003	0.0004	0.0001	0.0002	0.0002
2	0.0256	1.0235	0.0013	0.0071	0.0005	0.0023	0.0008	0.0011	0.0002	0.0006	0.0008
3	0.0013	0.0011	1.3042	0.0135	0.0018	0.0154	0.0017	0.0022	0.0005	0.0014	0.0013
4	0.1266	0.1028	0.2057	1.4289	0.0894	0.4684	0.1615	0.1093	0.0279	0.1235	0.1022
5	0.0287	0.0186	0.0209	0.0170	1.0209	0.0094	0.0113	0.0073	0.0218	0.0071	0.0394
6	0.0067	0.0042	0.0081	0.0047	0.0199	1.0023	0.0072	0.0160	0.0105	0.0181	0.0088
7	0.0378	0.0229	0.0262	0.0189	0.0085	0.0261	1.0568	0.0376	0.0330	0.0061	0.0193
8	0.0270	0.0281	0.0550	0.0522	0.0241	0.0501	0.0439	1.0398	0.0212	0.0199	0.0152
9	0.0076	0.0055	0.0259	0.0200	0.0043	0.0195	0.1439	0.0156	1.1080	0.0424	0.0223
10	0.0000	0.0000	0.0001	0.0003	0.0000	0.0001	0.000[illegible]	0.0000	0.0001	1.0000	0.0000
11	0.0092	0.0008	0.0045	0.0011	0.0012	0.0009	0.0053	0.0018	0.0200	0.0012	1.0107

TABLE X-2 INVERSE MATRIX, 11-SECTOR OPEN MODEL: NORTHERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0004	0.0003	0.0002	0.0102	0.0003	0.0016	0.0001	0.0005	0.0000	0.0003	0.0001
2	0.0627	1.0236	0.0017	0.0056	0.0005	0.0010	0.0001	0.0017	0.0000	0.0002	0.0002
3	0.0025	0.0017	1.0460	0.0456	0.0213	0.0169	0.0013	0.0049	0.0005	0.0019	0.0032
4	0.0541	0.0386	0.0308	1.3289	0.0420	0.2126	0.0114	0.0687	0.0049	0.0374	0.0151
5	0.0282	0.0145	0.0259	0.0259	1.0245	0.0091	0.0083	0.0095	0.0042	0.0070	0.0531
6	0.0063	0.0040	0.0052	0.0044	0.0135	1.0017	0.0044	0.0282	0.0074	0.0132	0.0083
7	0.0369	0.0187	0.0067	0.0084	0.0044	0.0130	1.0358	0.0205	0.0239	0.0030	0.0122
8	0.0245	0.0174	0.0285	0.0734	0.0215	0.0425	0.0272	1.0266	0.0183	0.0146	0.0106
9	0.0023	0.0011	0.0117	0.0059	0.0013	0.0025	0.0480	0.0055	1.0344	0.0140	0.0098
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000
11	0.0002	0.0014	0.0027	0.0004	0.0007	0.0062	0.0027	0.0004	0.0102	0.0006	1.0039

TABLE X-3 INVERSE MATRIX, 11-SECTOR OPEN MODEL: EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0076	0.0044	0.0045	0.1195	0.0024	0.0186	0.0044	0.0046	0.0007	0.0033	0.0029
2	0.1262	1.1195	0.0107	0.1122	0.0028	0.0176	0.0042	0.0069	0.0007	0.0031	0.0039
3	0.0005	0.0004	1.0638	0.0050	0.0039	0.0100	0.0026	0.0026	0.0002	0.0003	0.0008
4	0.0810	0.0435	0.0444	1.1925	0.0237	0.1856	0.0439	0.0463	0.0065	0.0326	0.0294
5	0.0246	0.0160	0.0070	0.0115	1.0170	0.0042	0.0041	0.0035	0.0071	0.0034	0.0303
6	0.0063	0.0043	0.0042	0.0059	0.0225	1.0016	0.0047	0.0188	0.0079	0.0077	0.0081
7	0.0365	0.0219	0.0123	0.0185	0.0059	0.0183	1.0446	0.0322	0.0235	0.0036	0.0145
8	0.0273	0.0278	0.0338	0.0613	0.0158	0.0415	0.0330	1.0236	0.0207	0.0141	0.0114
9	0.0025	0.0016	0.0031	0.0059	0.0008	0.0024	0.0535	0.0038	1.0362	0.0164	0.0110
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0001	1.0003	0.0002
11	0.0064	0.0008	0.0035	0.0012	0.0007	0.0004	0.0027	0.0002	0.0077	0.0005	1.0015

TABLE X-4 INVERSE MATRIX, 11-SECTOR OPEN MODEL: CENTRAL REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0039	0.0031	0.0011	0.0487	0.0002	0.0042	0.0007	0.0015	0.0001	0.0004	0.0005
2	0.0995	1.0394	0.0022	0.0788	0.0004	0.0068	0.0011	0.0027	0.0002	0.0006	0.0012
3	0.0009	0.0007	1.1665	0.0110	0.0002	0.0109	0.0002	0.0007	0.0001	0.0001	0.0003
4	0.0914	0.0747	0.0254	1.1594	0.0056	0.0992	0.0155	0.0367	0.0027	0.0088	0.0130
5	0.0188	0.0104	0.0083	0.0132	1.0133	0.0038	0.0046	0.0046	0.0355	0.0041	0.0300
6	0.0051	0.0035	0.0039	0.0036	0.0112	1.0008	0.0033	0.0128	0.0024	0.0060	0.0051
7	0.0392	0.0203	0.0128	0.0143	0.0044	0.0153	1.0375	0.0257	0.0170	0.0031	0.0129
8	0.0257	0.0197	0.0392	0.0453	0.0184	0.0358	0.0290	1.0232	0.0233	0.0118	0.0101
9	0.0017	0.0009	0.0026	0.0033	0.0004	0.0012	0.0329	0.0030	1.0219	0.0186	0.0045
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000
11	0.0066	0.0010	0.0019	0.0005	0.0005	0.0002	0.0023	0.0001	0.0052	0.0001	1.0003

TABLE X-5 INVERSE MATRIX, 11-SECTOR OPEN MODEL: SOUTH-EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0017	0.0012	0.0004	0.0480	0.0002	0.0054	0.0006	0.0016	0.0002	0.0003	0.0008
2	0.0878	1.0379	0.0034	0.0748	0.0009	0.0085	0.0009	0.0042	0.0004	0.0005	0.0019
3	0.0002	0.0009	1.2069	0.0022	0.0001	0.0101	0.0001	0.0004	0.0001	0.0001	0.0002
4	0.0434	0.0332	0.0122	1.3143	0.0058	0.1482	0.0158	0.0447	0.0054	0.0078	0.0220
5	0.0249	0.0068	0.0066	0.0161	1.0155	0.0048	0.0053	0.0040	0.0079	0.0048	0.0365
6	0.0032	0.0014	0.0032	0.0045	0.0068	1.0008	0.0014	0.0070	0.0021	0.0045	0.0029
7	0.0402	0.0503	0.0189	0.0207	0.0063	0.0189	1.0444	0.0396	0.0255	0.0032	0.0155
8	0.0250	0.0217	0.0435	0.0661	0.0191	0.0379	0.0288	1.0189	0.0177	0.0072	0.0111
9	0.0033	0.0036	0.0082	0.0150	0.0012	0.0037	0.0644	0.0042	1.0454	0.0270	0.0140
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000
11	0.0047	0.0001	0.0016	0.0004	0.0004	0.0001	0.0008	0.0001	0.0061	0.0002	1.0003

TABLE X-6 INVERSE MATRIX, 11-SECTOR OPEN MODEL: SOUTH AUSTRALIA

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	1.0049	0.0032	0.0053	0.0484	0.0027	0.0162	0.0056	0.0067	0.0009	0.0040	0.0034
2	0.0937	1.0586	0.0082	0.0406	0.0029	0.0137	0.0048	0.0076	0.0008	0.0034	0.0038
3	0.0018	0.0014	1.1755	0.0174	0.0058	0.0158	0.0024	0.0032	0.0006	0.0017	0.0019
4	0.1351	0.1002	0.1669	1.5178	0.0853	0.5084	0.1751	0.2088	0.0278	0.1241	0.1069
5	0.0281	0.0173	0.0219	0.0215	1.0221	0.0112	0.0117	0.0084	0.0191	0.0076	0.0420
6	0.0070	0.0044	0.0067	0.0056	0.0185	1.0027	0.0067	0.0180	0.0096	0.0169	0.0085
7	0.0421	0.0256	0.0190	0.0220	0.0080	0.0265	1.0547	0.0361	0.0318	0.0060	0.0188
8	0.0295	0.0267	0.0453	0.0639	0.0238	0.0542	0.0438	1.0395	0.0216	0.0205	0.0158
9	0.0082	0.0054	0.0251	0.0220	0.0041	0.0174	0.1406	0.0153	1.1028	0.0388	0.0230
10	0.0005	0.0000	0.0001	0.0003	0.0000	0.0001	0.0001	0.0000	0.0001	1.0000	0.0000
11	0.0088	0.0011	0.0041	0.0015	0.0011	0.0009	0.0040	0.0015	0.0178	0.0011	1.0096

TABLE XI-1 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: ADELAIDE REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0009	0.0009	0.0008	0.0030	0.0006	0.0013	0.0007	0.0008	0.0005	0.0009	0.0008	0.0009
2	0.0294	1.0283	0.0044	0.0098	0.0032	0.0254	0.0033	0.0044	0.0030	0.0054	0.0047	0.0060
3	0.0044	0.0051	1.3068	0.0157	0.0040	0.0178	0.0037	0.0049	0.0028	0.0053	0.0045	0.0049
4	0.4263	0.4831	0.4500	1.6407	0.2987	0.7065	0.3567	0.4472	0.2506	0.5035	0.4068	0.4727
5	0.0558	0.0529	0.0430	0.0361	1.0398	0.0309	0.0289	0.0306	0.0419	0.0414	0.0669	0.0427
6	0.0278	0.0310	0.0253	0.0196	0.0346	1.0191	0.0209	0.0342	0.0261	0.0448	0.0302	0.0332
7	0.1368	0.1484	0.1069	0.0889	0.0776	0.1047	1.1213	0.1227	0.1065	0.1315	0.1199	0.1560
8	0.0727	0.0860	0.0922	0.0844	0.0560	0.0863	0.0736	1.0783	0.0551	0.0778	0.0616	0.0720
9	0.2277	0.2848	0.2053	0.1755	0.1580	0.1934	0.2872	0.2050	1.2714	0.3214	0.2460	0.3470
10	0.0134	0.0170	0.0110	0.0098	0.0094	0.0108	0.0088	0.0116	0.0101	1.0170	0.0137	0.0211
11	0.1065	0.1255	0.0846	0.0705	0.0698	0.0789	0.0693	0.0864	0.0930	0.1258	1.1106	0.1550
H-H	0.9344	1.1857	0.7618	0.6604	0.6526	0.7424	0.6084	0.8040	0.6940	1.1846	0.9495	1.4735

TABLE XI-2 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: NORTHERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0012	0.0011	0.0006	0.0107	0.0009	0.0021	0.0005	0.0012	0.0006	0.0012	0.0009	0.0012
2	0.0747	1.0370	0.0070	0.0135	0.0089	0.0092	0.0067	0.0130	0.0086	0.0147	0.0124	0.0195
3	0.0066	0.0063	1.0478	0.0483	0.0241	0.0198	0.0041	0.0087	0.0034	0.0069	0.0074	0.0067
4	0.1529	0.1492	0.0742	1.3940	0.1111	0.2806	0.0658	0.1622	0.0757	0.1575	0.1160	0.1605
5	0.0506	0.0396	0.0358	0.0407	1.0401	0.0245	0.0207	0.0307	0.0203	0.0343	0.0760	0.0364
6	0.0157	0.0146	0.0094	0.0106	0.0201	1.0082	0.0096	0.0371	0.0141	0.0247	0.0179	0.0153
7	0.1027	0.0926	0.0357	0.0517	0.0506	0.0564	1.0722	0.0629	0.0712	0.0832	0.0796	0.1072
8	0.0534	0.0498	0.0412	0.0925	0.0417	0.0624	0.0432	1.0540	0.0390	0.0498	0.0402	0.0470
9	0.0421	0.0457	0.0292	0.0321	0.0291	0.0299	0.0700	0.0432	1.0629	0.0624	0.0505	0.0647
10	0.0084	0.0094	0.0037	0.0055	0.0059	0.0058	0.0046	0.0079	0.0061	1.0102	0.0086	0.0136
11	0.0708	0.0714	0.0302	0.0416	0.0445	0.0433	0.0371	0.0596	0.0559	0.0766	1.0678	0.1016
H-H	0.7033	0.8437	0.3310	0.4968	0.5268	0.5187	0.4155	0.7132	0.5399	0.9155	0.7697	1.2244

TABLE XI-3 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0249	0.0243	0.0125	0.1302	0.0122	0.0284	0.0120	0.0166	0.0105	0.0206	0.0168	0.0228
2	0.1551	1.1572	0.0259	0.1325	0.0213	0.0361	0.0187	0.0296	0.0194	0.0359	0.0303	0.0432
3	0.0014	0.0016	1.0642	0.0056	0.0045	0.0105	0.0010	0.0015	0.0006	0.0013	0.0016	0.0013
4	0.2333	0.2421	0.1246	1.2996	0.1214	0.2830	0.1201	0.1657	0.1049	0.2055	0.1681	0.2273
5	0.0406	0.0368	0.0154	0.0227	1.0272	0.0145	0.0121	0.0160	0.0175	0.0215	0.0448	0.0238
6	0.0207	0.0231	0.0118	0.0160	0.0317	1.0108	0.0119	0.0300	0.0172	0.0240	0.0212	0.0214
7	0.1216	0.1328	0.0571	0.0784	0.0605	0.0727	1.0866	0.0989	0.0784	0.1002	0.0920	0.1269
8	0.0639	0.0755	0.0530	0.0870	0.0393	0.0649	0.0513	1.0522	0.0443	0.0556	0.0447	0.0545
9	0.0713	0.0913	0.0393	0.0543	0.0450	0.0464	0.0080	0.0577	1.0804	0.0966	0.0737	0.1027
10	0.0080	0.0104	0.0042	0.0056	0.0051	0.0051	0.0040	0.0063	0.0053	1.0091	0.0073	0.0119
11	0.0882	0.1083	0.0469	0.0592	0.0536	0.0531	0.0440	0.0649	0.0609	0.0941	1.0766	0.1232
H-H	0.9667	1.1298	0.4563	0.6096	0.5561	0.5540	0.4340	0.6798	0.5596	0.9837	0.7895	1.0932

TABLE XI-4 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: CENTRAL REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0054	0.0045	0.0020	0.0496	0.0012	0.0050	0.0014	0.0027	0.0011	0.0020	0.0020	0.0022
2	0.1137	1.0524	0.0109	0.0879	0.0094	0.0153	0.0082	0.0141	0.0102	0.0171	0.0153	0.0220
3	0.0014	0.0011	1.1668	0.0113	0.0004	0.0112	0.0004	0.0010	0.0004	0.0007	0.0007	0.0007
4	0.1261	0.1061	0.0466	1.1813	0.0275	0.1199	0.0329	0.0642	0.0266	0.0487	0.0472	0.0533
5	0.0321	0.0225	0.0164	0.0216	1.0216	0.0117	0.0112	0.0151	0.0147	0.0194	0.0431	0.0204
6	0.0151	0.0125	0.0100	0.0099	0.0175	1.0068	0.0083	0.0209	0.0094	0.0175	0.0150	0.0154
7	0.1120	0.0863	0.0574	0.0604	0.0503	0.0589	1.0741	0.0837	0.0677	0.0871	0.0847	0.1120
8	0.0526	0.0441	0.0557	0.0623	0.0353	0.0518	0.0425	1.0446	0.0420	0.0427	0.0365	0.0413
9	0.0525	0.0470	0.0336	0.0355	0.0325	0.0317	0.0584	0.0433	1.0573	0.0773	0.0547	0.0782
10	0.0035	0.0034	0.0023	0.0024	0.0024	0.0023	0.0019	0.0030	0.0027	1.0044	0.0037	0.0058
11	0.0691	0.0576	0.0401	0.0401	0.0399	0.0376	0.0336	0.0498	0.0486	0.0721	1.0619	0.0960
H-H	0.7721	0.7000	0.4723	0.4887	0.4867	0.4618	0.3871	0.6142	0.5374	0.9904	0.7616	1.1871

TABLE XI-5 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: SOUTH-EASTERN REGION

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0050	0.0035	0.0026	0.0504	0.0023	0.0075	0.0022	0.0041	0.0024	0.0043	0.0039	0.0052
2	0.1015	1.0473	0.0124	0.0848	0.0097	0.0170	0.0078	0.0145	0.0095	0.0170	0.0146	0.0213
3	0.0005	0.0011	1.2071	0.0024	0.0002	0.0102	0.0002	0.0006	0.0002	0.0004	0.0005	0.0004
4	0.1344	0.0956	0.0725	1.3805	0.0637	0.2048	0.0615	0.1131	0.0657	0.1174	0.1063	0.1413
5	0.0403	0.0174	0.0168	0.0273	1.0253	0.0144	0.0130	0.0156	0.0181	0.0234	0.0508	0.0240
6	0.0117	0.0072	0.0088	0.0105	0.0122	1.0060	0.0056	0.0133	0.0077	0.0147	0.0108	0.0131
7	0.1172	0.1030	0.0699	0.0768	0.0552	0.0667	1.0830	0.0974	0.0764	0.0958	0.0868	0.1194
8	0.0533	0.0410	0.0622	0.0867	0.0371	0.0555	0.0430	1.0401	0.0364	0.0413	0.0373	0.0439
9	0.0790	0.0554	0.0584	0.0701	0.0493	0.0508	0.1024	0.0610	1.0955	0.1181	0.0641	0.1175
10	0.0036	0.0024	0.0024	0.0026	0.0023	0.0022	0.0018	0.0027	0.0025	1.0043	0.0033	0.0055
11	0.0672	0.0429	0.0430	0.0458	0.0401	0.0390	0.0321	0.0470	0.0474	0.0754	1.0582	0.0970
H-H	0.7854	0.5379	0.5203	0.5717	0.4990	0.4887	0.3941	0.5899	0.5190	0.9454	0.7277	1.2190

TABLE XI-6 INVERSE MATRIX, 11-SECTOR CLOSED MODEL: SOUTH AUSTRALIA

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H
1	1.0192	0.0188	0.0143	0.0594	0.0122	0.0275	0.0145	0.0188	0.0109	0.0210	0.0172	0.0212
2	0.1237	1.0913	0.0269	0.0637	0.0228	0.0373	0.0235	0.0330	0.0218	0.0392	0.0327	0.0445
3	0.0075	0.0076	1.1791	0.0218	0.0096	0.0203	0.0060	0.0080	0.0046	0.0085	0.0074	0.0085
4	0.5829	0.5889	0.4468	1.6629	0.3815	0.8610	0.4553	0.5891	0.3407	0.6591	0.5396	0.6646
5	0.0717	0.0649	0.0492	0.0551	1.0509	0.0455	0.0390	0.0454	0.0495	0.0597	0.0842	0.0647
6	0.0376	0.0378	0.0259	0.0293	0.0387	1.0268	0.0259	0.0441	0.0311	0.0535	0.0382	0.0455
7	0.1637	0.1583	0.0950	0.1158	0.0885	0.1222	1.1309	0.1394	0.1168	0.1513	0.1364	0.1805
8	0.0914	0.0942	0.0840	0.1116	0.0647	0.1029	0.0825	1.0920	0.0648	0.0944	0.0756	0.0918
9	0.2791	0.3010	0.1944	0.2307	0.1832	0.2307	0.3101	0.2454	1.2921	0.3624	0.2848	0.4020
10	0.0162	0.0176	0.0102	0.0128	0.0107	0.0128	0.0102	0.0138	0.0114	1.0193	0.0156	0.0240
11	0.1799	0.1878	0.1110	0.1333	0.1143	0.1356	0.1119	0.1469	0.1374	0.2055	1.1743	0.2539
H-H	1.1245	1.2269	0.7028	0.8666	0.7437	0.8853	0.7037	0.9550	0.7857	1.3433	1.0864	1.6686

TABLE XII-1 INVERSE MATRIX, 36-SECTOR OPEN MODEL: ADELAIDE REGION

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	1.0004	0.0000	0.0005	0.0000	0.0000	0.0306	0.0012	0.0005	0.0009	0.0001	0.0001	0.0002	0.0001	0.0000	0.0001
2A	0.0264	1.0263	0.0014	0.0000	0.0001	0.0211	0.0776	0.0194	0.0833	0.0379	0.0002	0.0005	0.0002	0.0000	0.0001
2B	0.0002	0.0002	1.0007	0.0016	0.0003	0.0006	0.0004	0.0001	0.0011	0.0002	0.0838	0.0075	0.0007	0.0000	0.0003
3A	0.0000	0.0000	0.0000	1.0087	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001
3B	0.0005	0.0004	0.0015	0.0218	1.3138	0.0006	0.0025	0.0004	0.0020	0.0082	0.0006	0.0029	0.0010	0.0004	0.0029
4A1	0.0114	0.0012	0.0165	0.0001	0.0010	1.1126	0.0419	0.0188	0.0309	0.0023	0.0018	0.0053	0.0006	0.0008	0.0012
4A2	0.0004	0.0003	0.0003	0.0000	0.0002	0.0005	1.0495	0.0285	0.0094	0.0124	0.0001	0.0002	0.0002	0.0001	0.0004
4A3	0.0071	0.0012	0.0004	0.0000	0.0001	0.0038	0.0054	1.1977	0.0229	0.0019	0.0001	0.0002	0.0037	0.0001	0.0002
4A4	0.0146	0.0185	0.0131	0.0000	0.0060	0.0035	0.0227	0.0374	1.0932	0.0456	0.0011	0.0001	0.0001	0.0000	0.0004
4A5	0.0013	0.0000	0.0000	0.0000	0.0001	0.0003	0.0010	0.0001	0.0004	1.0627	0.0001	0.0000	0.0000	0.0000	0.0000
4B1	0.0004	0.0028	0.0040	0.0020	0.0006	0.0004	0.0009	0.0003	0.0006	0.0022	1.2932	0.1130	0.0010	0.0003	0.0019
4B2	0.0005	0.0003	0.0129	0.0002	0.0006	0.0006	0.0008	0.0003	0.0003	0.0007	0.0039	1.0621	0.0004	0.0005	0.0033
4B3	0.0047	0.0130	0.0018	0.0005	0.0028	0.0063	0.0083	0.0128	0.0094	0.0138	0.0010	0.0042	1.0450	0.0164	0.0141
4B4	0.0002	0.0002	0.0002	0.0000	0.0002	0.0003	0.0016	0.0009	0.0002	0.0003	0.0003	0.0002	0.0259	1.0180	0.0008
4C1	0.0274	0.0076	0.0511	0.0149	0.0624	0.0034	0.0068	0.0024	0.0043	0.0073	0.0099	0.0037	0.0041	0.0062	1.1116
4C2	0.0066	0.0038	0.0131	0.0086	0.0203	0.0061	0.0083	0.0050	0.0052	0.0088	0.0098	0.0055	0.0066	0.0059	0.0068
4D1	0.0028	0.0012	0.0056	0.0088	0.0192	0.0023	0.0303	0.0027	0.0058	0.0218	0.0038	0.0247	0.0028	0.0019	0.0697
4D2	0.0019	0.0007	0.0037	0.0018	0.0046	0.0009	0.0087	0.0010	0.0027	0.0064	0.0016	0.0083	0.0027	0.0035	0.0566
4D3	0.0060	0.0033	0.0132	0.0194	0.0154	0.0108	0.1650	0.0129	0.0304	0.1187	0.0152	0.0264	0.0044	0.0073	0.0752
4E	0.0014	0.0008	0.0015	0.0172	0.0224	0.0039	0.0160	0.0012	0.0027	0.0690	0.0620	0.0208	0.0017	0.0010	0.0115
4F1	0.0222	0.0179	0.0099	0.0022	0.0110	0.0046	0.0081	0.0040	0.0065	0.0060	0.0189	0.0084	0.0114	0.0057	0.0138
4F2	0.0027	0.0054	0.0152	0.0005	0.0023	0.0023	0.0069	0.0022	0.0029	0.0026	0.0039	0.0210	0.0141	0.0026	0.0239
4F3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
4F4	0.0034	0.0024	0.0619	0.0021	0.0352	0.0132	0.0393	0.0242	0.0232	0.0198	0.0086	0.0373	0.0144	0.0296	0.0432
4F5	0.0001	0.0001	0.0009	0.0000	0.0014	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0006	0.0006	0.0001
5A1	0.0185	0.0097	0.0053	0.0111	0.0146	0.0004	0.0097	0.0082	0.0059	0.0101	0.0215	0.0077	0.0088	0.0065	0.0115
5A2	0.0005	0.0002	0.0006	0.0004	0.0009	0.0008	0.0018	0.0112	0.0015	0.0018	0.0005	0.0010	0.0009	0.0014	0.0048
5A3	0.0096	0.0096	0.0004	0.0010	0.0060	0.0033	0.0029	0.0018	0.0024	0.0055	0.0009	0.0008	0.0012	0.0036	0.0010
6	0.0068	0.0047	0.0022	0.0030	0.0085	0.0054	0.0076	0.0043	0.0046	0.0085	0.0081	0.0044	0.0065	0.0046	0.0042
7	0.0380	0.0202	0.0584	0.0054	0.0276	0.0173	0.0248	0.0264	0.0161	0.0296	0.0254	0.0189	0.0160	0.0304	0.0225
8A1	0.0266	0.0277	0.0248	0.0187	0.0565	0.0767	0.0903	0.0449	0.0494	0.0633	0.1066	0.0556	0.0463	0.0244	0.0471
8A2	0.0001	0.0001	0.0001	0.0001	0.0003	0.0001	0.0002	0.0002	0.0001	0.0002	0.0054	0.0007	0.0002	0.0003	0.0004
9	0.0075	0.0052	0.0117	0.0047	0.0272	0.0126	0.0203	0.0186	0.0116	0.0186	0.0574	0.0281	0.0246	0.0336	0.0244
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0001
11A	0.0072	0.0007	0.0001	0.0008	0.0009	0.0005	0.0003	0.0002	0.0002	0.0003	0.0008	0.0002	0.0002	0.0002	0.0002
11B	0.0009	0.0002	0.0003	0.0002	0.0038	0.0003	0.0004	0.0004	0.0003	0.0005	0.0010	0.0005	0.0004	0.0008	0.0005

TABLE XII-1 INVERSE MATRIX, 34-SECTOR OPEN MODEL: ADELAIDE REGION

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0001	0.0000	0.0000	0.0000	0.0000	0.0005	0.0039	0.0005	0.0010	0.0001	0.0000	0.0000	0.0003	0.0000	0.0000
2A	0.0001	0.0004	0.0001	0.0001	0.0001	0.0009	0.0117	0.0013	0.0010	0.0003	0.0000	0.0000	0.0000	0.0001	0.0001
2B	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0003	0.0001	0.0000	0.0001	0.0016	0.0001
3A	0.0001	0.0006	0.0001	0.0001	0.0003	0.0014	0.0001	0.0000	0.0001	0.0001	0.0004	0.0032	0.0001	0.0001	0.0000
3B	0.0025	0.0209	0.0019	0.0046	0.1240	0.0072	0.0004	0.0004	0.0024	0.1556	0.0002	0.0004	0.0014	0.0246	0.0038
4A1	0.0015	0.0004	0.0002	0.0005	0.0036	0.0168	0.0065	0.0042	0.0262	0.0029	0.0001	0.0004	0.0002	0.0007	0.0006
4A2	0.0005	0.0041	0.0001	0.0007	0.0002	0.0047	0.0002	0.0002	0.0013	0.0003	0.0000	0.0000	0.0001	0.0002	0.0003
4A3	0.0002	0.0001	0.0008	0.0001	0.0005	0.0051	0.0045	0.0005	0.0005	0.0002	0.0000	0.0000	0.0000	0.0001	0.0001
4A4	0.0001	0.0001	0.0000	0.0000	0.0000	0.0014	0.0004	0.0001	0.0002	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000
4A5	0.0001	0.0002	0.0000	0.0000	0.0000	0.0023	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
4B1	0.0024	0.0013	0.0011	0.0018	0.0013	0.0005	0.0006	0.0004	0.0017	0.0044	0.0002	0.0004	0.0012	0.0246	0.0016
4B2	0.0013	0.0003	0.0002	0.0026	0.0008	0.0016	0.0014	0.0010	0.0012	0.0013	0.0002	0.0004	0.0615	0.0301	0.0059
4B3	0.0017	0.0009	0.0007	0.0019	0.0096	0.0036	0.0091	0.0150	0.0032	0.0065	0.0002	0.0006	0.0010	0.0026	0.0114
4B4	0.0003	0.0001	0.0002	0.0005	0.0002	0.0017	0.0026	0.0010	0.0015	0.0004	0.0060	0.0001	0.0001	0.0002	0.0017
4C1	0.0385	0.0111	0.0092	0.0152	0.0217	0.0068	0.0047	0.0062	0.0055	0.0195	0.0020	0.0137	0.0419	0.0799	0.0134
4C2	1.3411	0.0063	0.0065	0.0072	0.0148	0.0089	0.0072	0.0049	0.0109	0.0072	0.0442	0.0045	0.0033	0.0063	0.0866
4D1	0.0751	1.1523	0.0139	0.1821	0.0230	0.0077	0.0017	0.0027	0.0065	0.0248	0.0029	0.0035	0.0113	0.0348	0.0069
4D2	0.0230	0.0214	1.1452	0.0521	0.0037	0.0077	0.0055	0.0021	0.0083	0.0514	0.0009	0.0015	0.0048	0.0162	0.0026
4D3	0.2328	0.0087	0.0085	1.0900	0.0131	0.0253	0.0060	0.0103	0.0219	0.0377	0.0082	0.0150	0.0508	0.0934	0.0216
4E	0.0077	0.0153	0.0138	0.0111	1.1301	0.0078	0.0015	0.0012	0.0053	0.0049	0.0010	0.0013	0.0059	0.1174	0.0018
4F1	0.0424	0.0096	0.0084	0.0070	0.0155	1.0797	0.0174	0.0085	0.0462	0.0159	0.0026	0.0036	0.0032	0.0090	0.0059
4F2	0.0051	0.0055	0.0032	0.0061	0.0052	0.0025	1.3313	0.1314	0.0457	0.0144	0.0004	0.0011	0.0007	0.0028	0.0023
4F3	0.0000	0.0005	0.0000	0.0001	0.0001	0.0000	0.0001	1.0154	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4F4	0.0351	0.0037	0.0036	0.0133	0.0101	0.0351	0.0140	0.1020	1.1184	0.1101	0.0018	0.0135	0.0068	0.0180	0.0126
4F5	0.0001	0.0003	0.0001	0.0001	0.0003	0.0003	0.0001	0.0001	0.0002	1.0171	0.0000	0.0000	0.0000	0.0001	0.0019
5A1	0.0110	0.0196	0.0216	0.0123	0.0175	0.0155	0.0172	0.0101	0.0149	0.0089	1.0006	0.0193	0.0420	0.0067	0.0074
5A2	0.0038	0.0016	0.0021	0.0067	0.0112	0.0039	0.0020	0.0016	0.0019	0.0036	0.0014	1.0003	0.0006	0.0028	0.0021
5A3	0.0008	0.0018	0.0006	0.0014	0.0043	0.0028	0.0037	0.0016	0.0011	0.0015	0.0002	0.0004	1.0002	0.0018	0.0016
6	0.0023	0.0035	0.0035	0.0051	0.0115	0.0067	0.0078	0.0033	0.0055	0.0046	0.0036	0.0074	0.0423	1.0032	0.0071
7	0.0114	0.0111	0.0131	0.0189	0.0261	0.0205	0.0154	0.0094	0.0243	0.0217	0.0048	0.0204	0.0099	0.0274	1.0568
8A1	0.0367	0.0076	0.0710	0.0565	0.1322	0.0371	0.0384	0.0285	0.0388	0.0341	0.0253	0.0611	0.0125	0.0592	0.0414
8A2	0.0007	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0046	0.0003	0.0003	0.0001	0.0001	0.0000	0.0003	0.0013
9	0.0100	0.0131	0.0093	0.0238	0.0223	0.0188	0.0300	0.0163	0.0306	0.0308	0.0032	0.0116	0.0039	0.0203	0.1439
10	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
11A	0.0008	0.0002	0.0002	0.0002	0.0003	0.0002	0.0005	0.0046	0.0003	0.0003	0.0001	0.0001	0.0000	0.0002	0.0008
11B	0.0003	0.0004	0.0003	0.0005	0.0008	0.0004	0.0005	0.0003	0.0005	0.0009	0.0021	0.0003	0.0002	0.0006	0.0046

TABLE XII-1 INVERSE MATRIX, 36-SECTOR OPEN MODEL: ADELAIDE REGION

SECTOR	8A1	8A2	9	10	11A	11B
1	0.0001	0.0000	0.0000	0.0000	0.0001	0.0001
2A	0.0001	0.0000	0.0000	0.0000	0.0004	0.0015
2B	0.0004	0.0001	0.0000	0.0001	0.0001	0.0000
3A	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001
3B	0.0012	0.0014	0.0004	0.0007	0.0009	0.0015
4A1	0.0010	0.0006	0.0001	0.0002	0.0046	0.0006
4A2	0.0002	0.0001	0.0000	0.0000	0.0030	0.0002
4A3	0.0002	0.0001	0.0000	0.0000	0.0007	0.0001
4A4	0.0001	0.0001	0.0000	0.0000	0.0001	0.0004
4A5	0.0001	0.0000	0.0002	0.0000	0.0000	0.0083
4B1	0.0020	0.0005	0.0003	0.0010	0.0007	0.0003
4B2	0.0010	0.0008	0.0006	0.0045	0.0042	0.0005
4B3	0.0041	0.0033	0.0008	0.0010	0.0010	0.0044
4B4	0.0002	0.0002	0.0037	0.0069	0.0064	0.0004
4C1	0.0064	0.1842	0.0072	0.0364	0.0118	0.0631
4C2	0.0349	0.0037	0.0037	0.0318	0.0025	0.0046
4D1	0.0035	0.0181	0.0012	0.0066	0.0027	0.0062
4D2	0.0016	0.0113	0.0007	0.0032	0.0013	0.0040
4D3	0.0110	0.0505	0.0036	0.0205	0.0105	0.0156
4E	0.0031	0.0087	0.0016	0.0029	0.0042	0.0073
4F1	0.0295	0.0041	0.0013	0.0030	0.0031	0.0076
4F2	0.0089	0.0017	0.0006	0.0012	0.0077	0.0139
4F3	0.0000	0.0000	0.0000	0.0012	0.0000	0.0000
4F4	0.0206	0.0217	0.0020	0.0062	0.0062	0.0164
4F5	0.0001	0.0000	0.0005	0.0001	0.0011	0.0001
5A1	0.0047	0.0059	0.0108	0.0053	0.0137	0.0351
5A2	0.0015	0.0012	0.0003	0.0011	0.0055	0.0024
5A3	0.0012	0.0007	0.0111	0.0007	0.0117	0.0219
6	0.0219	0.0037	0.0104	0.0180	0.0110	0.0038
7	0.0472	0.0182	0.0331	0.0062	0.0166	0.0265
8A1	1.0364	0.0403	0.0115	0.0180	0.0135	0.0160
8A2	0.0002	1.0014	0.0096	0.0014	0.0001	0.0030
9	0.0192	0.0094	1.1085	0.0425	0.0051	0.0639
10	0.0000	0.0000	0.0001	1.0000	0.0000	0.0000
11A	0.0012	0.0001	0.0050	0.0006	1.0014	0.0003
11B	0.0013	0.0002	0.0152	0.0006	0.0006	1.0308

TABLE XII-2 INVERSE MATRIX, 19-SECTOR OPEN MODEL: NORTHERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B
1	1.0025	0.0009	0.0066	0.0000	0.0000	0.2007	0.0002	0.0000	0.0001	0.0001	0.0045	0.0000	0.0006	0.0001	0.0000	0.0000	0.0000	0.0005	0.0000
2A	0.0629	1.0247	0.0019	0.0000	0.0000	0.0570	0.0001	0.0000	0.0000	0.0000	0.0017	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0003
2B	0.0005	0.0001	1.0007	0.0051	0.0007	0.0037	0.0221	0.0002	0.0004	0.0004	0.0053	0.0004	0.0004	0.0001	0.0014	0.0001	0.0001	0.0001	0.0001
3A	0.0010	0.0007	0.0003	1.0071	0.0000	0.0013	0.0005	0.0009	0.0058	0.0041	0.0214	0.0190	0.0011	0.0013	0.0022	0.0002	0.0005	0.0015	0.0046
3B	0.0009	0.0008	0.0006	0.0115	1.0523	0.0007	0.0008	0.0060	0.0547	0.1316	0.0363	0.0009	0.0214	0.0063	0.0014	0.0002	0.0007	0.0004	0.0006
4A	0.0136	0.0050	0.0365	0.0002	0.0001	1.1060	0.0011	0.0001	0.0003	0.0003	0.0219	0.0000	0.0001	0.0003	0.0002	0.0000	0.0001	0.0030	0.0001
4B	0.0005	0.0005	0.0053	0.0013	0.0004	0.0007	1.0414	0.0072	0.0010	0.0012	0.0010	0.0004	0.0156	0.0013	0.0017	0.0011	0.0016	0.0023	0.0003
4C	0.0008	0.0043	0.0120	0.0053	0.0084	0.0057	0.0036	1.0606	0.0073	0.0106	0.0058	0.0270	0.0131	0.0048	0.0404	0.0014	0.0217	0.0022	0.0084
4D	0.0034	0.0028	0.0044	0.0171	0.0139	0.0035	0.0120	0.1485	1.4003	0.0633	0.0432	0.0105	0.1067	0.0025	0.0099	0.0012	0.0102	0.0036	0.0032
4E	0.0005	0.0003	0.0001	0.0114	0.0043	0.0006	0.0009	0.0005	0.0036	1.0651	0.0013	0.0011	0.0655	0.0004	0.0019	0.0005	0.0009	0.0008	0.0006
4F	0.0243	0.0232	0.0052	0.0002	0.0011	0.0069	0.0013	0.0008	0.0023	0.0023	1.2788	0.0004	0.0013	0.0013	0.0102	0.0004	0.0007	0.0015	0.0025
5	0.0277	0.0146	0.0071	0.0146	0.0286	0.0209	0.0122	0.0106	0.0319	0.0269	0.0211	1.0239	0.0092	0.0083	0.0088	0.0044	0.0067	0.0340	0.0958
6	0.0064	0.0042	0.0011	0.0027	0.0058	0.0058	0.0046	0.0014	0.0046	0.0099	0.0072	0.0134	1.0020	0.0044	0.0281	0.0073	0.0132	0.0108	0.0027
7	0.0368	0.0179	0.0376	0.0026	0.0077	0.0189	0.0147	0.0060	0.0072	0.0141	0.0089	0.0043	0.0133	1.0358	0.0204	0.0239	0.0030	0.0098	0.0178
8	0.0231	0.0164	0.0166	0.0161	0.0317	0.0621	0.0368	0.0166	0.0913	0.1498	0.0300	0.0199	0.0473	0.0269	1.0242	0.0183	0.0135	0.0092	0.0128
9	0.0023	0.0011	0.0021	0.0013	0.0142	0.0051	0.0106	0.0037	0.0058	0.0053	0.0087	0.0010	0.0025	0.0481	0.0055	1.0345	0.0140	0.0013	0.0289
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000	0.0000
11A	0.0000	0.0014	0.0001	0.0004	0.0017	0.0018	0.0000	0.0001	0.0001	0.0002	0.0001	0.0001	0.0000	0.0002	0.0000	0.0027	0.0005	1.0015	0.0001
11B	0.0002	0.0001	0.0001	0.0000	0.0015	0.0002	0.0003	0.0001	0.0002	0.0003	0.0002	0.0006	0.0002	0.0025	0.0004	0.0076	0.0001	0.0005	1.0082

TABLE XII-3 INVERSE MATRIX, 19-SECTOR OPEN MODEL: EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B
1	1.0087	0.0026	0.0042	0.0001	0.0001	0.1621	0.0006	0.0002	0.0002	0.0002	0.0501	0.0001	0.0002	0.0002	0.0007	0.0001	0.0001	0.0013	0.0009
2A	0.1244	1.1215	0.0038	0.0001	0.0001	0.1487	0.0305	0.0001	0.0001	0.0001	0.0193	0.0002	0.0001	0.0001	0.0003	0.0001	0.0009	0.0011	0.0007
2B	0.0013	0.0007	1.0001	0.0137	0.0046	0.0026	0.0511	0.0005	0.0004	0.0016	0.0063	0.0006	0.0025	0.0005	0.0025	0.0002	0.0002	0.0034	0.0002
3A	0.0001	0.0001	0.0000	1.0019	0.0002	0.0003	0.0001	0.0001	0.0000	0.0071	0.0211	0.0034	0.0005	0.0003	0.0003	0.0001	0.0001	0.0003	0.0005
3B	0.0002	0.0001	0.0014	0.0090	1.0743	0.0005	0.0004	0.0008	0.0107	0.0591	0.0066	0.0004	0.0129	0.0002	0.0006	0.0002	0.0002	0.0003	0.0006
4A	0.0592	0.0166	0.0293	0.0004	0.0003	1.1611	0.0030	0.0006	0.0007	0.0005	0.0799	0.0001	0.0004	0.0398	0.0013	0.0002	0.0002	0.0036	0.0031
4B	0.0048	0.0121	0.0105	0.0030	0.0014	0.0086	1.0946	0.0036	0.0038	0.0123	0.0069	0.0013	0.0483	0.0091	0.0035	0.0021	0.0021	0.0051	0.0314
4C	0.0194	0.0085	0.0258	0.0031	0.0189	0.0071	0.0041	1.1218	0.0053	0.0039	0.0034	0.0105	0.0294	0.0272	0.0220	0.0023	0.0219	0.0032	0.0177
4D	0.0015	0.0007	0.0019	0.0050	0.0016	0.0119	0.0025	0.0191	1.0410	0.0035	0.0026	0.0075	0.0275	0.0020	0.0013	0.0095	0.0040	0.0026	0.0315
4E	0.0086	0.0003	0.0003	0.0144	0.0191	0.0036	0.0022	0.0015	0.0022	1.0570	0.0018	0.0016	0.0600	0.0304	0.0012	0.0005	0.0006	0.0023	0.0041
4F	0.3042	0.0036	0.0046	0.0005	0.0025	0.0057	0.0070	0.0053	0.0035	0.0039	1.3167	0.0013	0.0044	0.0039	0.0171	0.0005	0.0017	0.0033	0.0061
5	0.0245	0.0163	0.0025	0.0062	0.0072	0.0122	0.0349	0.0034	0.0056	0.0238	0.0690	1.0169	0.0043	0.0543	0.0033	0.0072	0.0032	0.0217	0.2461
6	0.0063	0.0344	0.0321	0.0028	0.0044	0.0066	0.0045	0.0012	0.0027	0.0109	0.0029	0.0224	1.0016	0.0346	0.0106	0.0079	0.0276	0.0112	0.0024
7	0.0362	0.0203	0.0605	0.0044	0.2135	0.0223	0.0202	0.0018	0.0192	0.0100	0.0128	0.3357	0.0172	1.0436	0.0319	0.0234	0.0033	0.0116	0.0196
8	0.0267	0.0275	0.0239	0.0159	0.0371	0.0703	0.0447	0.0124	0.0028	0.1231	0.0238	0.0149	0.0414	0.0316	1.0220	0.0205	0.0129	0.0097	0.0133
9	0.0024	0.0016	0.0035	0.0013	0.0034	0.0355	0.0114	0.0057	0.0077	0.0027	0.0096	0.0059	0.0025	0.0536	0.0036	1.0360	0.0195	0.0015	0.0086
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0002	0.0003
11A	0.0060	0.0037	0.0003	0.0035	0.0914	0.0012	0.0031	0.0012	0.0033	0.0002	0.0007	0.0002	0.0031	0.0032	0.0000	0.0031	0.0034	1.0215	0.0061
11B	0.0004	0.0001	0.0002	0.0000	0.0026	0.0002	0.0002	0.0031	0.0001	0.0002	0.0001	0.0007	0.0032	0.0325	0.0302	0.0046	0.0001	0.0305	1.0006

TABLE XII-4 INVERSE MATRIX, 19-SECTOR OPEN MODEL: CENTRAL REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B
1	1.0011	0.0002	0.0206	0.0000	0.0000	0.1129	0.0002	0.0000	0.0002	0.0001	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0060
2A	0.0949	1.0352	0.0010	0.0030	0.0000	0.1759	0.0000	0.0000	0.0000	0.0002	0.0020	0.0000	0.0000	0.0000	0.0000	0.0031	0.0000	0.0004	0.0013
2B	0.0024	0.0003	1.0026	0.0060	0.0004	0.0005	0.0000	0.0000	0.0000	0.0002	0.0055	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0001	0.0001
3A	0.0000	0.0000	0.0003	1.0000	0.0003	0.0000	0.0000	0.0000	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0006	0.0006	0.0001	0.0000	1.1677	0.0005	0.0003	0.0000	0.0331	0.0972	0.0100	0.0002	0.0139	0.0002	0.0006	0.0001	0.0001	0.0003	0.0005
4A	0.0107	0.0021	0.0065	0.0000	0.0001	1.1005	0.0001	0.0000	0.0001	0.0011	0.0130	0.0000	0.0001	0.0031	0.0003	0.0001	0.0000	0.0025	0.0001
4B	0.0005	0.0004	0.0171	0.0000	0.0002	0.0009	1.0343	0.0009	0.0004	0.0003	0.0005	0.0003	0.0260	0.0032	0.0005	0.0058	0.0015	0.0034	0.0001
4C	0.0177	0.0115	0.0030	0.0000	0.0029	0.0049	0.0005	1.0052	0.0011	0.0032	0.0015	0.0029	0.0043	0.0076	0.0117	0.0006	0.0043	0.0005	0.0027
4D	0.0005	0.0006	0.0002	0.0000	0.0009	0.0102	0.0018	0.0079	1.0260	0.0018	0.0010	0.0007	0.0202	0.0011	0.0007	0.0002	0.0011	0.0009	0.0201
4E	0.0002	0.0002	0.0000	0.0002	0.0169	0.0002	0.0014	0.0006	0.0015	1.1727	0.0007	0.0004	0.0392	0.0003	0.0005	0.0001	0.0002	0.0009	0.0015
4F	0.0609	0.0596	0.0050	0.0000	0.0047	0.0194	0.0067	0.0022	0.0075	0.0182	1.1352	0.0010	0.0039	0.0024	0.0221	0.0009	0.0010	0.0038	0.0107
5	0.0191	0.0109	0.2236	0.0000	0.0084	0.0111	0.0044	0.0058	0.0058	0.0201	0.0210	1.0133	0.0036	0.0046	0.0046	0.0056	0.0041	0.0211	0.0606
6	0.0050	0.0034	0.0004	0.0000	0.0040	0.0045	0.0023	0.0011	0.0022	0.0079	0.0026	0.0112	1.0069	0.0033	0.0128	0.0024	0.0059	0.0062	0.0013
7	0.0387	0.0196	0.0372	0.0000	0.0127	0.0215	0.0147	0.0013	0.0093	0.0110	0.0092	0.0043	0.0151	1.0375	0.0255	0.0170	0.0030	0.0113	0.0162
8	0.0246	0.0188	0.0149	0.0000	0.0410	0.0573	0.0366	0.0105	0.0034	0.1624	0.0329	0.0183	0.0391	0.0287	1.0226	0.0233	0.0116	0.0295	0.0120
9	0.0016	0.0029	0.0013	0.0000	0.0026	0.0032	0.0058	0.0032	0.0035	0.0017	0.0033	0.0024	0.0012	0.0329	0.0030	1.0228	0.0186	0.0037	0.0177
10	0.0000	0.0002	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000	0.0000
11A	0.0065	0.0009	0.0000	0.0095	0.0009	0.0009	0.0000	0.0013	0.0000	0.0001	0.0000	0.0000	0.0005	0.0001	0.0000	0.0026	0.0001	1.0001	0.0001
11B	0.0001	0.0000	0.0001	0.0000	0.0018	0.0001	0.0000	0.0000	0.0001	0.0001	0.0000	0.0005	0.0002	0.0022	0.0001	0.0025	0.0001	0.0002	1.0003

TABLE XII-5 INVERSE MATRIX, 19-SECTOR OPEN MODEL: SOUTH-EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B
1	1.0035	0.0004	0.0016	0.0000	0.0031	0.2692	0.0002	0.0000	0.0000	0.0001	0.0116	0.0000	0.0000	0.0001	0.0003	0.0000	0.0000	0.0014	0.0005
2A	0.0892	1.0596	0.0009	0.0000	0.0003	0.1513	0.0001	0.0000	0.0000	0.0000	0.0043	0.0000	0.0030	0.0000	0.0001	0.0001	0.0000	0.0008	0.0021
2B	0.0024	0.0304	1.0308	0.0000	0.0026	0.0027	0.0623	0.0002	0.0003	0.0008	0.0042	0.0006	0.0039	0.0024	0.0018	0.0002	0.0002	0.0004	0.0006
3A	0.0000	0.0000	0.0000	1.0200	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0050	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0002	0.0001	0.0014	0.0200	1.2071	0.0004	0.0014	0.0000	0.0009	0.0967	0.0053	0.0001	0.0135	0.0001	0.0005	0.0001	0.0001	0.0001	0.0005
4A	0.0134	0.0009	0.0061	0.0000	0.0001	1.1307	0.0006	0.0000	0.0002	0.0000	0.0062	0.0000	0.0001	0.0003	0.0002	0.0001	0.0000	0.0056	0.0016
4B	0.0014	0.0075	0.0092	0.0000	0.0005	0.0143	1.3598	0.0029	0.0060	0.0081	0.0039	0.0007	0.0341	0.0081	0.0019	0.0038	0.0045	0.0067	0.0123
4C	0.0023	0.0008	0.0333	0.0000	0.0021	0.0010	0.0007	1.0103	0.0008	0.0005	0.0003	0.0003	0.0023	0.0034	0.0027	0.0002	0.0010	0.0002	0.0011
4D	0.0003	0.0001	0.0004	0.0000	0.0007	0.0046	0.0004	0.0062	1.0113	0.0007	0.0009	0.0022	0.0073	0.0006	0.0002	0.0001	0.0010	0.0005	0.0005
4E	0.0002	0.0001	0.0001	0.0000	0.0017	0.0027	0.0012	0.0022	0.0001	1.0160	0.0031	0.0003	0.0411	0.0031	0.0003	0.0001	0.0002	0.0002	0.0064
4F	0.0194	0.0157	0.0129	0.0000	0.2049	0.0100	0.0069	0.0026	0.0032	0.0059	1.0975	0.0008	0.0024	0.0022	0.0325	0.0009	0.0007	0.0042	0.0075
5	0.0254	0.0155	0.0322	0.0000	0.0065	0.0170	0.0164	0.0075	0.0038	0.0133	0.0091	1.0155	0.0046	0.0052	0.0037	0.0079	0.0048	0.0257	0.0558
6	0.0632	0.0018	0.0011	0.0000	0.0032	0.0030	0.0050	0.0002	0.0215	0.0012	0.0629	0.0068	1.0006	0.0014	0.0069	0.0021	0.0045	0.0641	0.0009
7	0.0375	0.0177	0.0669	0.0000	0.0188	0.0269	0.0203	0.0018	0.0100	0.0132	0.0392	0.0063	0.0134	1.0443	0.0393	0.0255	0.0032	0.0127	0.0202
8	0.0241	0.0222	0.0232	0.0020	0.0432	0.0631	0.0687	0.0098	0.0017	0.1325	0.0134	0.0189	0.0400	0.0285	1.0172	0.0176	0.0071	0.0098	0.0124
9	0.0029	0.0017	0.0045	0.0000	0.0082	0.0060	0.0173	0.0077	0.0103	0.0043	0.0130	0.0312	0.0034	0.0644	0.0041	1.0455	0.0270	0.0014	0.0364
10	0.0000	0.0003	0.0000	0.0300	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1.0000	0.0000	0.0000
11A	0.0042	0.0000	0.0001	0.0000	0.0003	0.0011	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0062	0.0003	0.0028	0.0001	1.0000	0.0001
11B	0.0005	0.0000	0.0000	0.0000	0.0013	0.0003	0.0091	0.0000	0.0000	0.0001	0.0001	0.0054	0.0031	0.0006	0.0031	0.0033	0.0001	0.0002	1.0003

TABLE XII-6 INVERSE MATRIX, 36-SECTOR OPEN MODEL: SOUTH AUSTRALIA

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	1.0053	0.0007	0.0075	0.0002	0.0007	0.4403	0.0163	0.0094	0.0152	0.0011	0.0014	0.0043	0.0013	0.0009	0.0012
2A	0.0934	1.0631	0.0043	0.0001	0.0002	0.0823	0.2218	0.1147	0.3039	0.2054	0.0007	0.0019	0.0014	0.0004	0.0006
2B	0.0016	0.0008	1.0070	0.0133	0.0027	0.0040	0.0023	0.0010	0.0071	0.0013	0.1135	0.0241	0.0325	0.0040	0.0019
3A	0.0004	0.0003	0.0002	1.0056	0.0004	0.0005	0.0006	0.0005	0.0004	0.0005	0.0005	0.0005	0.0015	0.0003	0.0011
3B	0.0008	0.0005	0.0022	0.0201	1.1964	0.0012	0.0052	0.0007	0.0027	0.0094	0.0015	0.0056	0.0036	0.0010	0.0109
4A1	0.0118	0.0010	0.0166	0.0003	0.0012	1.1430	0.0409	0.0237	0.0387	0.0022	0.0026	0.0067	0.0014	0.0014	0.0020
4A2	0.0005	0.0002	0.0003	0.0001	0.0002	0.0609	1.0565	0.0367	0.0123	0.0130	0.0002	0.0004	0.0004	0.0001	0.0009
4A3	0.0070	0.0007	0.0004	0.0000	0.0001	0.0066	0.0057	1.1932	0.0211	0.0013	0.0002	0.0002	0.0089	0.0011	0.0003
4A4	0.0086	0.0082	0.0095	0.0001	0.0001	0.0066	0.0218	0.0312	1.0824	0.0273	0.0011	0.0003	0.0006	0.0001	0.0004
4A5	0.0011	0.0001	0.0001	0.0000	0.0001	0.0010	0.0012	0.0002	0.0007	1.0987	0.0001	0.0001	0.0000	0.0000	0.0001
4B1	0.0010	0.0040	0.0075	0.0039	0.0013	0.0013	0.0022	0.0010	0.0020	0.0035	1.3942	0.2780	0.0063	0.0013	0.0042
4B2	0.0006	0.0003	0.0107	0.0004	0.0007	0.0009	0.0008	0.0004	0.0005	0.0006	0.0049	1.0590	0.0009	0.0005	0.0033
4B3	0.0073	0.0116	0.0023	0.0006	0.0023	0.0099	0.0115	0.0172	0.0126	0.0181	0.0020	0.0056	1.2636	0.1494	0.0185
4B4	0.0002	0.0001	0.0002	0.0000	0.0002	0.0003	0.0014	0.0009	0.0002	0.0004	0.0003	0.0002	0.0045	1.0173	0.0009
4C1	0.0289	0.0108	0.0501	0.0138	0.0446	0.0156	0.0085	0.0037	0.0073	0.0081	0.0128	0.0058	0.0082	0.0068	1.1169
4C2	0.0081	0.0055	0.0129	0.0101	0.0175	0.0111	0.0109	0.0065	0.0076	0.0109	0.0157	0.0090	0.0125	0.0077	0.0085
4D1	0.0072	0.0036	0.0128	0.0192	0.0333	0.0080	0.0613	0.0067	0.0140	0.0317	0.0137	0.0608	0.0082	0.0054	0.1753
4D2	0.0028	0.0014	0.0052	0.0027	0.0055	0.0025	0.0117	0.0017	0.0041	0.0064	0.0035	0.2144	0.0055	0.0058	0.0604
4D3	0.0062	0.0037	0.0113	0.0160	0.0115	0.0114	0.1288	0.0123	0.0278	0.0657	0.0203	0.0276	0.0073	0.0078	0.0826
4E	0.0015	0.0009	0.0015	0.0140	0.0181	0.0050	0.0176	0.0015	0.0032	0.0761	0.0031	0.0226	0.0024	0.0012	0.0130
4F1	0.0245	0.0211	0.0100	0.0021	0.0077	0.0152	0.0111	0.0061	0.0107	0.0088	0.0257	0.0120	0.0113	0.0066	0.0143
4F2	0.0028	0.0042	0.0137	0.0006	0.0019	0.0034	0.0056	0.0024	0.0036	0.0027	0.0057	0.0247	0.0113	0.0036	0.0043
4F3	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0001	0.0000	0.0002	0.0000	0.0000	0.0000	0.0007	0.0001	0.0001
4F4	0.0036	0.0024	0.0533	0.0027	0.0265	0.0152	0.0382	0.0244	0.0220	0.0141	0.0107	0.0373	0.0132	0.0303	0.0421
4F5	0.0001	0.0000	0.0009	0.0000	0.0009	0.0001	0.0001	0.0001	0.0001	0.0002	0.0004	0.0001	0.0008	0.0009	0.0001
5A1	0.0184	0.0091	0.0055	0.0125	0.0165	0.0170	0.0121	0.0102	0.0084	0.0112	0.0291	0.0130	0.0199	0.0093	0.0147
5A2	0.0005	0.0003	0.0006	0.0004	0.0007	0.0010	0.0017	0.0111	0.0015	0.0015	0.0007	0.0012	0.0009	0.0015	0.0048
5A3	0.0092	0.0090	0.0004	0.0010	0.0060	0.0072	0.0040	0.0027	0.0042	0.0062	0.0014	0.0011	0.0033	0.0010	0.0013
6	0.0071	0.0048	0.0026	0.0031	0.0073	0.0085	0.0082	0.0048	0.0057	0.0092	0.0111	0.0061	0.0114	0.0057	0.0048
7	0.0420	0.0221	0.0633	0.0061	0.0210	0.0348	0.0273	0.0279	0.0208	0.0295	0.0341	0.0237	0.0218	0.0316	0.0229
8A1	0.0286	0.0258	0.0267	0.0195	0.0486	0.0905	0.0982	0.0483	0.0580	0.0710	0.1436	0.0790	0.0536	0.0302	0.0559
8A2	0.0001	0.0001	0.0002	0.0001	0.0007	0.0002	0.0002	0.0002	0.0001	0.0002	0.0072	0.0017	0.0003	0.0003	0.0005
9	0.0080	0.0049	0.0121	0.0046	0.0281	0.0160	0.0202	0.0189	0.0126	0.0169	0.0765	0.0387	0.0272	0.0359	0.0256
10	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0001	0.0000	0.0000	0.0001
11A	0.0081	0.0010	0.0003	0.0005	0.0014	0.0038	0.0005	0.0003	0.0005	0.0005	0.0010	0.0004	0.0002	0.0002	0.0002
11B	0.0006	0.0001	0.0003	0.0002	0.0031	0.0005	0.0004	0.0003	0.0003	0.0005	0.0011	0.0006	0.0005	0.0008	0.0005

TABLE XII-6 INVERSE MATRIX, 36-SECTOR OPEN MODEL: SOUTH AUSTRALIA

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0013	0.0007	0.0004	0.0008	0.0007	0.0090	0.0827	0.0124	0.0243	0.0031	0.0001	0.0004	0.0002	0.0007	0.0005
2A	0.0006	0.0016	0.0002	0.0007	0.0003	0.0041	0.0363	0.0051	0.0051	0.0026	0.0000	0.0001	0.0001	0.0003	0.0003
2B	0.0010	0.0016	0.0006	0.0012	0.0015	0.0024	0.0008	0.0010	0.0010	0.0016	0.0012	0.0006	0.0004	0.0045	0.0007
3A	0.0013	0.0052	0.0011	0.0021	0.0026	0.0102	0.0005	0.0002	0.0007	0.0008	0.0033	0.0253	0.0005	0.0007	0.0004
3B	0.0105	0.0733	0.0035	0.0254	0.1125	0.0082	0.0006	0.0007	0.0030	0.1451	0.0006	0.0014	0.0022	0.0249	0.0015
4A1	0.0022	0.0007	0.0004	0.0009	0.0008	0.0226	0.0079	0.0062	0.0433	0.0046	0.0001	0.0006	0.0003	0.0011	0.0009
4A2	0.0011	0.0062	0.0002	0.0021	0.0003	0.0057	0.0003	0.0002	0.0017	0.0005	0.0000	0.0001	0.0001	0.0004	0.0004
4A3	0.0003	0.0001	0.0008	0.0002	0.0006	0.0051	0.0043	0.0007	0.0007	0.0003	0.0000	0.0000	0.0000	0.0001	0.0002
4A4	0.0001	0.0002	0.0000	0.0001	0.0001	0.0013	0.0011	0.0002	0.0004	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000
4A5	0.0001	0.0002	0.0000	0.0001	0.0001	0.0024	0.0001	0.0000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002
4B1	0.0066	0.0032	0.0023	0.0048	0.0020	0.0012	0.0012	0.0010	0.0040	0.0090	0.0005	0.0008	0.0023	0.0492	0.0034
4B2	0.0028	0.0004	0.0003	0.0026	0.0008	0.0015	0.0013	0.0010	0.0014	0.0013	0.0002	0.0004	0.0014	0.0296	0.0053
4B3	0.0023	0.0014	0.0015	0.0028	0.0130	0.0046	0.0117	0.0183	0.0074	0.0144	0.0002	0.0008	0.0011	0.0032	0.0117
4B4	0.0002	0.0001	0.0002	0.0005	0.0002	0.0016	0.0023	0.0009	0.0012	0.0003	0.0000	0.0001	0.0001	0.0002	0.0013
4C1	0.0419	0.0144	0.0090	0.0177	0.0188	0.0069	0.0066	0.0066	0.0062	0.0179	0.0021	0.0131	0.0353	0.0736	0.0132
4C2	1.3082	0.0101	0.0084	0.0104	0.0173	0.0102	0.0081	0.0057	0.0115	0.0079	0.0436	0.0059	0.0037	0.0078	0.0938
4D1	0.1775	1.3013	0.0361	0.4548	0.0401	0.0186	0.0045	0.0067	0.0173	0.0600	0.0069	0.0087	0.0231	0.0829	0.0175
4D2	0.0355	0.0388	1.2204	0.0867	0.0059	0.0112	0.0077	0.0034	0.0130	0.0787	0.0013	0.0023	0.0061	0.0247	0.0041
4D3	0.2118	0.0098	0.0078	1.0915	0.0117	0.0231	0.0059	0.0104	0.0246	0.0360	0.0076	0.0147	0.0411	0.0909	0.0214
4E	0.0089	0.0191	0.0149	0.0153	1.1255	0.0000	0.0014	0.0012	0.0055	0.0052	0.0010	0.0015	0.0052	0.1060	0.0018
4F1	0.0438	0.0106	0.0081	0.0089	0.0144	1.0742	0.0161	0.0083	0.0449	0.0155	0.0026	0.0037	0.0027	0.0090	0.0061
4F2	0.0050	0.0065	0.0034	0.0072	0.0053	0.0025	1.2900	0.1544	0.0420	0.0137	0.0004	0.0011	0.0007	0.0031	0.0021
4F3	0.0001	0.0005	0.0000	0.0002	0.0001	0.0000	0.0001	1.0227	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4F4	0.0328	0.0053	0.0038	0.0144	0.0093	0.0392	0.0125	0.1004	1.1200	0.1094	0.0018	0.0134	0.0064	0.0177	0.0121
4F5	0.0001	0.0004	0.0001	0.0002	0.0003	0.0003	0.0001	0.0001	0.0002	1.0169	0.0000	0.0000	0.0000	0.0001	0.0016
5A1	0.0132	0.0268	0.0256	0.0194	0.0215	0.0180	0.0190	0.0113	0.0168	0.0113	1.0008	0.0215	0.0462	0.0067	0.0379
5A2	0.0042	0.0019	0.0023	0.0071	0.0113	0.0039	0.0018	0.0016	0.0019	0.0036	0.0014	1.0003	0.0006	0.0027	0.0021
5A3	0.0010	0.0024	0.0006	0.0019	0.0045	0.0029	0.0044	0.0018	0.0014	0.0017	0.0002	0.0004	1.0002	0.0019	0.0015
6	0.0027	0.0047	0.0039	0.0061	0.0116	0.0067	0.0077	0.0036	0.0056	0.0047	0.0035	0.0073	0.0390	1.0035	0.0067
7	0.0125	0.0137	0.0135	0.0214	0.0240	0.0201	0.0175	0.0102	0.0244	0.0211	0.0048	0.0201	0.0095	0.0271	1.0544
8A1	0.0445	0.1078	0.0773	0.0800	0.1364	0.0397	0.0385	0.0300	0.0338	0.0382	0.0256	0.0619	0.0129	0.0548	0.0409
8A2	0.0009	0.0002	0.0001	0.0003	0.0002	0.0002	0.0003	0.0047	0.0003	0.0004	0.0001	0.0001	0.0001	0.0004	0.0013
9	0.0115	0.0168	0.0699	0.0272	0.0204	0.0184	0.0283	0.0164	0.0305	0.0316	0.0032	0.0115	0.0036	0.0199	0.1404
10	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0060	0.0001
11A	0.0009	0.0003	0.0002	0.0002	0.0004	0.0002	0.0012	0.0048	0.0005	0.0004	0.0001	0.0001	0.0000	0.0002	0.0007
11B	0.0003	0.0005	0.0003	0.0005	0.0007	0.0003	0.0005	0.0003	0.0005	0.0008	0.0018	0.0003	0.0002	0.0005	0.0041

TABLE XII-6 INVERSE MATRIX, 36-SECTOR OPEN MODEL: SOUTH AUSTRALIA

SECTOR	8A1	8A2	9	10	11A	11B
1	0.0012	0.0006	0.0001	0.0002	0.0026	0.0013
2A	0.0005	0.0002	0.0002	0.0001	0.0015	0.0058
2B	0.0032	0.0007	0.0002	0.0003	0.0003	0.0004
3A	0.0008	0.0003	0.0001	0.0002	0.0004	0.0007
3B	0.0017	0.0031	0.0005	0.0013	0.0011	0.0020
4A1	0.0015	0.0009	0.0001	0.0004	0.0054	0.0009
4A2	0.0003	0.0002	0.0001	0.0001	0.0041	0.0003
4A3	0.0002	0.0001	0.0000	0.0000	0.0007	0.0001
4A4	0.0001	0.0001	0.0000	0.0000	0.0001	0.0004
4A5	0.0001	0.0000	0.0002	0.0000	0.0000	0.0139
4B1	0.0042	0.0011	0.0006	0.0021	0.0015	0.0006
4B2	0.0011	0.0008	0.0005	0.0040	0.0035	0.0004
4B3	0.0042	0.0041	0.0018	0.0019	0.0020	0.0059
4B4	0.0002	0.0002	0.0031	0.0060	0.0056	0.0003
4C1	0.0074	0.1839	0.0064	0.0335	0.0113	0.0563
4C2	0.0518	0.0045	0.0039	0.0320	0.0029	0.0052
4D1	0.0109	0.0416	0.0028	0.0153	0.0062	0.0135
4D2	0.0029	0.0158	0.0009	0.0044	0.0019	0.0052
4D3	0.0132	0.0431	0.0032	0.0187	0.0093	0.0136
4E	0.0033	0.0075	0.0014	0.0026	0.0040	0.0082
4F1	0.0321	0.0042	0.0012	0.0031	0.0031	0.0067
4F2	0.0086	0.0017	0.0006	0.0014	0.0078	0.0147
4F3	0.0000	0.0000	0.0000	0.0011	0.0000	0.0000
4F4	0.0196	0.0214	0.0018	0.0060	0.0062	0.0166
4F5	0.0001	0.0001	0.0004	0.0001	0.0010	0.0001
5A1	0.0056	0.0068	0.0093	0.0058	0.0148	0.0405
5A2	0.0014	0.0011	0.0002	0.0011	0.0053	0.0026
5A3	0.0012	0.0007	0.0098	0.0006	0.0120	0.0216
6	0.0243	0.0037	0.0096	0.0168	0.0108	0.0037
7	0.0441	0.0178	0.0318	0.0059	0.0160	0.0259
8A1	1.0357	0.0417	0.0114	0.0185	0.0137	0.0171
8A2	0.0002	1.0014	0.0100	0.0014	0.0001	0.0028
9	0.0182	0.0094	1.1033	0.0389	0.0050	0.0652
10	0.0001	0.0000	0.0001	1.0000	0.0000	0.0000
11A	0.0009	0.0001	0.0048	0.0005	1.0013	0.0003
11B	0.0011	0.0002	0.0132	0.0005	0.0006	1.0248

TABLE XIII-1 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: ADELAIDE REGION

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	1.0008	0.0005	0.0007	0.0001	0.0003	0.0308	0.0014	0.0008	0.0010	0.0003	0.0003	0.0005	0.0002	0.0003	0.0003
2A	0.0313	1.0328	0.0044	0.0019	0.0042	0.0237	0.0807	0.0232	0.0857	0.0407	0.0030	0.0047	0.0025	0.0035	0.0036
2B	0.0005	0.0007	1.0009	0.0017	0.0006	0.0007	0.0006	0.0004	0.0013	0.0004	0.0040	0.0077	0.0009	0.0003	0.0005
3A	0.0001	0.0001	0.0000	1.0007	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001
3B	0.0022	0.0026	0.0025	0.0224	1.3152	0.0015	0.0036	0.0017	0.0028	0.0092	0.0016	0.0043	0.0018	0.0016	0.0042
4A1	0.0233	0.0170	0.0235	0.0047	0.0109	1.1190	0.0491	0.0280	0.0366	0.0091	0.0087	0.0155	0.0061	0.0090	0.0101
4A2	0.0090	0.0116	0.0053	0.0033	0.0072	0.0051	1.0547	0.0351	0.0135	0.0173	0.0051	0.0074	0.0041	0.0060	0.0067
4A3	0.0307	0.0325	0.0143	0.0091	0.0197	0.0165	0.0199	1.2159	0.0342	0.0153	0.0139	0.0203	0.0145	0.0164	0.0177
4A4	0.0271	0.0351	0.0205	0.0048	0.0104	0.0102	0.0393	0.0471	1.0992	0.0527	0.0084	0.0108	0.0059	0.0086	0.0096
4A5	0.0244	0.0307	0.0136	0.0089	0.0193	0.0128	0.0152	0.0180	0.0115	1.0759	0.0136	0.0198	0.0107	0.0160	0.0172
4B1	0.0028	0.0060	0.0054	0.0030	0.0027	0.0017	0.0024	0.0022	0.0018	0.0036	1.2946	0.1151	0.0021	0.0020	0.0037
4B2	0.0088	0.0112	0.0177	0.0034	0.0075	0.0050	0.0058	0.0067	0.0043	0.0054	0.0086	1.0691	0.0041	0.0061	0.0094
4B3	0.0081	0.0175	0.0038	0.0018	0.0056	0.0081	0.0104	0.0155	0.0111	0.0157	0.0030	0.0071	1.0466	0.0188	0.0166
4B4	0.0045	0.0059	0.0028	0.0017	0.0038	0.0026	0.0042	0.0043	0.0023	0.0028	0.0028	0.0039	0.0079	1.0209	0.0040
4C1	0.0774	0.0738	0.0805	0.0341	0.1038	0.0302	0.0376	0.0410	0.0283	0.0356	0.0391	0.0462	0.0271	0.0407	1.1487
4C2	0.0756	0.0951	0.0536	0.0352	0.0775	0.0432	0.0507	0.0582	0.0383	0.0479	0.0500	0.0642	0.0384	0.0535	0.0579
4D1	0.0126	0.0142	0.0114	0.0126	0.0274	0.0076	0.0364	0.0102	0.0105	0.0273	0.0095	0.0331	0.0073	0.0087	0.0770
4D2	0.0066	0.0071	0.0066	0.0037	0.0086	0.0035	0.0116	0.0047	0.0650	0.0091	0.0044	0.0124	0.0049	0.0068	0.0601
4D3	0.0354	0.0421	0.0304	0.0307	0.0397	0.0265	0.1630	0.0355	0.0445	0.1354	0.0323	0.0514	0.0179	0.0275	0.0969
4E	0.0071	0.0083	0.0048	0.0194	0.0271	0.0069	0.0194	0.0056	0.0054	0.0722	0.0053	0.0256	0.0043	0.0049	0.0157
4F1	0.0273	0.0247	0.0129	0.0041	0.0153	0.0074	0.0112	0.0079	0.0089	0.0089	0.0219	0.0127	0.0137	0.0093	0.0176
4F2	0.0095	0.0144	0.0192	0.0031	0.0079	0.0059	0.0111	0.0075	0.0061	0.0064	0.0079	0.0268	0.0172	0.0073	0.0089
4F3	0.0075	0.0099	0.0044	0.0029	0.0062	0.0047	0.0046	0.0058	0.0038	0.0043	0.0044	0.0064	0.0036	0.0052	0.0056
4F4	0.0163	0.0194	0.0694	0.0070	0.0458	0.0281	0.0472	0.0341	0.0294	0.0270	0.0161	0.0482	0.0203	0.0384	0.0527
4F5	0.0039	0.0051	0.0031	0.0015	0.0046	0.0021	0.0024	0.0030	0.0019	0.0023	0.0024	0.0033	0.0023	0.0032	0.0029
5A1	0.0327	0.0285	0.0136	0.0166	0.0264	0.0160	0.0184	0.0192	0.0127	0.0181	0.0298	0.0197	0.0153	0.0163	0.0221
5A2	0.0029	0.0034	0.0020	0.0013	0.0029	0.0021	0.0032	0.0130	0.0027	0.0031	0.0019	0.0030	0.0020	0.0031	0.0065
5A3	0.0199	0.0233	0.0064	0.0049	0.0146	0.0089	0.0092	0.0098	0.0074	0.0114	0.0069	0.0095	0.0059	0.0078	0.0087
6	0.0272	0.0316	0.0142	0.0100	0.0254	0.0163	0.0201	0.0200	0.0143	0.0200	0.0199	0.0217	0.0161	0.0187	0.0193
7	0.1349	0.1485	0.1152	0.0427	0.1079	0.0693	0.0843	0.1011	0.0626	0.0846	0.0818	0.1014	0.0626	0.0972	0.0943
8A1	0.0529	0.0626	0.0402	0.0289	0.0783	0.0908	0.1065	0.0652	0.0620	0.0783	0.1219	0.0780	0.0584	0.0425	0.0666
8A2	0.0179	0.0237	0.0106	0.0069	0.0151	0.0097	0.0112	0.0139	0.0087	0.0193	0.0158	0.0159	0.0084	0.0126	0.0136
9	0.2235	0.2912	0.1384	0.0879	0.2062	0.1286	0.1530	0.1852	0.1152	0.1411	0.1832	0.2120	0.1239	0.1826	0.1846
10	0.0131	0.0174	0.0077	0.0051	0.0109	0.0071	0.0081	0.0101	0.0063	0.0075	0.0079	0.0112	0.0060	0.0091	0.0098
11A	0.0544	0.0631	0.0278	0.0189	0.0400	0.0258	0.0292	0.0365	0.0228	0.0270	0.0282	0.0404	0.0218	0.0327	0.0351
11B	0.0564	0.0657	0.0294	0.0192	0.0448	0.0269	0.0308	0.0385	0.0240	0.0286	0.0298	0.0426	0.0232	0.0349	0.0372
H-H	0.9138	1.2098	0.5361	0.3518	0.7573	0.4907	0.5614	0.7047	0.4382	0.5181	0.5322	0.7778	0.4202	0.6302	0.6774

TABLE XIII-1 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: ADELAIDE REGION

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0003	0.0002	0.0001	0.0003	0.0003	0.0006	0.0041	0.0008	0.0012	0.0004	0.0002	0.0002	0.0003	0.0003	0.0003
2A	0.0036	0.0033	0.0019	0.0034	0.0037	0.0033	0.0150	0.0061	0.0044	0.0040	0.0032	0.0032	0.0039	0.0040	0.0033
2B	0.0004	0.0004	0.0002	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0006	0.0004	0.0003	0.0004	0.0019	0.0004
3A	0.0001	0.0006	0.0001	0.0002	0.0003	0.0015	0.0001	0.0001	0.0001	0.0001	0.0004	0.0033	0.0001	0.0001	0.0001
3B	0.0037	0.0219	0.0025	0.0057	0.1252	0.0080	0.0016	0.0021	0.0036	0.1568	0.0014	0.0015	0.0027	0.0259	0.0019
4A1	0.0098	0.0076	0.0048	0.0083	0.0092	0.0224	0.0146	0.0156	0.0344	0.0119	0.0078	0.0080	0.0095	0.0102	0.0084
4A2	0.0065	0.0092	0.0034	0.0063	0.0064	0.0088	0.0060	0.0084	0.0071	0.0067	0.0056	0.0055	0.0067	0.0070	0.0058
4A3	0.0168	0.0143	0.0098	0.0156	0.0176	0.0163	0.0203	0.0232	0.0166	0.0179	0.0154	0.0152	0.0184	0.0189	0.0155
4A4	0.0088	0.0077	0.0048	0.0082	0.0091	0.0073	0.0098	0.0121	0.0087	0.0094	0.0082	0.0081	0.0097	0.0100	0.0082
4A5	0.0163	0.0141	0.0089	0.0152	0.0168	0.0133	0.0156	0.0223	0.0159	0.0175	0.0151	0.0149	0.0180	0.0185	0.0152
4B1	0.0041	0.0028	0.0020	0.0035	0.0030	0.0017	0.0022	0.0028	0.0034	0.0062	0.0018	0.0019	0.0031	0.0266	0.0032
4B2	0.0071	0.0052	0.0034	0.0079	0.0068	0.0055	0.0069	0.0089	0.0068	0.0074	0.0055	0.0057	0.0079	0.0366	0.0113
4B3	0.0041	0.0029	0.0020	0.0042	0.0121	0.0052	0.0114	0.0183	0.0055	0.0091	0.0024	0.0028	0.0036	0.0053	0.0136
4B4	0.0033	0.0027	0.0018	0.0033	0.0033	0.0038	0.0055	0.0051	0.0044	0.0036	0.0028	0.0029	0.0034	0.0036	0.0045
4C1	0.0735	0.0412	0.0283	0.0480	0.0578	0.0306	0.0383	0.0542	0.0396	0.0571	0.0345	0.0458	0.0807	0.1196	0.0459
4C2	1.3894	0.0478	0.0328	0.0524	0.0647	0.0417	0.0535	0.0712	0.0579	0.0590	0.0870	0.0488	0.0568	0.0612	0.1314
4D1	0.0820	1.1582	0.0176	0.1885	0.0301	0.0124	0.0083	0.0121	0.0132	0.0322	0.0092	0.0098	0.0189	0.0426	0.0133
4D2	0.0263	0.0243	1.1470	0.0553	0.0072	0.0100	0.0088	0.0067	0.0116	0.0550	0.0040	0.0046	0.0085	0.0200	0.0057
4D3	0.2534	0.0264	0.0197	1.1093	0.0343	0.0393	0.0257	0.0385	0.0419	0.0598	0.0273	0.0338	0.0736	0.1168	0.0407
4E	0.0116	0.0187	0.0159	0.0148	1.1342	0.0105	0.0053	0.0066	0.0092	0.0092	0.0047	0.0049	0.0103	0.1219	0.0055
4F1	0.0460	0.0126	0.0104	0.0103	0.0192	1.0821	0.0208	0.0134	0.0497	0.0198	0.0059	0.0069	0.0071	0.0131	0.0093
4F2	0.0098	0.0095	0.0057	0.0106	0.0101	0.0057	1.3359	0.1379	0.0503	0.0195	0.0048	0.0055	0.0060	0.0082	0.0067
4F3	0.0053	0.0050	0.0029	0.0050	0.0054	0.0036	0.0051	1.0225	0.0051	0.0056	0.0049	0.0048	0.0058	0.0060	0.0049
4F4	0.0441	0.0114	0.0085	0.0218	0.0194	0.0413	0.0226	0.1144	1.1271	0.1197	0.0102	0.0217	0.0168	0.0282	0.0210
4F5	0.0027	0.0026	0.0015	0.0026	0.0031	0.0021	0.0027	0.0037	0.0028	1.0200	0.0025	0.0025	0.0030	0.0032	0.0044
5A1	0.0209	0.0281	0.0270	0.0216	0.0277	0.0222	0.0267	0.0237	0.0245	0.0196	1.0099	0.0284	0.0530	0.0180	0.0166
5A2	0.0055	0.0030	0.0030	0.0082	0.0129	0.0050	0.0036	0.0039	0.0035	0.0054	0.0029	1.0018	0.0025	0.0047	0.0036
5A3	0.0080	0.0080	0.0045	0.0082	0.0117	0.0077	0.0106	0.0115	0.0082	0.0093	0.0069	0.0071	1.0082	0.0100	0.0084
6	0.0165	0.0158	0.0113	0.0185	0.0262	0.0164	0.0215	0.0229	0.0193	0.0199	0.0169	0.0205	0.0581	1.0194	0.0204
7	0.0793	0.0694	0.0501	0.0825	0.0962	0.0666	0.0805	0.1025	0.0903	0.0944	0.0679	0.0828	0.0851	0.1045	1.1198
8A1	0.0551	0.1035	0.0811	0.0738	0.1513	0.0496	0.0561	0.0538	0.0487	0.0539	0.0425	0.0781	0.0329	0.0802	0.0585
8A2	0.0132	0.0109	0.0069	0.0119	0.0131	0.0087	0.0123	0.0218	0.0124	0.0137	0.0117	0.0116	0.0139	0.0145	0.0129
9	0.1613	0.1432	0.0917	0.1655	0.1785	0.1215	0.1752	0.2238	0.1778	0.1931	0.1438	0.1506	0.1715	0.1921	0.2843
10	0.0107	0.0079	0.0050	0.0086	0.0095	0.0063	0.0088	0.0126	0.0090	0.0099	0.0086	0.0084	0.0102	0.0105	0.0086
11A	0.0338	0.0286	0.0182	0.0311	0.0344	0.0226	0.0322	0.0499	0.0324	0.0357	0.0308	0.0305	0.0366	0.0377	0.0314
11B	0.0350	0.0302	0.0192	0.0329	0.0366	0.0239	0.0338	0.0478	0.0343	0.0381	0.0343	0.0321	0.0386	0.0399	0.0368
H-H	0.6396	0.5501	0.3488	0.5994	0.6606	0.4345	0.6140	0.8778	0.6227	0.6862	0.5947	0.5878	0.7089	0.7269	0.5939

TABLE XIII-1 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: ADELAIDE REGION

SECTOR	8A1	8A2	9	10	11A	11B	H-H
1	0.0003	0.0004	0.0003	0.0005	0.0006	0.0003	0.0006
2A	0.0041	0.0049	0.0037	0.0064	0.0062	0.0049	0.0079
2B	0.0006	0.0004	0.0003	0.0005	0.0005	0.0003	0.0006
3A	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001
3B	0.0026	0.0031	0.0017	0.0029	0.0029	0.0026	0.0027
4A1	0.0106	0.0122	0.0090	0.0155	0.0185	0.0087	0.0190
4A2	0.0071	0.0084	0.0064	0.0110	0.0130	0.0060	0.0136
4A3	0.0193	0.0231	0.0176	0.0302	0.0283	0.0163	0.0376
4A4	0.0102	0.0123	0.0093	0.0160	0.0147	0.0090	0.0199
4A5	0.0188	0.0226	0.0175	0.0296	0.0271	0.0241	0.0369
4B1	0.0040	0.0029	0.0022	0.0042	0.0036	0.0020	0.0039
4B2	0.0077	0.0088	0.0067	0.0150	0.0138	0.0061	0.0131
4B3	0.0069	0.0066	0.0034	0.0053	0.0050	0.0068	0.0054
4B4	0.0037	0.0044	0.0070	0.0124	0.0114	0.0033	0.0069
4C1	0.0468	0.2329	0.0445	0.1003	0.0702	0.0972	0.0796
4C2	0.0907	0.0709	0.0551	0.1200	0.0831	0.0517	0.1097
4D1	0.0115	0.0277	0.0086	0.0192	0.0142	0.0129	0.0156
4D2	0.0054	0.0160	0.0042	0.0093	0.0069	0.0073	0.0076
4D3	0.0348	0.0791	0.0255	0.0581	0.0448	0.0357	0.0467
4E	0.0077	0.0142	0.0058	0.0101	0.0108	0.0112	0.0090
4F1	0.0337	0.0091	0.0051	0.0096	0.0091	0.0111	0.0082
4F2	0.0144	0.0033	0.0056	0.0099	0.0156	0.0185	0.0108
4F3	0.0060	0.0073	0.0056	0.0107	0.0087	0.0051	0.0119
4F4	0.0310	0.0342	0.0116	0.0227	0.0212	0.0252	0.0205
4F5	0.0032	0.0038	0.0033	0.0050	0.0055	0.0027	0.0061
5A1	0.0162	0.0197	0.0214	0.0234	0.0303	0.0448	0.0226
5A2	0.0034	0.0035	0.0020	0.0041	0.0083	0.0041	0.0038
5A3	0.0095	0.0107	0.0188	0.0139	0.0238	0.0289	0.0164
6	0.0384	0.0236	0.0256	0.0440	0.0347	0.0177	0.0324
7	0.1256	0.1127	0.1053	0.1301	0.1298	0.0928	0.1542
8A1	1.0577	0.0660	0.0311	0.0517	0.0443	0.0340	0.0419
8A2	0.0146	1.0188	0.0229	0.0242	0.0209	0.0152	0.0284
9	0.1940	0.2200	1.2696	0.3188	0.2574	0.2116	0.3438
10	0.0107	0.0128	0.0099	1.0168	0.0153	0.0090	0.0209
11A	0.0393	0.0460	0.0402	0.0608	1.0564	0.0326	0.0750
11B	0.0414	0.0485	0.0521	0.0639	0.0584	1.0647	0.0787
H-H.	0.7393	0.8904	0.6812	1.1682	1.0673	0.6247	1.4540

TABLE XIII-2 INVERSE MATRIX, 19-SECTOR CLOSED MODEL: NORTHERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	1.0075	0.0067	0.0089	0.0019	0.0023	0.2044	0.0033	0.0034	0.0033	0.0031	0.0075	0.0035	0.0034	0.0028	0.0048	0.0036	0.0061	0.0066	0.0031	0.0081
2A	0.0740	1.0383	0.0074	0.0044	0.0054	0.0658	0.0074	0.0081	0.0078	0.0073	0.0088	0.0083	0.0081	0.0065	0.0112	0.0085	0.0144	0.0144	0.0076	0.0193
2B	0.0017	0.0016	1.0013	0.0056	0.0013	0.0046	0.0229	0.0011	0.0012	0.0011	0.0061	0.0013	0.0013	0.0008	0.0026	0.0009	0.0016	0.0016	0.0008	0.0020
3A	0.0018	0.0016	0.0007	1.0074	0.0011	0.0018	0.0010	0.0014	0.0063	0.0045	0.0218	0.0195	0.0016	0.0017	0.0029	0.0008	0.0014	0.0024	0.0051	0.0012
3B	0.0016	0.0016	0.0009	0.0118	1.0526	0.0012	0.0012	0.0064	0.0552	0.1320	0.0367	0.0014	0.0219	0.0007	0.0020	0.0007	0.0015	0.0013	0.0011	0.0011
4A	0.0413	0.0367	0.0492	0.0104	0.0126	1.1264	0.0181	0.0188	0.0183	0.0172	0.0385	0.0193	0.0189	0.0155	0.0263	0.0197	0.0335	0.0361	0.0170	0.0448
4B	0.0035	0.0039	0.0066	0.0024	0.0018	0.0028	1.0433	0.0092	0.0030	0.0030	0.0028	0.0025	0.0176	0.0029	0.0045	0.0032	0.0052	0.0058	0.0022	0.0048
4C	0.0526	0.0546	0.0322	0.0214	0.0283	0.0380	0.0307	1.0904	0.0360	0.0374	0.0322	0.0575	0.0430	0.0289	0.0817	0.0326	0.0749	0.0547	0.0353	0.0711
4D	0.0135	0.0144	0.0091	0.0208	0.0185	0.0110	0.0183	0.1554	1.4069	0.0695	0.0493	0.0175	0.1137	0.0081	0.0194	0.0084	0.0225	0.0158	0.0094	0.0164
4E	0.0011	0.0011	0.0004	0.0117	0.0046	0.0011	0.0013	0.0009	0.0040	1.0656	0.0017	0.0016	0.0660	0.0007	0.0026	0.0010	0.0017	0.0016	0.0010	0.0011
4F	0.0276	0.0270	0.0067	0.0015	0.0026	0.0094	0.0033	0.0031	0.0045	0.0043	1.2808	0.0027	0.0036	0.0031	0.0134	0.0028	0.0047	0.0055	0.0046	0.0054
5	0.0499	0.0400	0.0173	0.0227	0.0386	0.0372	0.0259	0.0256	0.0464	0.0405	0.0344	1.0393	0.0243	0.0204	0.0297	0.0202	0.0336	0.0605	0.1093	0.0359
6	0.0157	0.0149	0.0054	0.0062	0.0100	0.0127	0.0103	0.0077	0.0107	0.0156	0.0128	0.0199	1.0084	0.0095	0.0369	0.0139	0.0244	0.0219	0.0084	0.0150
7	0.1031	0.0939	0.0601	0.0269	0.0378	0.0677	0.0555	0.0510	0.0505	0.0545	0.0488	0.0504	0.0586	1.0722	0.0829	0.0711	0.0833	0.0891	0.0584	0.1074
8	0.0493	0.0464	0.0287	0.0257	0.0436	0.0814	0.0530	0.0343	0.1084	0.1658	0.0458	0.0382	0.0652	0.0413	1.0489	0.0369	0.0453	0.0406	0.0289	0.0425
9	0.0422	0.0469	0.0205	0.0160	0.0323	0.0345	0.0352	0.0308	0.0320	0.0298	0.0328	0.0288	0.0298	0.0705	0.0431	1.0629	0.0624	0.0492	0.0534	0.0647
10	0.0084	0.0096	0.0039	0.0031	0.0038	0.0062	0.0052	0.0057	0.0055	0.0051	0.0050	0.0058	0.0057	0.0046	0.0079	0.0060	1.0102	0.0100	0.0051	0.0136
11A	0.0433	0.0418	0.0163	0.0133	0.0177	0.0277	0.0218	0.0240	0.0232	0.0218	0.0214	0.0246	0.0241	0.0195	0.0333	0.0278	0.0432	1.0437	0.0217	0.0571
11B	0.0276	0.0315	0.0127	0.0101	0.0139	0.0204	0.0172	0.0186	0.0181	0.0170	0.0166	0.0197	0.0189	0.0175	0.0262	0.0271	0.0333	0.0333	1.0250	0.0444
H-H	0.7536	0.3639	0.3467	0.2772	0.3417	0.5550	0.4648	0.5110	0.4927	0.4604	0.4536	0.5244	0.5147	0.4136	0.7106	0.5365	0.9133	0.9028	0.4621	1.2212

TABLE XIII-3 INVERSE MATRIX, 19-SECTOR CLOSED MODEL: EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	1.0290	0.0175	0.0099	0.0039	0.0063	0.1704	0.0060	0.0054	0.0057	0.0075	0.0588	0.0073	0.0073	0.0058	0.0096	0.0074	0.0129	0.0138	0.0070	0.0169
2A	0.1477	1.1526	0.0156	0.0079	0.0129	0.1658	0.0156	0.0127	0.0134	0.0151	0.0371	0.0149	0.0147	0.0117	0.0184	0.0151	0.0264	0.0269	0.0164	0.0347
2B	0.0022	0.0032	1.0091	0.0143	0.0357	0.0040	0.0523	0.0015	0.0015	0.0028	0.0077	0.0018	0.0037	0.0015	0.0043	0.0014	0.0023	0.0025	0.0012	0.0029
3A	0.0003	0.0003	0.0001	1.0020	0.0002	0.0004	0.0001	0.0002	0.0001	0.0072	0.0012	0.0035	0.0006	0.0004	0.0004	0.0002	0.0002	0.0005	0.0009	0.0002
3B	0.0005	0.0006	0.0016	0.0091	1.0745	0.0008	0.0006	0.0010	0.0139	0.0594	0.0069	0.0006	0.0131	0.0003	0.0009	0.0004	0.0036	0.0007	0.0008	0.0035
4A	0.1290	0.1214	0.0691	0.0270	0.0436	1.2108	0.0540	0.0432	0.0456	0.0512	0.1432	0.0503	0.0497	0.0398	0.0626	0.0509	0.0892	0.0956	0.0479	0.1174
4B	0.0142	0.0246	0.0152	0.0052	0.0066	0.0155	1.1067	0.0027	0.0092	0.0184	0.0132	0.0073	0.0547	0.0137	0.0103	0.0081	0.0137	0.0154	0.0065	0.0140
4C	0.0637	0.0674	0.0402	0.0231	0.0433	0.0396	0.0327	1.1457	0.0305	0.0375	0.0375	0.0387	0.0571	0.0491	0.0565	0.0307	0.0719	0.0521	0.0420	0.0560
4D	0.0059	0.0066	0.0042	0.0065	0.0043	0.0151	0.0054	0.0215	1.0435	0.0063	0.0120	0.0103	0.0317	0.0341	0.0047	0.0033	0.0089	0.0075	0.0040	0.0065
4E	0.0019	0.0022	0.0010	0.0149	0.0198	0.0046	0.0033	0.0022	0.0030	1.0579	0.0021	0.0024	0.0609	0.0011	0.0323	0.0014	0.0021	0.0038	0.0043	0.0020
4F	0.0165	0.0200	0.0100	0.0046	0.0092	0.0147	0.0149	0.0120	0.0105	0.0110	1.3261	0.0091	0.0121	0.0391	0.0287	0.0087	0.0156	0.0169	0.0127	0.0183
5	0.0403	0.0374	0.0165	0.0113	0.0159	0.0230	0.0151	0.0139	0.0146	0.0340	0.0212	1.0270	0.0142	0.0118	0.0156	0.0174	0.0211	0.0392	0.0547	0.0236
6	0.0202	0.0229	0.0091	0.0076	0.0121	0.0169	0.0135	0.0088	0.0166	0.0199	0.0136	0.0313	1.0104	0.0113	0.0295	0.0169	0.0233	0.0265	0.0099	0.0208
7	0.1201	0.1319	0.1020	0.0327	0.0595	0.0830	0.0745	0.0472	0.0579	0.0649	0.0767	0.0591	0.0696	1.0851	0.0972	0.0774	0.0989	0.1041	0.0651	0.1249
8	0.0611	0.0732	0.0383	0.0275	0.0560	0.0955	0.0669	0.0310	0.0224	0.1452	0.0501	0.0362	0.0623	0.0486	1.0438	0.0426	0.0517	0.0476	0.0319	0.0512
9	0.0710	0.0927	0.0381	0.0245	0.0413	0.0557	0.0557	0.0427	0.0467	0.0469	0.0522	0.0445	0.0453	0.0875	0.0572	1.0801	0.0758	0.0772	0.0658	0.1020
10	0.0079	0.0105	0.0040	0.0027	0.0043	0.0058	0.0051	0.0043	0.0345	0.0251	0.0051	0.0050	0.0049	0.0039	0.0362	0.0352	1.0309	0.0087	0.0043	0.0118
11A	0.0469	0.0552	0.0210	0.0143	0.0236	0.0312	0.0265	0.0233	0.0233	0.0265	0.0319	0.0261	0.0257	0.0305	0.0319	0.0294	0.0466	1.0466	0.0223	0.0609
11B	0.0411	0.0542	0.0207	0.0139	0.0253	0.0300	0.0265	0.0221	0.0232	0.0264	0.0312	0.0266	0.0256	0.0226	0.0319	0.0307	0.0460	0.0454	1.0227	0.0606
H-H	0.6579	1.1410	0.4330	0.2895	0.4700	0.6287	0.5551	0.4637	0.4678	0.5523	0.6561	0.5462	0.5361	0.4242	0.6678	0.5517	0.9687	0.7469	0.4651	1.2776

TABLE XIII-4 INVERSE MATRIX, 19-SECTOR CLOSED MODEL: CENTRAL REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	1.0028	0.0019	0.0013	0.0000	0.0011	0.1141	0.0012	0.0009	0.0009	0.0013	0.0027	0.0011	0.0010	0.0009	0.0014	0.0012	0.0029	0.0021	0.0010	0.0026
2A	0.1084	1.0475	0.0061	0.0000	0.0083	0.1888	0.0092	0.0074	0.0074	0.0095	0.0091	0.0055	0.0081	0.0068	0.0103	0.0095	0.0156	0.0134	0.0097	0.0208
2B	0.0014	0.0013	1.0204	0.0000	0.0011	0.0013	0.0009	0.0006	0.0006	0.0009	0.0061	0.0007	0.0007	0.0005	0.0012	0.0006	0.0013	0.0013	0.0006	0.0017
3A	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3B	0.0069	0.0008	0.0002	0.0000	1.1679	0.0008	0.0004	0.0010	0.0332	0.3974	0.0102	0.0003	0.0140	0.0095	0.0008	0.0002	0.0004	0.0006	0.0006	0.0004
4A	0.0285	0.0183	0.0133	0.0000	0.0110	1.1936	0.0122	0.0078	0.0098	0.0134	0.0223	0.0113	0.0103	0.0091	0.0144	0.0125	0.0206	0.0224	0.0099	0.0275
4B	0.0049	0.0044	0.0188	0.0000	0.0029	0.0041	1.0373	0.0034	0.0029	0.0333	0.0023	0.0031	0.0386	0.0054	0.0040	0.0039	0.0066	0.0083	0.0025	0.0068
4C	0.0230	0.0164	0.0050	0.0000	0.0062	0.0088	0.0042	1.0881	0.0040	0.0069	0.0043	0.0062	0.0075	0.0102	0.0159	0.0043	0.0105	0.0065	0.0656	0.0093
4D	0.0026	0.0024	0.0009	0.0000	0.0021	0.0117	0.0032	0.0070	1.0271	0.0032	0.0029	0.0029	0.0214	0.0021	0.0023	0.0016	0.0035	0.0331	0.0012	0.0031
4E	0.0007	0.0035	0.0002	0.0000	0.0172	0.0006	0.0018	0.6003	0.0018	1.1730	0.0010	0.0007	0.0395	0.0025	0.0009	0.0004	0.0008	0.0014	0.0016	0.0037
4F	0.0549	0.0633	0.0066	0.0000	0.0072	0.0024	0.0094	0.0045	0.0097	0.0211	1.1374	0.0036	0.0054	0.0045	0.0253	0.0037	0.0057	0.0083	0.0130	0.0063
5	0.0325	0.0232	0.0038	0.0000	0.0167	0.0211	0.0136	0.0132	0.0132	0.0295	0.0281	1.0218	0.0117	0.0113	0.0154	0.0150	0.0197	0.0362	0.0683	0.0208
6	0.0148	0.0124	0.0041	0.0000	0.0100	0.0121	0.0090	0.0065	0.0076	0.0147	0.0078	0.0174	1.0068	0.0082	0.0206	0.0093	0.0173	0.0172	0.0653	0.0152
7	0.1109	0.0855	0.0548	0.0000	0.0571	0.0747	0.0638	0.0410	0.0496	0.0612	0.0472	0.0500	0.0565	1.0733	0.0029	0.0674	0.0366	0.0920	0.0560	0.1115
8	0.0511	0.0430	0.0250	0.0000	0.0573	0.0770	0.0546	0.0251	0.0179	0.2008	0.0469	0.0351	0.0551	0.0420	1.0437	0.7418	0.0423	0.0391	0.0266	0.0410
9	0.0522	0.0470	0.0206	0.0000	0.0337	0.0404	0.0402	0.0309	0.0311	0.0367	0.0299	0.0324	0.0317	0.0583	0.0432	1.0572	0.0771	0.0572	0.0455	0.0781
10	0.0037	0.0034	0.0014	0.0000	0.0023	0.0028	0.0025	0.0021	0.0020	0.0026	0.0020	0.0024	0.0023	0.0017	0.0030	0.0027	1.0043	0.0042	0.0021	0.0058
11A	0.0435	0.0347	0.0141	0.0000	0.0236	0.0281	0.0252	0.0216	0.0202	0.0258	0.0195	0.0234	0.0223	0.0107	0.0295	0.0285	0.0429	1.0414	0.0204	0.0571
11B	0.0249	0.0227	0.0096	0.0000	0.0102	0.0193	0.0169	0.0136	0.0136	0.0174	0.0131	0.0162	0.0151	0.0147	0.0199	0.0192	0.0288	0.0280	1.0140	0.0393
H-H	0.7638	0.6973	0.2919	0.0000	0.4693	0.5630	0.5198	0.4196	0.4169	0.5313	0.4021	0.4834	0.4598	0.3835	0.6062	0.5336	0.9848	0.8543	0.4210	1.1802

TABLE XIII-5 INVERSE MATRIX, 19-SECTOR CLOSED MODEL: SOUTH-EASTERN REGION

SECTOR	1	2A	2B	3A	3B	4A	4B	4C	4D	4E	4F	5	6	7	8	9	10	11A	11B	H-H
1	1.0167	0.0126	0.0087	0.0000	0.0086	0.2798	0.0074	0.0065	0.0078	0.0075	0.0214	0.0082	0.0080	0.0065	0.0109	0.0086	0.0135	0.0159	0.0078	0.0250
2A	0.1046	1.1039	0.0091	0.0000	0.0099	0.1637	0.0108	0.0075	0.0090	0.0087	0.0156	0.0095	0.0092	0.0076	0.0114	0.0100	0.0181	0.0177	0.0106	0.0233
2B	0.0046	0.0025	1.0100	0.0000	0.0041	0.0045	0.0638	0.0612	0.0016	0.0020	0.0058	0.0020	0.0053	0.0015	0.0034	0.0016	0.0028	0.0028	0.0019	0.0033
3A	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
3B	0.0034	0.0003	0.0015	0.0000	1.2072	0.0006	0.0015	0.0001	0.0010	0.0920	0.0055	0.0002	0.0137	0.0302	0.0006	0.0002	0.0003	0.0004	0.0006	0.0031
4A	0.0686	0.0520	0.0359	0.0000	0.0357	1.1751	0.0390	0.0269	0.0324	0.0312	0.0470	0.0343	0.0332	0.0273	0.0487	0.0358	0.0650	0.0664	0.0323	0.0633
4B	0.0217	0.0262	0.0201	0.0000	0.0137	0.0306	1.3739	0.0128	0.0179	0.0175	0.0189	0.0133	0.0963	0.0150	0.0168	0.0170	0.0294	0.0290	0.0235	0.0308
4C	0.0041	0.0025	0.0043	0.0000	0.0332	0.0025	0.0020	1.0112	0.0018	0.0016	0.0017	0.0029	0.0034	0.0043	0.0041	0.0014	0.0031	0.0022	0.0022	0.0021
4D	0.0013	0.0010	0.0009	0.0000	0.0014	0.0354	0.0011	0.0067	1.0119	0.0013	0.0016	0.0023	0.0079	0.0011	0.0009	0.0008	0.0022	0.0017	0.0010	0.0015
4E	0.0007	0.0035	0.0003	0.0000	0.2021	0.0031	0.0015	0.0083	0.0004	1.0162	0.0205	0.0006	0.0414	0.0003	0.0007	0.0024	0.0008	0.0009	0.0037	0.0060
4F	0.0253	0.0212	0.0161	0.0000	0.0087	0.0147	0.0111	0.0055	0.0067	0.0093	1.1019	0.0045	0.0059	0.0051	0.0369	0.0049	0.0077	0.0163	0.0128	0.0090
5	0.0415	0.0305	0.0109	0.0000	0.0169	0.0299	0.0276	0.0153	0.0183	0.0224	0.0210	1.0255	0.0143	0.0131	0.0156	0.0183	0.0238	0.0435	0.0547	0.0241
6	0.0117	0.0297	0.0057	0.0000	0.0087	0.0098	0.0189	0.0043	0.0065	0.0061	0.0092	0.0121	1.0058	0.0055	0.0132	0.0076	0.0146	0.0135	0.0056	0.0130
7	0.1163	0.0927	0.1092	0.0000	0.0698	0.2902	0.0750	0.0481	0.0563	0.0577	0.0674	0.0552	0.0657	1.0229	0.0971	0.0764	0.0959	0.0995	0.0640	0.1190
8	0.0528	0.0488	0.0357	0.0000	0.0618	0.0912	0.0697	0.0238	0.0186	0.1487	0.0347	0.0362	0.0573	0.0426	1.0323	0.0362	0.5410	0.0415	0.0294	0.0437
9	0.0803	0.0733	0.0460	0.0000	0.0582	0.0689	0.0710	0.0454	0.0557	0.0480	0.0701	0.0492	0.0498	0.1022	0.0609	1.0955	0.1180	0.0866	0.0794	0.1174
10	0.0037	0.0034	0.0020	0.0063	0.0024	0.0029	0.0025	0.0018	0.0021	0.0021	0.0027	0.0023	0.0022	0.0010	0.0027	0.0025	1.0043	0.0040	0.0029	0.0058
11A	0.0371	0.0305	0.0170	0.0000	0.0216	0.0276	0.0229	0.0160	0.0194	0.0186	0.0244	0.0204	0.0198	0.0163	0.0242	0.0240	0.0363	1.0363	0.0184	0.0350
11B	0.0316	0.0288	0.0167	0.0000	0.0214	0.0252	0.0217	0.0152	0.0183	0.0177	0.0230	0.0197	0.0187	0.0150	0.0229	0.0234	0.0367	0.0344	1.0176	0.0472
H-H	0.8030	0.7440	0.4321	0.0000	0.5197	0.6455	0.5585	0.3914	0.4721	0.4539	0.5942	0.4989	0.4825	0.3937	0.5934	0.5198	0.9461	0.9359	0.4470	1.2202

TABLE XIII-6 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: SOUTH AUSTRALIA

SECTOR	1	2A	2B	3A	3B	4A1	4A2	4A3	4A4	4A5	4B1	4B2	4B3	4B4	4C1
1	1.0138	0.0103	0.0125	0.0033	0.0062	0.4483	0.0226	0.0165	0.0211	0.0068	0.0077	0.0120	0.0060	0.0069	0.0076
2A	0.1280	1.1023	0.0246	0.0129	0.0227	0.1150	0.2474	0.1436	0.3278	0.2288	0.0266	0.0334	0.0207	0.0248	0.0266
2B	0.0050	0.0046	1.0090	0.0146	0.0048	0.0072	0.0047	0.0038	0.0094	0.0036	0.1160	0.0272	0.0344	0.0064	0.0044
3A	0.0009	0.0008	0.0005	1.0058	0.0007	0.0010	0.0010	0.0009	0.0007	0.0009	0.0009	0.0010	0.0018	0.0007	0.0014
3B	0.0043	0.0045	0.0043	0.0214	1.1986	0.0045	0.0078	0.0037	0.0051	0.0118	0.0042	0.0088	0.0056	0.0035	0.0135
4A1	0.0321	0.0240	0.0286	0.0079	0.0144	1.1622	0.0559	0.0407	0.0527	0.0159	0.0177	0.0252	0.0127	0.0157	0.0172
4A2	0.0156	0.0174	0.0092	0.0057	0.0100	0.0152	1.0677	0.0493	0.0228	0.0232	0.0115	0.0142	0.0038	0.0108	0.0123
4A3	0.0352	0.0327	0.0170	0.0105	0.0184	0.0333	0.0265	1.2168	0.0406	0.0203	0.0213	0.0259	0.0247	0.0210	0.0215
4A4	0.0321	0.0348	0.0232	0.0088	0.0152	0.0287	0.0391	0.0507	1.0986	0.0431	0.0186	0.0216	0.0136	0.0166	0.0180
4A5	0.0306	0.0335	0.0174	0.0109	0.0192	0.0288	0.0230	0.0248	0.0210	1.1186	0.0221	0.0269	0.0165	0.0208	0.0222
4B1	0.0158	0.0207	0.0161	0.0093	0.0108	0.0153	0.0131	0.0133	0.0121	0.0134	1.4052	0.2914	0.0145	0.0117	0.0153
4B2	0.0105	0.0116	0.0166	0.0040	0.0071	0.0103	0.0081	0.0087	0.0073	0.0074	0.0123	1.0680	0.0064	0.0075	0.0108
4B3	0.0153	0.0208	0.0070	0.0036	0.0075	0.0175	0.0174	0.0239	0.0182	0.0236	0.0080	0.0129	1.2681	0.1551	0.0246
4B4	0.0086	0.0096	0.0051	0.0031	0.0057	0.0082	0.0076	0.0079	0.0060	0.0060	0.0066	0.0079	0.0092	1.0233	0.0072
4C1	0.0919	0.0823	0.0872	0.0372	0.0855	0.0752	0.0552	0.0563	0.0507	0.0507	0.0599	0.0632	0.0434	0.0513	1.1643
4C2	0.0907	0.0991	0.0615	0.0407	0.0710	0.0870	0.0720	0.0754	0.0645	0.0667	0.0774	0.0842	0.0586	0.0660	0.0705
4D1	0.0383	0.0388	0.0311	0.0307	0.0534	0.0374	0.0843	0.0326	0.0354	0.0527	0.0369	0.0891	0.0235	0.0274	0.1986
4D2	0.0121	0.0119	0.0106	0.0061	0.0115	0.0112	0.0186	0.0094	0.0105	0.0127	0.0104	0.0228	0.0106	0.0123	0.0873
4D3	0.0446	0.0472	0.0339	0.0302	0.0364	0.0476	0.1572	0.0443	0.0543	0.0716	0.0490	0.0625	0.0287	0.0349	0.1114
4E	0.0094	0.0099	0.0062	0.0169	0.0233	0.0125	0.0235	0.0082	0.0086	0.0814	0.0091	0.0298	0.0069	0.0068	0.0190
4F1	0.0340	0.0318	0.0156	0.0056	0.0139	0.0242	0.0181	0.0140	0.0173	0.0152	0.0328	0.0206	0.0165	0.0133	0.0214
4F2	0.0128	0.0155	0.0197	0.0043	0.0084	0.0129	0.0130	0.0108	0.0106	0.0095	0.0131	0.0339	0.0169	0.0107	0.0118
4F3	0.0105	0.0119	0.0062	0.0039	0.0069	0.0104	0.0078	0.0068	0.0074	0.0071	0.0079	0.0096	0.0065	0.0075	0.0080
4F4	0.0204	0.0214	0.0632	0.0089	0.6374	0.0311	0.0506	0.0384	0.0336	0.0254	0.0233	0.0525	0.0225	0.0421	0.0547
4F5	0.0046	0.0051	0.0035	0.0017	0.0038	0.0043	0.0034	0.0038	0.0032	0.0032	0.0037	0.0042	0.0033	0.0040	0.0035
5A1	0.0453	0.0397	0.0214	0.0225	0.0340	0.0425	0.0320	0.0326	0.0270	0.0294	0.0493	0.0376	0.0349	0.0283	0.0350
5A2	0.0036	0.0037	0.0024	0.0015	0.0027	0.0040	0.0039	0.0137	0.0036	0.0036	0.0030	0.0040	0.0026	0.0037	0.0071
5A3	0.0227	0.0243	0.0084	0.0060	0.0147	0.0200	0.0140	0.0139	0.0135	0.0153	0.0114	0.0134	0.0108	0.0105	0.0114
6	0.0361	0.0376	0.0196	0.0138	0.0261	0.0358	0.0296	0.0289	0.0256	0.0287	0.0328	0.0324	0.0275	0.0261	0.0265
7	0.1598	0.1557	0.1327	0.0498	0.0973	0.1460	0.1144	0.1262	0.1020	0.1091	0.1221	0.1309	0.0875	0.1147	0.1114
8A1	0.0664	0.0687	0.0490	0.0335	0.0731	0.1262	0.1262	0.0799	0.0841	0.0965	0.1719	0.1135	0.0746	0.0569	0.0843
8A2	0.0217	0.0245	0.0129	0.0081	0.0146	0.0205	0.0162	0.0182	0.0150	0.0148	0.0234	0.0213	0.0123	0.0156	0.0167
9	0.2726	0.3050	0.1679	0.1027	0.1996	0.2660	0.2160	0.2397	0.1951	0.1956	0.2742	0.2797	0.1749	0.2227	0.2244
10	0.0156	0.0177	0.0092	0.0058	0.0102	0.0147	0.0115	0.0130	0.0108	0.0105	0.0119	0.0143	0.0087	0.0110	0.0118
11A	0.0642	0.0645	0.0333	0.0212	0.0377	0.0567	0.0420	0.0471	0.0392	0.0384	0.0429	0.0514	0.0315	0.0398	0.0423
11B	0.1109	0.1252	0.0653	0.0410	0.0746	0.1047	0.0920	0.0924	0.0764	0.0750	0.0835	0.1010	0.0620	0.0786	0.0834
H-H	1.0849	1.2298	0.6389	0.4020	0.7031	1.0249	0.8025	0.9051	0.7484	0.7326	0.8104	0.9878	0.6051	0.7658	0.8151

TABLE XIII-6 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: SOUTH AUSTRALIA

SECTOR	4C2	4D1	4D2	4D3	4E	4F1	4F2	4F3	4F4	4F5	5A1	5A2	5A3	6	7
1	0.0075	0.0068	0.0037	0.0074	0.0065	0.0130	0.0888	0.0203	0.0300	0.0093	0.0053	0.0056	0.0064	0.0073	0.0058
2A	0.0260	0.0262	0.0139	0.0274	0.0240	0.0203	0.0613	0.0376	0.0286	0.0277	0.0213	0.0214	0.0252	0.0271	0.0217
2B	0.0035	0.0040	0.0019	0.0037	0.0038	0.0039	0.0032	0.0041	0.0033	0.0040	0.0033	0.0027	0.0028	0.0071	0.0028
3A	0.0016	0.0055	0.0013	0.0024	0.0030	0.0105	0.0009	0.0007	0.0010	0.0012	0.0036	0.0256	0.0008	0.0011	0.0007
3B	0.0131	0.0759	0.0049	0.0281	0.1149	0.0099	0.0032	0.0040	0.0054	0.1476	0.0028	0.0036	0.0048	0.0276	0.0037
4A1	0.0171	0.0152	0.0084	0.0165	0.0147	0.0322	0.0225	0.0253	0.0570	0.0194	0.0126	0.0131	0.0151	0.0168	0.0135
4A2	0.0122	0.0170	0.0062	0.0137	0.0106	0.0128	0.0112	0.0144	0.0119	0.0114	0.0093	0.0094	0.0111	0.0122	0.0097
4A3	0.0210	0.0203	0.0120	0.0219	0.0199	0.0183	0.0247	0.0272	0.0198	0.0208	0.0174	0.0174	0.0205	0.0220	0.0177
4A4	0.0173	0.0169	0.0093	0.0181	0.0161	0.0123	0.0180	0.0222	0.0163	0.0171	0.0144	0.0144	0.0170	0.0182	0.0145
4A5	0.0218	0.0212	0.0117	0.0228	0.0202	0.0163	0.0214	0.0277	0.0201	0.0214	0.0182	0.0182	0.0214	0.0229	0.0184
4B1	0.0174	0.0137	0.0081	0.0161	0.0120	0.0081	0.0119	0.0148	0.0139	0.0196	0.0095	0.0099	0.0130	0.0606	0.0125
4B2	0.0101	0.0074	0.0042	0.0102	0.0076	0.0062	0.0085	0.0104	0.0081	0.0085	0.0063	0.0065	0.2086	0.0373	0.0115
4B3	0.0062	0.0071	0.0046	0.0090	0.0186	0.0084	0.0175	0.0259	0.0128	0.0203	0.0052	0.0057	0.0069	0.0095	0.0167
4B4	0.0064	0.0061	0.0035	0.0069	0.0059	0.0056	0.0083	0.0088	0.0069	0.0064	0.0052	0.0052	0.0062	0.0067	0.0065
4C1	0.0682	0.0593	0.0339	0.0662	0.0619	0.0365	0.0521	0.0658	0.0489	0.0636	0.0409	0.0519	0.0811	0.1225	0.0523
4C2	1.3639	0.0690	0.0410	0.0740	0.0738	0.0490	0.0678	0.0832	0.0674	0.0678	0.0943	0.0367	0.0636	0.0719	0.1450
4D1	0.2003	1.4035	0.0484	0.4787	0.0614	0.0332	0.0270	0.0359	0.0383	0.0825	0.0260	0.0278	0.0457	0.1070	0.0367
4D2	0.0423	0.0454	1.2241	0.0938	0.0122	0.0156	0.0143	0.0120	0.0192	0.0854	0.0070	0.0030	0.0128	0.0318	0.0098
4D3	0.2400	0.0371	0.0230	1.1210	0.0380	0.0411	0.0336	0.0464	0.0505	0.0636	0.0311	0.0383	0.0689	0.1206	0.0451
4E	0.0147	0.0248	0.0180	0.0215	1.1310	0.0117	0.0072	0.0087	0.0109	0.0110	0.0059	0.0064	0.0110	0.1122	0.0068
4F1	0.0507	0.0173	0.0119	0.0162	0.0209	1.0787	0.0229	0.0172	0.0513	0.0223	0.0084	0.0096	0.0096	0.0164	0.0120
4F2	0.0124	0.0136	0.0073	0.0149	0.0121	0.0072	1.2972	0.1638	0.0438	0.0209	0.0066	0.0073	0.0090	0.0108	0.0054
4F3	0.0078	0.0080	0.0042	0.0083	0.0073	0.0050	0.0077	1.0326	0.0072	0.0077	0.0065	0.0065	0.0076	0.0082	0.0065
4F4	0.0451	0.0172	0.0104	0.0273	0.0208	0.0471	0.0247	0.1162	1.1322	0.1215	0.0121	0.0238	0.0186	0.0307	0.0225
4F5	0.0034	0.0036	0.0018	0.0037	0.0034	0.0024	0.0033	0.0043	0.0032	1.0202	0.0028	0.0028	0.0033	0.0036	0.0043
5A1	0.0330	0.0460	0.0363	0.0402	0.0400	0.0307	0.0385	0.0366	0.0350	0.0308	1.0173	0.0381	0.0658	0.0298	0.0246
5A2	0.0064	0.0041	0.0035	0.0094	0.0134	0.0054	0.0041	0.0045	0.0040	0.0059	0.0033	1.0022	0.0028	0.0051	0.0040
5A3	0.0109	0.0120	0.0060	0.0123	0.0137	0.0093	0.0141	0.0145	0.0106	0.0115	0.0085	0.0088	1.0109	0.0124	0.0099
6	0.0239	0.0253	0.0153	0.0283	0.0314	0.0203	0.0286	0.0308	0.0252	0.0256	0.0213	0.0251	0.0608	1.0260	0.0246
7	0.0991	0.0976	0.0602	0.1121	0.1046	0.0754	0.1026	0.1208	0.1041	0.1065	0.0772	0.0927	0.0950	0.1184	1.1274
8A1	0.0723	0.1347	0.0923	0.1091	0.1623	0.0574	0.0659	0.0655	0.0594	0.0657	0.0489	0.0852	0.0403	0.0941	0.0644
8A2	0.0167	0.0156	0.0086	0.0169	0.0150	0.0103	0.0159	0.0250	0.0149	0.0160	0.0133	0.0134	0.0157	0.0172	0.0147
9	0.2060	0.2054	0.1147	0.2310	0.2015	0.1429	0.2195	0.2648	0.2096	0.2235	0.1659	0.1746	0.1958	0.2251	0.3045
10	0.0129	0.0111	0.0062	0.0120	0.0107	0.0073	0.0113	0.0146	0.0106	0.0113	0.0096	0.0096	0.0113	0.0121	0.0098
11A	0.0421	0.0402	0.0224	0.0434	0.0387	0.0266	0.0417	0.0575	0.0385	0.0410	0.0346	0.0347	0.0407	0.0437	0.0355
11B	0.0814	0.0791	0.0439	0.0854	0.0762	0.0522	0.0802	0.1038	0.0752	0.0808	0.0696	0.0682	0.0803	0.0861	0.0725
H-H	0.7974	0.7729	0.4294	0.8352	0.7423	0.5101	0.7837	1.0187	0.7345	0.7867	0.6669	0.6683	0.7878	0.8414	0.6726

TABLE XIII-6 INVERSE MATRIX, 36-SECTOR CLOSED MODEL: SOUTH AUSTRALIA

SECTOR	8A1	8A2	9	10	11A	11B	H-H
1	0.0080	0.0084	0.0060	0.0104	0.0120	0.0068	0.0127
2A	0.0283	0.0321	0.0243	0.0415	0.0398	0.0282	0.0515
2B	0.0059	0.0037	0.0025	0.0043	0.0040	0.0025	0.0050
3A	0.0012	0.0008	0.0004	0.0008	0.0009	0.0010	0.0007
3B	0.0045	0.0063	0.0030	0.0055	0.0050	0.0043	0.0053
4A1	0.0178	0.0196	0.0143	0.0246	0.0279	0.0140	0.0302
4A2	0.0124	0.0142	0.0106	0.0182	0.0208	0.0101	0.0225
4A3	0.0229	0.0261	0.0197	0.0338	0.0319	0.0184	0.0421
4A4	0.0189	0.0216	0.0163	0.0280	0.0260	0.0156	0.0349
4A5	0.0238	0.0272	0.0208	0.0353	0.0326	0.0330	0.0439
4B1	0.0161	0.0147	0.0109	0.0197	0.0178	0.0102	0.0219
4B2	0.0091	0.0099	0.0074	0.0159	0.0145	0.0069	0.0148
4B3	0.0107	0.0115	0.0074	0.0115	0.0109	0.0111	0.0120
4B4	0.0069	0.0079	0.0090	0.0161	0.0149	0.0057	0.0125
4C1	0.0581	0.2420	0.0504	0.1090	0.0810	0.0971	0.0939
4C2	0.1182	0.0806	0.0615	0.1308	0.0942	0.0587	0.1230
4D1	0.0359	0.0702	0.0245	0.0524	0.0405	0.0337	0.0463
4D2	0.0104	0.0243	0.0074	0.0155	0.0121	0.0112	0.0138
4D3	0.0441	0.0785	0.0299	0.0646	0.0517	0.0385	0.0571
4E	0.0097	0.0149	0.0069	0.0121	0.0128	0.0134	0.0119
4F1	0.0397	0.0129	0.0079	0.0144	0.0136	0.0129	0.0141
4F2	0.0167	0.0109	0.0076	0.0134	0.0189	0.0212	0.0149
4F3	0.0085	0.0097	0.0074	0.0136	0.0116	0.0068	0.0156
4F4	0.0331	0.0368	0.0135	0.0261	0.0248	0.0274	0.0250
4F5	0.0037	0.0042	0.0035	0.0055	0.0060	0.0030	0.0067
5A1	0.0273	0.0317	0.0281	0.0380	0.0446	0.0580	0.0402
5A2	0.0039	0.0040	0.0024	0.0048	0.0087	0.0046	0.0046
5A3	0.0121	0.0131	0.0192	0.0168	0.0269	0.0304	0.0201
6	0.0476	0.0304	0.0298	0.0514	0.0428	0.0224	0.0431
7	0.1389	0.1263	0.1140	0.1469	0.1462	0.1022	0.1755
8A1	1.0661	0.0766	0.0378	0.0638	0.0555	0.0416	0.0564
8A2	0.0176	1.0213	0.0251	0.0272	0.0239	0.0168	0.0321
9	0.2312	0.2533	1.2879	0.3556	0.2976	0.2368	0.3944
10	0.0126	0.0144	0.0110	1.0187	0.0172	0.0101	0.0232
11A	0.0460	0.0518	0.0439	0.0676	1.0633	0.0367	0.0835
11B	0.0899	0.1019	0.0902	0.1325	0.1226	1.0963	0.1644
H-H	0.8731	0.9998	0.7569	1.2981	1.1997	0.7032	1.6166

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