MANITOBA/CANADA IMPACT ANALYSIS: A TWO REGION INPUT-OUTPUT MODEL

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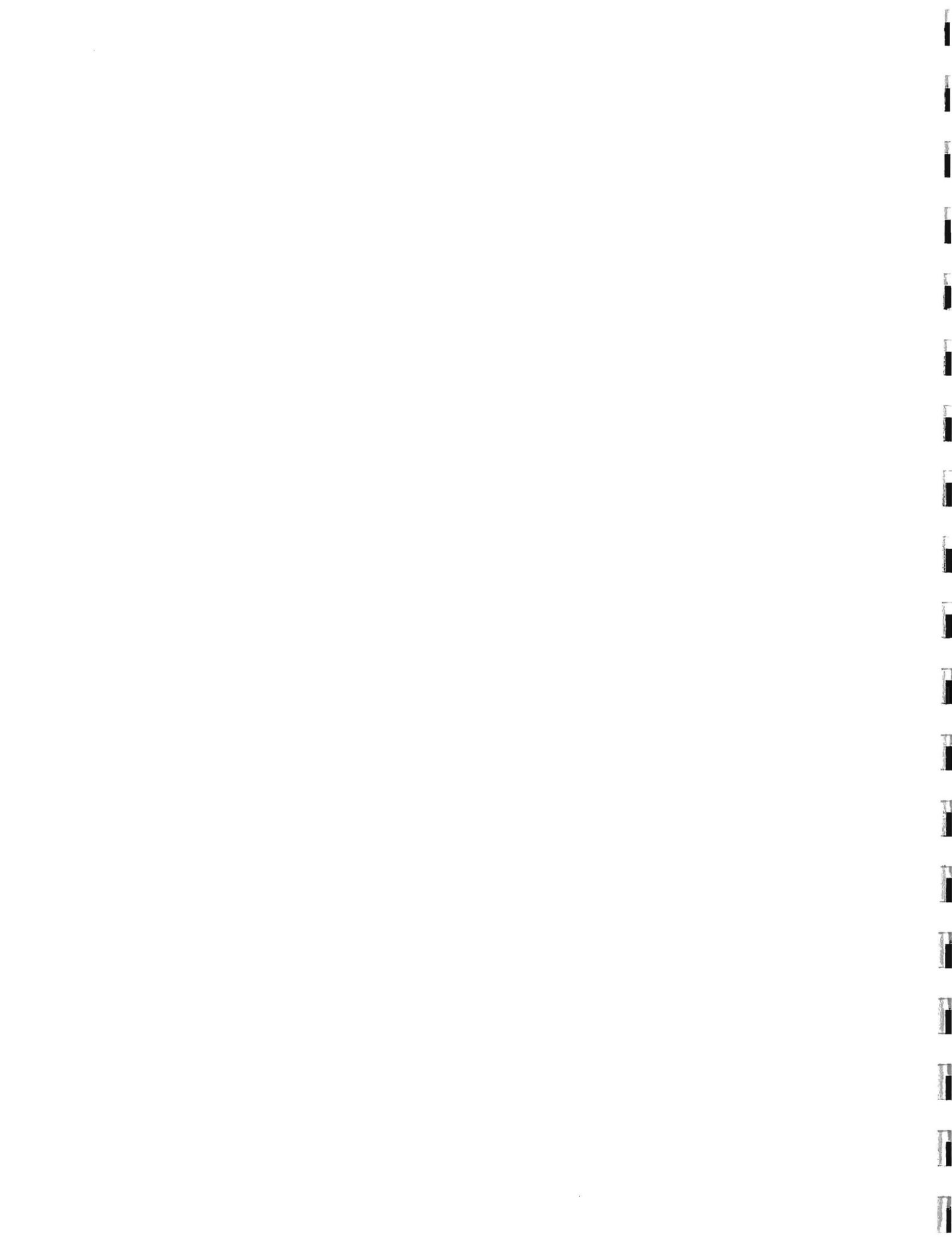
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1. INTRODUCTION

The major purpose of this research bulletin is to document the methodology for provincial impact analysis using a two region version of the 1984 Statistics Canada Interregional Input-Output Model. Analyses by Douglas and MacMillan (1982), MacMillan and Douglas (1984) and Gould (1986) have illustrated the usefulness of the 1979 model for Canadian regional analysis but the usefulness of the partitioned solution of the Canadian interregional model for provincial impact analysis has not been illustrated. Access to the 1984 model on a Lotus 1-2-3 spreadsheet provides an opportunity for increased use of the interregional model by economists for provincial impact analyses.

The model is well suited for estimating short-run and long-run income and employment impacts of major investment projects on the Manitoba and Canadian economies. For example, the $65 million water supply investment proposed by the Pembina Valley Water Supply Task Force is a project for which the magnitude and distribution of long-run value added and employment impacts generated in the Region, Manitoba and Canada is significant for regional development policy analysis. In addition, the short-run employment impact generated by construction activity is significant.

This report develops a two region (Manitoba, Rest-of-Canada (ROC)), Input-Output (I-O) model and estimates output, income, value added and employment impacts of a projected change in manufacturing sector final demand for the Pembina Valley Water project, MacMillan, Chorney, Coyle and Grunau (1990). The model is formulated using 1984 National Accounts data but differs from standard models in terms of its level of aggregation. This model endogenizes interactions in production between Manitoba and ROC (in contrast to a single region Manitoba

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model), and can be run on a personal computer. Quattro macros are available on request from the authors.

The model incorporates 16 industries (sectors) and 43 commodities for each of the two regions, and impacts of changes in final demand are calculated for the corresponding 86 commodities over Manitoba and ROC. Provincial data available from Statistics Canada at the "small" (S) level of aggregation (16 x 49) is used. A more detailed two region model could be constructed. The Manitoba/ROC model presented provides a Canadian context for the Manitoba multipliers summarized by the Manitoba Bureau of Statistics (1992). In addition the equations identify the macroeconomic framework and assumptions underlying the use of a Manitoba partition of the Manitoba/ROC model. A major difference between the multipliers presented below and the Manitoba Bureau of Statistics multipliers is the exclusion of induced consumption and re-spending of household income. In contrast, the Manitoba Bureau of Statistics multipliers are based on a model closed with respect to household economic activity.

2.   COMMODITY/INDUSTRY FRAMEWORK FOR MANITOBA

The interregional model is a disaggregation of the national model. The accounting relations in the national model are outlined in Figure 1. The Manitoba Use Matrix, U (Figure 1) shows the value of commodities used by the agriculture sector as current inputs, Figure 1. For example, two agricultural commodities: 1) grains and 2) other agricultural products are treated separately. Agriculture is one of the 16 sectors. The largest commodity expenditures in the agriculture sector (See Table 1) are: 1) chemicals, fertilizers, etc., 2) other agricultural products, which represent

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Figure 1: Commodity / Industry Accounting Relations

	Commodities	Industries	Final Demand	Total
Commodities		U	F	q
Industries	V			g
Primary Inputs		YI	YF	
TOTAL	q'	g'		

Where:	NC	=	number of commodities
	NI	=	number of industries
	NY	=	number of primary inputs
	NF	=	number of final demand categories
	V	=	is a NI * NC order matrix showing the value of gross domestic output of industries by commodities.
	U	=	is a NC * NI order matrix showing the value of commodities used by industries as current inputs.
	F	=	is a NC * NF order matrix showing the value of commodities used by the final demand categories
	YI	=	is a NY * NI order matrix showing the value of primary inputs used by industries
	YF	=	is a NY * NF order matrix showing the value of primary inputs used in final demand categories
	q	=	is a NC * 1 vector which shows the values of total commodity outputs.
	g	=	is a NI * 1 vector which shows the values of total industrial outputs.

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Table 1 - Manitoba Use Matrix (UM)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Agricult	FishgTra	Forestry	MiQuOiWe	Manufact	Construc	TranStor	Communic	ElPoGaOU	WholeTra	RtailTra	FilnReEs	CoBuPeSe	OpOfLaFo	TraAdvPr	TransMar	Total
1	Grains	161.3	0.0	0.0	0.0	74.9	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	237.1
2	OthAgrPr	224.7	0.0	0.0	0.0	636.0	5.5	0.3	0.0	0.0	0.3	12.2	0.0	9.1	4.7	0.0	0.0	892.8
3	ForestPr	0.1	0.0	9.5	0.0	43.8	0.8	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	54.7
4	FishTrap	0.0	0.2	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.0	13.9
5	MetalCon	0.0	0.0	0.0	0.0	291.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	292.3
6	MinFuels	2.2	0.0	0.0	0.2	67.4	0.2	10.6	0.3	5.0	1.0	4.6	5.7	5.2	0.0	0.0	0.0	102.4
7	NonMetMn	1.8	0.0	0.0	5.8	15.7	23.8	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	47.6
8	MinServ	0.0	0.0	0.0	23.8	0.0	23.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.5
9	MeFiDaPr	1.0	0.0	0.0	0.0	143.1	0.0	0.0	0.0	0.0	0.1	0.6	0.0	74.7	35.7	0.0	0.0	255.2
10	FrVeFeMF	126.4	0.0	0.0	0.0	131.0	0.0	0.2	0.0	0.0	2.0	3.3	0.0	32.4	15.4	0.0	0.0	310.7
11	Beverage	0.0	0.0	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	2.2	3.8	0.0	24.8
12	TobaToPr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	RuLePlFP	5.5	0.0	0.0	0.0	88.5	39.2	9.0	0.0	0.0	3.8	5.1	0.0	2.5	37.2	0.2	0.0	191.0
14	TextileP	1.9	0.4	0.1	0.0	123.2	22.9	1.3	0.1	0.0	0.6	1.4	0.0	9.8	5.1	0.0	0.0	166.8
15	KnitPrCl	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.5	5.3	0.0	0.0	15.8
16	LuSawOWP	0.5	0.1	0.0	0.1	47.9	108.2	0.0	0.0	0.0	2.4	0.6	0.0	2.2	0.8	0.0	0.0	162.8
17	FurnFix	0.0	0.0	0.0	0.0	6.5	2.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	8.9
18	PapPapPr	0.6	0.0	0.0	1.1	174.2	16.3	4.5	0.0	0.0	10.1	21.6	0.0	10.0	30.0	0.2	0.0	268.6
19	PrintPub	0.0	0.0	0.0	0.0	19.7	0.0	0.6	8.3	0.3	1.6	1.7	3.5	2.9	90.1	98.2	0.0	226.9
20	PrimMePr	0.0	0.0	0.0	4.6	248.7	38.6	2.6	0.0	0.0	1.9	0.0	0.0	0.4	2.9	0.0	0.0	299.7
21	MetFabPr	5.0	0.1	0.4	0.3	103.5	178.4	1.8	0.0	0.0	4.7	4.3	0.0	0.9	32.3	0.0	0.0	331.7
22	MachEqui	17.8	0.2	0.3	10.2	92.5	18.9	0.1	0.0	0.0	1.3	0.0	0.1	0.1	55.5	0.0	0.0	197.0
23	AuTruOte	0.3	1.1	0.3	6.1	101.4	2.7	37.7	0.0	0.0	0.3	0.0	0.0	0.0	32.3	2.4	0.0	184.6
24	EleComPr	0.0	0.3	0.0	0.4	61.7	74.4	2.0	14.7	0.0	1.6	0.0	0.0	0.1	34.1	0.2	0.0	189.5
25	NoMetMiP	0.0	0.0	0.0	1.6	54.6	109.6	1.0	0.0	0.0	0.5	0.2	0.0	1.8	4.9	0.0	0.0	174.2
26	PetCoalP	145.1	3.1	1.7	14.7	47.6	40.2	134.8	4.7	6.9	29.9	25.1	15.8	31.8	0.8	22.8	0.0	525.0
27	ChemChPr	323.9	0.1	0.1	17.9	127.1	27.2	1.3	0.3	0.0	2.7	1.2	0.0	9.2	44.3	0.1	0.0	555.4
28	MiManuPr	0.0	0.3	0.0	0.0	37.9	16.7	0.7	1.9	0.0	0.8	1.2	0.0	16.5	27.1	6.2	0.0	109.3
29	ResConst	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	NonResCo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	RepConst	20.0	0.2	0.9	9.0	15.7	1.1	65.8	9.2	15.0	2.0	7.7	129.3	9.1	0.0	0.0	0.0	285.0
32	TransSto	7.0	0.2	11.0	8.5	35.1	10.5	158.7	7.1	1.1	25.0	14.9	4.7	11.7	0.0	86.7	441.6	823.8
33	CommunSe	7.2	0.0	0.1	1.2	32.1	3.9	25.5	21.6	2.0	30.7	32.2	39.6	50.7	0.0	47.1	0.0	293.9
34	OthUtil	25.1	0.0	0.0	12.2	72.3	1.7	13.0	6.9	1.0	10.4	32.8	45.0	33.7	0.0	0.0	0.0	254.1
35	WhlslMrg	73.0	0.5	0.3	13.7	174.4	111.5	22.8	2.4	0.5	15.1	4.4	1.2	20.4	87.2	6.0	0.0	533.4
36	RtlMarg	8.9	0.1	0.0	0.3	0.8	12.0	1.1	1.2	0.0	0.5	0.4	0.3	9.7	27.4	4.3	0.0	65.0
37	ImpRent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	OthFinan	114.9	0.2	2.2	59.6	83.2	30.2	44.4	11.4	19.8	63.9	128.5	180.3	117.8	0.0	0.0	0.0	856.2
39	BusServ	4.2	0.0	0.2	13.9	51.0	100.2	14.1	12.5	3.4	28.3	30.5	94.6	62.4	0.0	45.6	0.0	461.0
40	PersOMiS	20.2	0.2	2.7	11.0	53.3	88.5	69.9	23.7	1.4	12.1	9.6	21.1	60.0	17.6	108.1	0.0	499.4
41	TransMar	26.2	0.2	0.1	3.8	95.5	32.0	3.9	0.5	0.5	1.9	1.6	0.4	4.9	13.9	1.6	0.0	187.0
42	OpOfLaFo	64.2	0.1	4.4	21.9	110.2	23.2	27.9	18.1	3.3	13.8	22.1	19.1	68.4	0.0	0.0	0.0	396.5
43	TraAdvPr	0.1	0.0	0.2	4.3	97.8	9.9	16.7	10.7	2.3	57.4	60.0	39.9	58.9	0.0	0.0	0.0	358.2
	Total	2,322.4	22.1	56.7	698.5	5,432.6	2,089.9	1,532.7	578.2	619.1	1,398.1	1,432.2	2,801.6	2,195.4	623.7	469.9	441.6	22,714.7

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interfarm purchases, 3) grains, 4) gasoline, fuel, etc., 5) fruits, vegetable, feed, etc. The value of primary inputs are also included in the Manitoba use matrix including: 1) indirect taxes and subsidies, 2) labour income, 3) net income and 4) other operating surplus.

Gross Domestic Product at Factor Cost (Value Added) is the sum of labour income, ($490.7 million), net income to farm businesses, ($403.4 million) and other operating surplus, ($470.1 million). The value added coefficient for the Manitoba agricultural sector in 1984 is .415 (964.2/2322.4). The value added coefficient indicates that for every dollar of gross output produced by the Manitoba agricultural sector, $.403 is contributed to total Manitoba valued added.

Similarly the income coefficient for the Manitoba agricultural sector is the sum of labour income and net income to farm businesses. The income coefficient for Manitoba agriculture is .213 (494.1/2322.4).

The Manitoba Use matrix is used to calculate an input-output technical coefficient matrix, B, (See Table 2) for the agricultural sector by dividing the value of the commodity purchases the total gross output for the sector. The largest commodity purchase in the agricultural sector is for chemicals and fertilizers, $323.9 million. Dividing the commodity input purchase by gross output gives the production coefficient, .1395, (Table 2).

Multiplier calculations are made for sectors which produce and use a variety of commodities. The Manitoba Make matrix, V, shows the distribution of the 43 commodities to the 16 sectors, (Table 3). The Make matrix is used to calculate a matrix of market share coefficients, D (Table 4), by dividing the commodity row entries in Table 3 by the total commodity output. The D matrix is formatted in Table 4 on a industry by commodity basis to

Table 2 - Manitoba Input-Output Coefficients Matrix (B)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Agricult	FishgTra	Forestry	MiQuOiWe	Manufact	Construc	TranStor	Communic	ElPoGaOU	WholeTra	RtailTra	FiInReEs	CoBuPeS	OpOfLaFo	TraAdvPr	TransMar
1 Grains	0.0695	0.0000	0.0000	0.0000	0.0138	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2 OthAgrPr	0.0968	0.0000	0.0000	0.0000	0.1171	0.0026	0.0002	0.0000	0.0000	0.0002	0.0085	0.0000	0.0041	0.0075	0.0000	0.0000
3 ForestPr	0.0000	0.0000	0.1675	0.0000	0.0081	0.0004	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000
4 FishTrap	0.0000	0.0090	0.0000	0.0000	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0003	0.0000	0.0000
5 MetalCon	0.0000	0.0000	0.0000	0.0000	0.0537	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
6 MinFuels	0.0009	0.0000	0.0000	0.0003	0.0124	0.0001	0.0069	0.0005	0.0081	0.0007	0.0032	0.0020	0.0024	0.0000	0.0000	0.0000
7 NonMetMn	0.0008	0.0000	0.0000	0.0083	0.0029	0.0114	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
8 MinServ	0.0000	0.0000	0.0000	0.0341	0.0000	0.0113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9 MeFiDaPr	0.0004	0.0000	0.0000	0.0000	0.0263	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0000	0.0340	0.0572	0.0000	0.0000
10 FrVeFeMF	0.0544	0.0000	0.0000	0.0000	0.0241	0.0000	0.0001	0.0000	0.0000	0.0014	0.0023	0.0000	0.0148	0.0247	0.0000	0.0000
11 Beverage	0.0000	0.0000	0.0000	0.0000	0.0027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019	0.0035	0.0081	0.0000
12 TobaToPr	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
13 RuLePlFP	0.0024	0.0000	0.0000	0.0000	0.0163	0.0188	0.0059	0.0000	0.0000	0.0027	0.0036	0.0000	0.0011	0.0596	0.0004	0.0000
14 TextileP	0.0008	0.0181	0.0018	0.0000	0.0227	0.0110	0.0008	0.0002	0.0000	0.0004	0.0010	0.0000	0.0045	0.0082	0.0000	0.0000
15 KnitPrCl	0.0000	0.0000	0.0000	0.0000	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0002	0.0085	0.0000	0.0000
16 LuSawOWP	0.0002	0.0045	0.0000	0.0001	0.0088	0.0518	0.0000	0.0000	0.0000	0.0017	0.0004	0.0000	0.0010	0.0013	0.0000	0.0000
17 FurnFix	0.0000	0.0000	0.0000	0.0000	0.0012	0.0010	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000
18 PapPapPr	0.0003	0.0000	0.0000	0.0016	0.0321	0.0078	0.0029	0.0000	0.0000	0.0072	0.0151	0.0000	0.0046	0.0481	0.0004	0.0000
19 PrintPub	0.0000	0.0000	0.0000	0.0000	0.0036	0.0000	0.0004	0.0144	0.0005	0.0011	0.0012	0.0012	0.0013	0.1445	0.2090	0.0000
20 PrimMePr	0.0000	0.0000	0.0000	0.0066	0.0458	0.0185	0.0017	0.0000	0.0000	0.0014	0.0000	0.0000	0.0002	0.0046	0.0000	0.0000
21 MetFabPr	0.0022	0.0045	0.0071	0.0004	0.0191	0.0854	0.0012	0.0000	0.0000	0.0034	0.0030	0.0000	0.0004	0.0518	0.0000	0.0000
22 MachEqui	0.0077	0.0090	0.0053	0.0146	0.0170	0.0090	0.0001	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0890	0.0000	0.0000
23 AuTruOte	0.0001	0.0498	0.0053	0.0087	0.0187	0.0013	0.0246	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0518	0.0051	0.0000
24 EleComPr	0.0000	0.0136	0.0000	0.0006	0.0114	0.0356	0.0013	0.0254	0.0000	0.0011	0.0000	0.0000	0.0000	0.0547	0.0004	0.0000
25 NoMetMiP	0.0000	0.0000	0.0000	0.0023	0.0101	0.0524	0.0007	0.0000	0.0000	0.0004	0.0001	0.0000	0.0008	0.0079	0.0000	0.0000
26 PetCoalP	0.0625	0.1403	0.0300	0.0210	0.0088	0.0192	0.0879	0.0081	0.0111	0.0214	0.0175	0.0056	0.0145	0.0013	0.0485	0.0000
27 ChemChPr	0.1395	0.0045	0.0018	0.0256	0.0234	0.0130	0.0008	0.0005	0.0000	0.0019	0.0008	0.0000	0.0042	0.0710	0.0002	0.0000
28 MiManuPr	0.0000	0.0136	0.0000	0.0000	0.0070	0.0080	0.0005	0.0033	0.0000	0.0006	0.0008	0.0000	0.0075	0.0435	0.0132	0.0000
29 ResConst	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
30 NonResCo	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
31 RepConst	0.0086	0.0090	0.0159	0.0129	0.0029	0.0005	0.0429	0.0159	0.0242	0.0014	0.0054	0.0462	0.0041	0.0000	0.0000	0.0000
32 TransSto	0.0030	0.0090	0.1940	0.0122	0.0065	0.0050	0.1035	0.0123	0.0018	0.0179	0.0104	0.0017	0.0053	0.0000	0.1845	1.0000
33 CommunSe	0.0031	0.0000	0.0018	0.0017	0.0059	0.0019	0.0166	0.0374	0.0032	0.0220	0.0225	0.0141	0.0231	0.0000	0.1002	0.0000
34 OthUtil	0.0108	0.0000	0.0000	0.0175	0.0133	0.0008	0.0085	0.0119	0.0016	0.0074	0.0229	0.0161	0.0154	0.0000	0.0000	0.0000
35 WhlslMrg	0.0314	0.0226	0.0053	0.0196	0.0321	0.0534	0.0149	0.0042	0.0008	0.0108	0.0031	0.0004	0.0093	0.1398	0.0128	0.0000
36 RtlMarg	0.0030	0.0045	0.0000	0.0004	0.0001	0.0057	0.0007	0.0021	0.0000	0.0004	0.0003	0.0001	0.0044	0.0439	0.0092	0.0000
37 ImpRent	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
38 OthFinan	0.0495	0.0090	0.0388	0.0853	0.0153	0.0145	0.0290	0.0197	0.0317	0.0457	0.0897	0.0644	0.0537	0.0000	0.0000	0.0000
39 BusServ	0.0018	0.0000	0.0035	0.0199	0.0094	0.0479	0.0092	0.0216	0.0055	0.0202	0.0213	0.0338	0.0284	0.0000	0.0975	0.0000
40 PersOMiS	0.0087	0.0090	0.0476	0.0157	0.0098	0.0423	0.0456	0.0410	0.0023	0.0087	0.0067	0.0075	0.0273	0.0282	0.2300	0.0000
41 TransMar	0.0113	0.0090	0.0018	0.0054	0.0176	0.0153	0.0025	0.0009	0.0008	0.0014	0.0011	0.0001	0.0022	0.0223	0.0034	0.0000
42 OpOfLaFo	0.0276	0.0045	0.0776	0.0314	0.0203	0.0111	0.0182	0.0313	0.0053	0.0097	0.0154	0.0068	0.0312	0.0000	0.0000	0.0000
43 TraAdvPr	0.0000	0.0000	0.0035	0.0062	0.0180	0.0047	0.0109	0.0185	0.0037	0.0411	0.0419	0.0142	0.0268	0.0000	0.0000	0.0000

Table 3 - Manitoba Make Matrix (M)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Agricult	FishgTra	Forestry	MiQuOi	Manufact	Construc	TranStor	Communi	ElPoGaO	WholeTra	RtailTra	FiInReEs	CoBuPeS	OpOfLaF	TraAdvPr	TransMar	Total
1	Grains	941.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	941.8
2	OthAgrPr	1,290.1	0.0	0.2	0.0	6.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,297.6
3	ForestPr	6.5	0.0	56.2	0.0	1.5	0.0	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	65.0
4	FishTrap	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.0
5	MetalCon	0.0	0.0	0.0	398.6	0.1	0.0	0.0	0.0	·0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	398.7
6	MinFuels	0.0	0.0	0.0	169.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.8
7	NonMetMn	0.0	0.0	0.0	54.8	4.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	59.5
8	MinServ	0.0	0.0	0.0	50.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.6
9	MeFiDaPr	17.5	0.0	0.0	0.0	839.2	0.0	0.0	0.0	0.0	0.4	12.3	0.0	0.0	0.0	0.0	0.0	869.4
10	FrVeFeMF	0.0	0.0	0.0	0.0	603.7	0.0	0.0	0.0	0.0	8.9	13.0	0.0	0.0	0.0	0.0	0.0	625.6
11	Beverage	0.0	0.0	0.0	0.0	159.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	159.9
12	TobaToPr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0'	0.0	0.0	0.0
13	RuLePlFP	0.0	0.0	0.0	0.0	109.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	110.5
14	TextileP	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	35.3
15	KnitPrCl	0.0	0.0	0.0	0.0	300.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	301.5
16	LuSawOWP	0.0	0.0	0.0	0.0	123.5	0.0	0.0	0.0	0.0	3.9	5.1	0.0	0.0	0.0	0.0	0.0	132.5
17	FurnFix	0.0	0.0	0.0	0.0	117.5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	117.8
18	PapPapPr	0.0	0.0	0.0	0.0	276.8	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	279.5
19	PrintPub	0.0	0.0	0.0	0.0	306.5	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	306.9
20	PrimMePr	0.0	0.0	0.0	0.0	529.1	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	530.5
21	MetFabPr	0.0	0.0	0.0	0.0	300.2	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	302.9
22	MachEqui	0.0	0.0	0.0	2.3	498.5	0.0	0.0	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	508.1
23	AuTruOte	0.0	0.0	0.0	0.0	401.8	0.0	12.1	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	416.8
24	EleComPr	0.0	0.0	0.0	0.0	240.6	0.0	0.0	20.7	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0	268.5
25	NoMetMiP	0.0	0.0	0.0	0.1	144.4	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	145.1
26	PetCoalP	0.0	0.0	0.0	4.8	18.8	0.0	1.8	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	25.6
27	ChemChPr	61.9	0.0	0.0	0.0	229.7	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	297.6
28	MiManuPr	0.0	0.0	0.0	0.0	51.3	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	55.2
29	ResConst	0.0	0.0	0.0	0.0	0.0	679.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	679.2
30	NonResCo	0.0	0.0	0.0	0.0	0.0	1,005.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,005.2
31	RepConst	0.0	0.0	0.0	0.0	0.0	398.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	398.1
32	TransSto	0.0	0.0	0.0	0.0	0.0	0.0	1,479.2	0.0	0.0	0.0	0.0	0.9	0.0	2.8	0.0	0.0	1,482.9
33	CommunSe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	537.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	537.2
34	OthUtil	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	601.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	601.4
35	WhlslMrg	0.0	0.0	0.0	0.3	89.6	0.0	2.9	0.0	0.0	1,222.6	0.0	0.0	2.1	0.0	0.0	0.0	1,317.5
36	RtlMarg	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	6.5	0.0	1,175.1	0.0	10.6	0.0	0.0	0.0	1,194.2
37	ImpRent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,280.4	0.0	0.0	0.0	0.0	1,280.4
38	OthFinan	4.6	0.0	0.0	3.3	2.1	3.9	10.4	0.7	0.7	8.2	9.5	1,459.0	11.0	0.0	0.0	0.0	1,513.4
39	BusServ	0.0	0.0	0.0	0.0	4.9	0.0	2.3	16.3	1.9	2.8	0.1	0.9	453.6	0.0	0.0	0.0	482.8
40	PersOMiS	0.0	0.1	0.3	13.9	37.5	3.5	20.6	3.6	8.5	112.0	216.0	61.5	1,715.3	0.0	0.0	0.0	2,192.8
41	TransMar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	441.6	441.6
42	OpOfLaFo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	623.7	0.0	0.0	623.7
43	TraAdvPr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	470.0	0.0	470.0
	Total **	2,322.4	22.1	56.7	698.5	5,432.6	2,089.9	1,532.3	578.5	619.2	1,397.7	1,432.2	2,801.8	2,195.4	623.7	470.0	441.6	22,714.6

Table 4 - Manitoba Market Shares (D)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Agricult	FishgTra	Forestry	MiQuOi	Manufact	Construc	TranStor	Communi	ElPoGaO	WholeTra	RtailTra	FiInReEs	CoBuPeS	OpOfLaF	TraAdvPr	TransMar	Total
1	Grains	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	1.0000
2	OthAgrPr	0.9942	0.0000	0.0002	0.0000	0.0049	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
3	ForestPr	0.1000	0.0000	0.8646	0.0000	0.0231	0.0000	0.0000	0.0000	0.0031	0.0092	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
4	FishTrap	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	1.0000
5	MetalCon	0.0000	0.0000	0.0000	0.9997	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
6	MinFuels	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	1.0000
7	NonMetMn	0.0000	0.0000	0.0000	0.9210	0.0706	0.0000	0.0000	0.0000	0.0000	0.0084	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
8	MinServ	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	1.0000
9	MeFiDaPr	0.0201	0.0000	0.0000	0.0000	0.9653	0.0000	0.0000	0.0000	0.0000	0.0005	0.0141	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	FrVeFeMF	0.0000	0.0000	0.0000	0.0000	0.9650	0.0000	0.0000	0.0000	0.0000	0.0142	0.0208	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
11	Beverage	0.0000	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	1.0000
12	TobaToPr	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
13	RuLePlFP	0.0000	0.0000	0.0000	0.0000	0.9910	0.0000	0.0000	0.0000	0.0000	0.0090	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
14	TextileP	0.0000	0.0000	0.0000	0.0000	0.9858	0.0000	0.0000	0.0000	0.0000	0.0085	0.0057	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
15	KnitPrCl	0.0000	0.0000	0.0000	0.0000	0.9967	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
16	LuSawOWP	0.0000	0.0000	0.0000	0.0000	0.9321	0.0000	0.0000	0.0000	0.0000	0.0294	0.0385	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
17	FurnFix	0.0000	0.0000	0.0000	0.0000	0.9975	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
18	PapPapPr	0.0000	0.0000	0.0000	0.0000	0.9903	0.0000	0.0000	0.0000	0.0000	0.0097	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
19	PrintPub	0.0000	0.0000	0.0000	0.0000	0.9987	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
20	PrimMePr	0.0000	0.0000	0.0000	0.0000	0.9974	0.0000	0.0000	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
21	MetFabPr	0.0000	0.0000	0.0000	0.0000	0.9911	0.0000	0.0000	0.0000	0.0000	0.0089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
22	MachEqui	0.0000	0.0000	0.0000	0.0045	0.9811	0.0000	0.0000	0.0000	0.0000	0.0144	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
23	AuTruOte	0.0000	0.0000	0.0000	0.0000	0.9640	0.0000	0.0290	0.0000	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
24	EleComPr	0.0000	0.0000	0.0000	0.0000	0.8961	0.0000	0.0000	0.0771	0.0000	0.0268	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
25	NoMetMiP	0.0000	0.0000	0.0000	0.0007	0.9952	0.0000	0.0000	0.0000	0.0000	0.0041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
26	PetCoalP	0.0000	0.0000	0.0000	0.1875	0.7344	0.0000	0.0703	0.0000	0.0039	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
27	ChemChPr	0.2080	0.0000	0.0000	0.0000	0.7718	0.0000	0.0000	0.0000	0.0000	0.0202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
28	MiManuPr	0.0000	0.0000	0.0000	0.0000	0.9293	0.0000	0.0000	0.0000	0.0000	0.0707	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
29	ResConst	0.0000	0.0000	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	1.0000
30	NonResCo	0.0000	0.0000	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	1.0000
31	RepConst	0.0000	0.0000	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	1.0000
32	TransSto	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9975	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0019	0.0000	0.0000	1.0000
33	CommunSe	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
34	OthUtil	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.9998	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
35	WhlslMrg	0.0000	0.0000	0.0000	0.0002	0.0680	0.0000	0.0022	0.0000	0.0000	0.9280	0.0000	0.0000	0.0016	0.0000	0.0000	0.0000	1.0000
36	RtlMarg	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.0000	0.0054	0.0000	0.9840	0.0000	0.0089	0.0000	0.0000	0.0000	1.0000
37	ImpRent	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
38	OthFinan	0.0030	0.0000	0.0000	0.0022	0.0014	0.0026	0.0069	0.0005	0.0005	0.0054	0.0063	0.9641	0.0073	0.0000	0.0000	0.0000	1.0000
39	BusServ	0.0000	0.0000	0.0000	0.0000	0.0101	0.0000	0.0048	0.0338	0.0039	0.0058	0.0002	0.0019	0.9395	0.0000	0.0000	0.0000	1.0000
40	PersOMiS	0.0000	0.0000	0.0001	0.0063	0.0171	0.0016	0.0094	0.0016	0.0039	0.0511	0.0985	0.0280	0.7822	0.0000	0.0000	0.0000	1.0000
41	TransMar	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	1.0000	1.0000
42	OpOfLaFo	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	1.0000	0.0000	0.0000	1.0000
43	TraAdvPr	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	1.0000	0.0000	1.0000

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conform with the accounting framework summarized in Figure 1. Matrix multiplication of D times B gives a 16 sector by 16 sector technical coefficient matrix consistent with the more usual formulation of input-output coefficients on a sector by sector basis. In other words the matrix of market share coefficients, D, can be used. Aggregate the commodity production coefficients in the B matrix into sectors. For example, the grain and other agricultural input commodities are aggregated into the single sector agriculture when impacts are estimated on a sector basis.

Final demand categories include: personal expenditures on durables, semi-durables, nondurables and services; construction, machinery, government, inventory and export purchases of commodities (see Appendix Tables 15 and 16). Manitoba final demand for unprocessed grain includes entries for inventory withdrawals of -$85.8 million and foreign exports of $435 million, re-exports of $.1 million, foreign imports of -$17.4 million giving a trade balance of $417.6 million. Exports of grain from Manitoba to other provinces, as well as imports from other provinces are given. Total grain exports to other provinces from Manitoba total $381.1 million. Total grain imports from other provinces to Manitoba total -$8.3 million giving a Manitoba trade balance of $372.8 million. The total trade balance considering both net foreign trade and net interprovincial trade is $790.5 million for grain. Total final domestic demand (columns 1 to 9 - Final Demand Matrix) for grain products in Manitoba is zero. Total intermediate sector demand for grain products is $237.1 million.

3. THE MANITOBA/CANADA TWO REGION MODEL

3.1. Basic Data

The two region model is derived from province level data for 16 industries (sectors) and 43 commodities (the "small" S level of aggregation) for 1984 and 5 categories of primary inputs .

These industries and commodities are listed in Figures 2 and 3, respectively. For each of 12 regions (10 provinces and the territories) there are three tables of data: a "make" matrix accounting for the value of goods produced in the region (by industry and commodity); a "use" matrix containing the values of all intermediate inputs (commodities) used in production by each of the region's industries; and a"final demand" matrix accounting for the value of consumer and public expenditures, inter provincial trade and foreign trade (by commodity). Final demand categories are listed in Figure 4. The Appendix and Tables 1-4 present the basic data in the appropriate form for the two region model. Data for ROC is obtained by summing the make, use and final demand matrices, and the employment vectors, over all 11 regions excluding Manitoba. Manitoba and ROC final demand categories are summarized in Figure 4.

The resulting 43x16 two region make matrices are labelled VMBT and VROCT (MB or ROC for region and T denotes transposition). Similarly the resulting 43x16 two region use matrices are labelled UMB and UROC. The 1x16 row vector of values of total industrial outputs for the regions are labelled gMBT and gCT and the 43x1 column vector of total commodity outputs for the regions are labelled qMB and qC (Regional domestic demand, FMB and FROC, include the first 9 categories of final demand listed in Figure 4). In addition, the following 43x1 column vectors are defined for the Manitoba final demand matrix: AMB (government sales of goods and services); NMB (net inventory withdrawals); XMB (foreign exports); EMB (foreign re-exports, i.e. exports of imported commodities); MMB = (foreign imports - note that imports and inventory withdrawals enter the final demand matrix as negative numbers); and TFMB (total final demand). FMB and FROC are vectors of provincial domestic final demands by commodity excluding foreign exports, re-exports, imports, government

Figure 2: Categories of Industries in the "Small" (S) Level of Aggregation

1. Agricultural and Related Services Industries

2. Fishing and Trapping Industries

3. Logging and Forestry Industries

4. Mining, Quarrying and Oil Well Industries

5. Manufacturing Industries

6. Construction Industries

7. Transportation and Storage Industries

8. Communication Industries

9. Other Utility Industries

10. Wholesale Trade Industries

11. Retail Trade Industries

12. Finance, Insurance, and Real Estate Industries

13. Community, Business, Person Services

14. Operating, Office, Cafeteria, and Laboratory Supplies

15. Travel, Advertising and Promotion

16. Transportation Margins

Figure 3: Categories of Commodities in the "Small" (S) Level of Aggregation

1.	Grains	26.	Petroleum and Coal Products
2.	Other Agricultural Products	27.	Chemicals, Chemical Production
3.	Forestry Products	28.	Miscellaneous Manufactured Products
4.	Fishing and Trapping Products	29.	Residential Construction
5.	Metallic Ores and Concentrates	30.	Non-residential Construction
6.	Minerals Fuels	31.	Repair Construction
7.	Non-metallic Minerals	32.	Transportation & Storage
8.	Services Incidental to Mining	33.	Communications Services
9.	Meat, Fish and Dairy Products	34.	Other Utilities
10.	Fruit, Vegetables, Feed, Miscellaneous, Food Products	35.	Wholesale Margins
11.	Beverages	36.	Retail Margins
12.	Tobacco & Tobacco Products	37.	Imputed Rent Owner Occupied Dwellings
13.	Rubber, Leather, Plastic Fabric Products	38.	Other Finance, Insurance, Real Estate
14.	Textile Products	39.	Business Services
15.	Knitted Products & Clothing	40.	Personal & Other Miscellaneous Service
16.	Lumber, Sawmill, other Wood Products	41.	Transportation Margins
17.	Furniture and Fixtures	42.	Operating, Office, Lab. & Food
18.	Paper and Paper Products	43.	Travel, Advertising, Promotion
19.	Printing and Publishing	44.	Non-competing Imports
20.	Primary Metal Products	45.	Unallocated Imports & Exports
21.	Metal Fabricated Products	46.	Net Indirect Taxes
22.	Machinery and Equipment	47.	Labour Income
23.	Autos, Trucks, Other Transport Equipment	48.	Net Income Uninc. Business
24.	Electrical and Communications Products	49.	Other Operating Surplus
25.	Non-metallic Mineral Products		

Figure 4: Categories of Final Demand in the "Small" (S) Level of Aggregation

1.	Personal Expenditures, Durables
2.	Personal Expenditures, Semi-durables
3.	Personal expenditures, Non-durables
4.	Personal Expenditure, Services
5.	Construction, Business
6.	Construction, Government
7.	Machinery and Equipment, Business
8.	Machinery and Equipment, Government
9.	Government Gross Current Expenditures
10.	Government Sales of Goods and Services
11.	Domestic Demand
12.	Inventory Withdrawals
13.	Foreign Exports
14.	Foreign Re-exports
15.	Foreign Imports
44.	Total Final Demand

production and withdrawal from inventories. The column vectors AROC, NROC, XROC, EROC, MROC, TFROC and FMROC were defined similarly from the ROC final demand matrix. The 16x1 column vectors of total employment by industry for Manitoba and ROC are labelled LM and LC, respectively. These variables are summarized in Figure 5 and data are labelled accordingly in the Appendix.

3.2   Variable Transformations

This section describes in detail the construction of additional model variables from the basic data described above. These model variables include interregional trade coefficients, market share and technical coefficients, aggregation of matrices over the two regions, leakage coefficients (for foreign imports and inventory withdrawals), labour input-output coefficients, and coefficients for labour income, net income and net taxes.

First, the make matrices and vectors of total industrial outputs are transposed:

VMB = transpose of VMBT,

VROC = transpose of VROCT,

gMB = transpose of gMBT,

gC = transpose of gCT.

Second, interregional trade coefficients and matrices are calculated for MB and ROC. An alternative procedure would be to aggregate the individual interregional trade coefficient matrices for ROC provinces available for Statistics Canada.

Figure 5: Basic Variables for Manitoba and Rest-of-Canada (ROC) Regions

		Symbols	
	Dimensions	Manitoba	ROC
Make	43x16	VMBT	VROCT
Use	43x16	UMB	UROC
Total Industrial Outputs	1x16	gMBT	gCT
Total Commodity Outputs	43x1	qMB	qC
Government Production	43x1	AMB	AROC
Net Inventory Withdrawals	43x1	NMB	NROC
Foreign Exports	43x1	XMB	XROC
Foreign Re-exports	43x1	EMB	EROC
Foreign Imports	43x1	MMB	MROC
Total Final Demand	43x1	TFMB	TFROC
Final Demand Adjusted	43x1	FMB	FROC
Total Employment	16x1	LMB	LROC

Coefficients for Manitoba imports by commodity from ROC are defined as,

$$c_i^{CM} = \frac{z_i^{CM}}{(T_i^M + F_i^{MMB})} \qquad i = 1, ..., 43$$

(1)

where:

z_i^{CM} = total imports of commodity i from ROC, (column 42 of Manitoba final

demand, Table 15),

T_i^M = total use of intermediate input i in Manitoba, (column 17 of Manitoba use

matrix, Table 1),

F_i^{MMB} = final demand for commodity i in Manitoba, (columns 1 to 9 of Manitoba

final demand matrix, Table 15),

Similarly, coefficients for ROC imports from Manitoba are defined as,

$$c_i^{MC} = \frac{z_i^{MC}}{(T_i^C + F_i^{MC})} \qquad i = 1, ..., 43$$

(2)

where:

z_i^{MC} = total imports of commodity i from Manitoba, (column 29 of Manitoba final

demand, Table 15),

T_i^C = total use of intermediate input i in ROC, (column 17 of ROC use matrix, Table 13),

F_i^{MC} = final demand for commodity i in ROC, (columns 1 to 9 of ROC final demand matrix, Table 16),

These coefficients are arranged in two 43x1 column vectors,

$$c^{CM} = \begin{bmatrix} c_1^{CM} \\ \vdots \\ c_{43}^{CM} \end{bmatrix}$$

$$c^{MC} = \begin{bmatrix} c_1^{MC} \\ \vdots \\ c_{43}^{MC} \end{bmatrix}$$

(4)

Then these 43x1 vectors are diagonalized to 43x43 matrices:

$\hat{c}^{CM}$ = diagonalize c^{CM},

$\hat{c}^{MC}$ = diagonalize c^{MC}.

A diagonal matrix for the share of non-imports in Manitoba intermediate inputs and final demand (excluding exports) is calculated as

$$\hat{c}^{MM} = I_{43} - \hat{c}^{CM}$$

(3)

where I denotes a 43x43 identity matrix (a matrix of 0's, except 43 for 1's down the main diagonal). Similarly a diagonal matrix for the share of non-imports in ROC intermediate inputs and final demand is calculated as,

$$\hat{c}^{CC} = I_{43} - \hat{c}^{MC}$$

(4)

Finally, an aggregate 86x86 interregional trade coefficient matrix R is defined by stacking 43x43 coefficient matrices as follows (see Table 5):

$$R = \begin{matrix} \hat{c}^{MM} & \hat{c}^{MC} \\ \hat{c}^{CM} & \hat{c}^{CC} \end{matrix}$$

(5)

Third, market share and technical coefficients are calculated for each region and aggregated. Consider Manitoba. The 43x1 vector of total commodity outputs qMB is diagonalized, and this diagonal matrix is inverted:

$\hat{q}MB$ = diagonalize qMB,

$I\hat{q}M$ = inverse of $\hat{q}MB$,

and similarly for the 16x1 vector of total industrial outputs gMB:

$\hat{g}MB$ = diagonalize gMB,

$I\hat{g}MB$ = inverse of $\hat{g}MB$,

Then a 16x43 market share coefficient matrix DMB is calculated as,

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Table 5 - Interregional Trade Coefficient Matrix

		CMM	CMC	CCM	CCC
1	Grains	96.50%	13.74%	3.50%	86.26%
2	OthAgrPr	77.72%	1.55%	22.28%	98.45%
3	ForestPr	89.79%	0.18%	10.21%	99.82%
4	FishTrap	43.48%	0.00%	56.52%	100.00%
5	MetalCon	92.51%	3.15%	7.49%	96.85%
6	MinFuels	3.66%	0.64%	96.34%	99.36%
7	NonMetMn	74.91%	0.28%	25.09%	99.72%
8	MinServ	51.58%	0.57%	48.42%	99.43%
9	MeFiDaPr	76.09%	1.98%	23.91%	98.02%
10	FrVeFeMF	38.66%	1.84%	61.34%	98.16%
11	Beverage	64.03%	1.02%	35.97%	98.98%
12	TobaToPr	5.65%	0.00%	94.35%	100.00%
13	RuLePlFP	48.17%	0.77%	51.83%	99.23%
14	TextileP	48.13%	0.41%	51.87%	99.59%
15	KnitPrCl	47.76%	3.57%	52.24%	96.43%
16	LuSawOWP	39.11%	0.71%	60.89%	99.29%
17	FurnFix	47.60%	2.07%	52.40%	97.93%
18	PapPapPr	37.53%	1.07%	62.47%	98.93%
19	PrintPub	78.01%	1.25%	21.99%	98.75%
20	PrimMePr	27.94%	0.97%	72.06%	99.03%
21	MetFabPr	43.44%	1.44%	56.56%	98.56%
22	MachEqui	84.62%	0.99%	15.38%	99.01%
23	AuTruOte	79.84%	0.76%	20.16%	99.24%
24	EleComPr	29.57%	1.03%	70.43%	98.97%
25	NoMetMiP	-79.59%	0.33%	179.59%	99.67%
26	PetCoalP	4.05%	0.04%	95.95%	99.96%
27	ChemChPr	41.80%	0.51%	58.20%	99.49%
28	MiManuPr	54.32%	0.37%	45.68%	99.63%
29	ResConst	100.00%	0.00%	0.00%	100.00%
30	NonResCo	100.00%	0.00%	0.00%	100.00%
31	RepConst	100.00%	0.00%	0.00%	100.00%
32	TransSto	34.90%	3.63%	65.10%	96.37%
33	CommunSe	90.50%	0.34%	9.50%	99.66%
34	OthUtil	95.82%	0.19%	4.18%	99.81%
35	WhlsMrg	47.47%	2.83%	52.53%	97.17%
36	RtlMrg	100.00%	0.03%	0.00%	99.97%
37	ImpRent	100.00%	0.00%	0.00%	100.00%
38	OthFinan	44.88%	1.17%	55.12%	98.83%
39	BusServ	50.19%	1.27%	49.81%	98.73%
40	PersOMiS	86.77%	0.41%	13.23%	99.59%
41	TransMar	19.79%	4.81%	80.21%	95.19%
42	OpOfLaFo	99.94%	0.01%	0.06%	99.99%
43	TraAdvPr	99.28%	0.00%	0.72%	100.00%

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$$DMB = VMB * I\hat{q}MB$$

<div align="right">(6)</div>

The element i,j of DM is VM_{ij}/q_j, i.e., the share of commodity allocated to industry i. Matrix DMB defines the transformation from commodity to industry outputs: gMB = DMB * qMB. In addition, a 43x16 matrix of market share coefficients DDMB is calculated as

$$DDMB = VMBT * I\hat{g}MB$$

<div align="right">(7)</div>

Matrix DDMB defines the transformation from industry to commodity outputs: qMB = DDMB * gMB. A 43x16 technical coefficient matrix BMB is calculated as,

$$BMB = UMB * I\hat{g}MB$$

<div align="right">(8)</div>

The element i, j of BMB is UMB_{ij}/gMB_j, i.e., the input-output coefficient a_{ij} is the value of commodity i used as an intermediate input in the production of output for industry j divided by the value of output for industry j. Similarly for ROC:

$\hat{q}C$ = diagonalize qC,

$I\hat{q}C$ = inverse of $\hat{q}C$,

$\hat{g}C$ = diagonalize gC,

$I\hat{g}C$ = inverse of $\hat{g}C$,

$DROC = VROC * I\hat{q}C$ <div align="right">(9)</div>

$$DDROC = VROCT * I\hat{g}C \tag{10}$$

$$BROC = UROC * I\hat{q}C \tag{11}$$

Finally, these regional market share and technical coefficient matrices are aggregated as follows:

$$D = \begin{matrix} DMB & O_D \\ O_D & DROC \end{matrix} \tag{12}$$

$$DD = \begin{matrix} DDMB & O_{DD} \\ O_{DD} & DDROC \end{matrix} \tag{13}$$

$$B = \begin{matrix} BMB & O_B \\ O_B & BROC \end{matrix} \tag{14}$$

where O_D is a 16x43 matrix of 0's, O_{DD} is a 43x16 matrix of 0's, and O_B is a 43x16 matrix of 0's. The dimensions of D, DD and B are B 32x86, 86x32 and 86x32, respectively.

Fourth, regional vectors for total commodity outputs, adjusted final demands, government production, net inventory withdrawals, foreign exports, foreign re-exports and foreign imports are stacked as follows:

$$g = \begin{bmatrix} g^{MB} \\ \vdots \\ g^{C} \end{bmatrix}$$

$$F = \begin{bmatrix} F^{FMB} \\ \vdots \\ F^{FROC} \end{bmatrix}$$

$$A = \begin{bmatrix} A^{AMB} \\ \vdots \\ A^{AROC} \end{bmatrix}$$

$$N = \begin{bmatrix} N^{NMB} \\ \vdots \\ N^{NROC} \end{bmatrix}$$

$$X = \begin{bmatrix} X^{XMB} \\ \vdots \\ X^{XROC} \end{bmatrix}$$

$$E = \begin{bmatrix} E^{EMB} \\ \vdots \\ E^{EROC} \end{bmatrix}$$

$$M = \begin{bmatrix} M^{MMB} \\ \vdots \\ M^{MROC} \end{bmatrix}$$

The dimension of g is 32x1, and the dimensions of all other vectors are 86x1.

Fifth, coefficients (appendix Table 17) are calculated for leakages in the economy arising when foreign imports and inventory withdrawals are used to supply commodities to intermediate inputs and final demands for the economy. Diagonal matrices (86x86) of leakage coefficients $\hat{P}$

(foreign imports), and $\hat{J}$ (inventory withdrawals and government sales of goods and services) are calculated as follows:

(a) $$ZIMP = R * (B * g + F) + E \qquad (15)$$

$\hat{ZIMP}$ = diagonalize ZIMP,

$I\hat{ZIMP}$ = inverse of ZIMP,

$\hat{M}$ = diagonalize M,

$\hat{P} = \hat{M} * I\hat{ZIMP}$

(b) $$ZGOV = R * (B * g + F) + X, \qquad (16)$$

$\hat{ZGOV}$ = diagonalize $ZGOV$,

$I\hat{ZGOV}$ = inverse of $\hat{ZGOV}$,

$$\hat{N} + \hat{A} \qquad = \qquad \text{diagonalize } N + A,$$

$$\hat{J} = (\hat{N} + \hat{A}) * \hat{IZGOV} \qquad\qquad (17)$$

(since imports and net inventory withdrawals enter final demand matrices as negative numbers, there are negative signs in calculations of $\hat{M}$ and $\hat{J}$). Sixth, labour input-output coefficients are calculated for each industry in Manitoba and ROC. The 16x1 vectors of total employment by industry, LM and LC, are transposed:

LMT = transpose of LM,

LCT = transpose of LC

Then a 1x16 row vector of labour input-output coefficients by industry is calculated for each region:

$$EmpMb = LMT * \hat{Ig}M \qquad\qquad (18)$$

$$EmpC = LCT * \hat{Ig}C \qquad\qquad (19)$$

and stacked as a 1x32 row vector,

$$EMP = \begin{bmatrix} EmpMB \\ \vdots \\ EmpC \end{bmatrix}$$

Using these vectors of labour coefficients by industry, total employment by region can be calculated from industry outputs as follows:

$$TLaborMB = LabMT * gMB \qquad\qquad (20)$$

$$TLaborC = LabCT * gC \tag{21}$$

Seventh, ratios of income (INC - rows 47 and 48 in USE Matrices) and value added (VADD - rows 47,48 and 49 in Use Matrices) to industry outputs are calculated for Manitoba and ROC as follows :

$$Inc\ coef. = INC * I\hat{g} \tag{22}$$

$$Vad\ coef. = VADD * g \tag{23}$$

Where Inc Coefficient and Vad Coefficient represent a 86 x 1 column vector of income and value added coefficient.

The following transformed variables are listed in the Appendix:

$$F,\ A,\ N,\ X,\ E,\ M,\ \hat{P},\ \hat{J}$$

3.3   Model Equilibrium

Consider a simple one region model with fixed proportions between (a) intermediate inputs and outputs in production and (b) commodity and industry outputs in production. Equilibrium implies that the supply of commodities produced q is equal to intermediate demands B*g plus final demands e (column 44 from the Final Demand Matrices):

$$q = Bg + e \tag{24}$$

Fixed market shares between commodities and industries imply,

$$g = Dq. \tag{25}$$

Substituting q = B*g + e into g=D*q,

$$g = [I - B*D]^{-1}\ D * e \tag{26}$$

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so that,

$$\Delta g = [I - B*D]^{-1} D * \Delta e. \tag{27}$$

Here $[I - B*D]^{-1}D$ is the impact matrix used to calculate the effects of a change in exogenous final demands on equilibrium commodity outputs q. The two region model for Manitoba and Rest-of-Canada is more complex. A constant market shares assumption implies (as in the simple one region model),

$$g = D*q \tag{28}$$

where g, q, D are defined as in the previous section. Equilibrium now implies that supply of commodities q is equal to intermediate demand R*B*g, plus domestic final demand R*F, plus exports and re-exports X+E, minus inventory withdrawals N and government production A and foreign imports M:

$$q = R*(B*g+F)+X+E-N-A-M, \tag{29}$$

where:

$F =$ = Columns 1 to 9 from Final Demand Matrices.

The following assumptions are made about leakages in the economy: commodity imports and withdrawals from inventories are fixed proportions of domestic commodity demand. In particular,

$$M = \hat{P} * [R*(B*g+F)+E] \tag{30}$$

$$A + N = \hat{J} * [R*(B*g+F)+X]. \tag{31}$$

Substituting (28), (30)-(31) into (29), model equilibrium can be expressed in terms of industry outputs g as,

$$g = [I_{32} - D (I_{86} - \hat{P} - \hat{J}) RB]{-1} D *$$ (32)

$$* [(I - \hat{P} - \hat{J}) RF + (I - \hat{J}) X + (I - \hat{P}) E]$$

Here I_{32} and I_{86} denote 32x32 and 86x86 identity matrices, respectively. Assuming exports X and re-exports E are constant, the impact of a change in exogenous final demand F on equilibrium industrial output levels g can be calculated from the matrix equation,

$$\Delta g = Z * (I_{86} - \hat{P} - \hat{J}) * R \ \Delta F$$ (33)

where Z is the 32x86 impact matrix,

$$Z = [I_{32} - D * (I_{86} - \hat{P} - \hat{J}) * R * B]^{-1} * D .$$ (34)

ΔF is the 86x1 vector of changes in exogenous final demands for commodities in Manitoba and ROC, and Δg is the 32x1 vector of induced changes in industry outputs for Manitoba and ROC. Induced changes in commodity outputs q and employment are easily calculated from the induced changes in industry outputs g. Assuming constant proportions between commodities and industries in both regions,

$$q = DD * g .$$ (35)

Assuming fixed labour input-industry output coefficients LabM and LabC for both regions, total employment by region is defined as (see Table 6),

$$TLaborMB = LabMB * \Delta g^{MB}$$ (36)

$$TLaborC = LabC * \Delta g^{C}$$ (37)

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Table 6 - Income, Employment and Value Added Coefficients

MANITOBA		INCOME	EMPLOYMENT*	VALUE ADDED
1	Agricult	0.21275	0.01632	0.41517
2	FishgTra	0.53394	0.00860	0.63348
3	Forestry	0.34039	0.01762	0.37390
4	MiQuOiWe	0.24825	0.00717	0.60072
5	Manufact	0.22096	0.00944	0.32778
6	Construc	0.30509	0.00971	0.37715
7	TranStor	0.40782	0.01456	0.59401
8	Communic	0.49922	0.01595	0.77442
9	ElPoGaOU	0.26470	0.00755	0.90568
10	WholeTra	0.56922	0.01702	0.74000
11	RtailTra	0.59447	0.03798	0.66736
12	FiInReEs	0.31637	0.00533	0.66504
13	CoBuPeSe	0.53753	0.02977	0.64034
14	OpOfLaFo	0.00000	0.00000	0.00000
15	TraAdvPr	0.00000	0.00000	0.00000
16	TransMar	0.00000	0.00000	0.00000

ROC		INCOME	EMPLOYMENT*	VALUE ADDED
1	Agricult	0.21639	0.02136	0.43866
2	FishgTra	0.49822	0.03650	0.62978
3	Forestry	0.32527	0.00991	0.43488
4	MiQuOiWe	0.13942	0.00339	0.57772
5	Manufact	0.20596	0.00707	0.31309
6	Construc	0.30724	0.00994	0.39518
7	TranStor	0.36069	0.01315	0.52836
8	Communic	0.45311	0.01349	0.79741
9	ElPoFaOU	0.18596	0.00564	0.78261
10	WholeTra	0.48939	0.01833	0.66653
11	RtailTra	0.53198	0.03788	0.67220
12	FiInReEs	0.29373	0.00633	0.66972
13	CoBuPeSe	0.56145	0.02897	0.68915
14	OpOfLaFo	0.00000	0.00000	0.00000
15	TraAdvPr	0.00000	0.00000	0.00000
16	TransMar	0.00000	0.00000	0.00000

* Person year employment divided by output ($000).

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Thus the impacts of changes in final demands ΔF' on equilibrium commodity outputs and labour employment can be calculated from Δg as follows:

$$\Delta q = DD * \Delta g \tag{38}$$

$$\Delta TLaborMB = LabM * \Delta g^{MB} \tag{39}$$

$$\Delta TlaborC = LabC * \Delta g^{C}. \tag{40}$$

Induced changes income, value added are calculated from induced changes in industry outputs g for Manitoba and ROC as follows:,

$$\Delta INC = Inc\ Coef. * \Delta g \tag{41}$$

$$\Delta VADD = Vad\ coef. * \Delta g \tag{42}$$

3.4   Industry, Commodity, Employment and Income Impacts
Pembina Valley Water Project

The model is well suited for estimating short-run and long-run value added and employment impacts which could be generated by the water supply investment proposed for the Pembina Valley. The construction activity will generate short-run output and employment impacts of interest to regional and Manitoba governments. The usual input-output assumptions of excess capacity and labour force availability are required.

With respect to long-run impacts it was concluded by the Pembina Valley Water Task Force that economic activity in the region could decline if additional water supply was not provided. Surveys in the region (MacMillan, Chorney, Coyle and Grunau (1990) provided estimates of future manufacturing sector final demand growth expected by regional businesses. A discussion of the methodology used is given in MacMillan and Coyle (1992).

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The estimates of manufacturing and construction sectors Final Demand are given in Table 7. The Pembina Valley Water Project is assumed to have direct impacts on final demands for manufacturing (machinery and equipment) and for non residential construction in 1991. Expenditures for these categories are deflated to 1984 in order to be consistent with the I-O model defined in terms of 1984 prices (see Table 8 and 9).

Two categories of expenditures for Manitoba and Rest-of-Canada define the 86x1 vector of changes in final demands, ΔF. Given ΔF, the leakages, the R matrix and the impact matrix Z, the 32x1 vector of changes in industry output Δg is calculated from (equation 33) (see Table 10). Changes in total employment for Manitoba and ROC are calculated from equation (39) and (40). Finally, changes in income, and value added for Manitoba and ROC are calculated using equations (41) and (42) (see Table 10).

It is estimated that the present value (assuming a 10 percent discount factor), for the direct and indirect value added generated by increased manufacturing activity in the region over the project life is $2,298 million (Table 11). A value added tax rate of 2 percent on the $2,298 million will cover the $45.35 million capital cost of the water supply construction of treatment plants and water distribution pipelines. The value added shares in Table 11 provide an information input to Region, Manitoba and Canada cost sharing negotiations for the project. Past rural water supply agreements have been negotiated on the basis of a one third cost share to each of the region, province and Canada.

Table 7 - Pembina Valley Water Project: Total Final Demand Impacts of Regional
Growth and Project Construction, 1991

	Million $ (Current)		
	Manitoba	Rest-of-Canada	Canada
Impacts of Regional Growth [a]	30.11	4.49	34.60
Water Supply Project Construction [b]	25.08	34.12	59.20
TOTAL	55.19	38.61	93.80

(a) Source: MacMillan, Chorney, Coyle and Grunau, 1990 p20

(b) Source: MacMillan, Chorney, Coyle and Grunau, 1990 p18

Table 8 - Pembina Valley Water Project: Final Demand Impacts of Regional
Growth and Project Construction by sector, 1991*
Millions $ (current)

MANITOBA	Regional Growth	Project Construction
10 FrVeFeMF	8.73	0.00
13 RuLePIFP	3.16	0.00
19 PrintPub	7.78	0.00
21 MetFabPr	5.86	0.00
23 AuTruOte	4.59	0.00
30 NonResCo	0.00	25.08
35 WhlslMrg	4.57	0.00
36 RtlMarg	5.52	0.00
41 TransMar	1.51	0.00
TOTAL	41.72	25.08

REST OF CANADA	Regional Growth	Project Construction
10 FrVeFeMF	1.30	0.00
13 RuLePIFP	0.47	0.00
19 PrintPub	1.16	0.00
21 MetFabPr	0.87	0.00
23 AuTruOte	0.68	0.00
30 NonResCo	0.00	34.12
35 WhlslMrg	0.68	0.00
36 RtlMarg	0.81	0.00
41 TransMar	0.22	0.00
TOTAL	6.19	34.12
CANADA	47.91	59.20

*Wholesale, retail and transportation margins added to the values in Table 7

Table 9 - CHANGE IN FINAL DEMAND INCLUDING MARGINS - 1984*
Millions $ (current)

MANITOBA	Regional Growth	Project Construction
10 FrVeFeMF	7.68	0.00
13 RuLePIFP	2.57	0.00
19 PrintPub	5.76	0.00
21 MetFabPr	4.93	0.00
23 AuTruOte	4.81	0.00
30 NonResCo	0.00	20.98
35 WhlslMrg	4.09	0.00
36 RtlMrg	4.84	0.00
41 TransMar	1.34	0.00
TOTAL	36.02	20.98

REST OF CANADA	Regional Growth	Project Construction
10 FrVeFeMF	1.14	0.00
13 RuLePIFP	0.38	0.00
19 PrintPub	0.86	0.00
21 MetFabPr	0.77	0.00
23 AuTruOte	0.71	0.00
30 NonResCo	0.00	28.56
35 WhlslMrg	0.61	0.00
36 RtlMarg	0.71	0.00
41 TransMar	0.20	0.00
TOTAL	5.38	28.56
CANADA	41.40	49.54

*Deflated Table 8 Values, Source: Statistics Canada - Industry Price Indexes; the IPPI values from 1984 to 1986 were estimated based on the average change from 1987 to 1991.

Table 10 - Manitoba and Canada Impacts of Pembina Valley Water Supply Project
Construction and Manufacturing Sector Regional Growth, 1991

	Final Demand[a]	Output[b]	Value Added[b]	Employment (Person yr)[b]
Const	($ mill)	($ mill)	($ mill)	
Manitoba	25.08	34.31	13.60	368
Rest of Canada	34.12	75.03	31.86	772
Canada	59.20	109.34	45.46	1,140
Pembina Reg. Growth				
Manitoba	41.72	61.71	25.53	805
Rest of Canada	6.19	31.92	14.11	347
Canada	47.31	93.63	39.64	1,152

[a]Source: Table 8 above
[b]Input-output model impacts associated with changes in final demands, equations 38-42 above

Table 11 - Present Value of Value Added at Risk Without Additional Pembina Valley
Water Supply, 1991-2010 ($ million)

Location	Direct Value Added[a]	Indirect Value Added[b]	Total	Percent
Region	420.38	0	420.38	18.3
Rest of Manitoba	207.11	853.09	1060.20	46.1
Rest of Canada	110.19	708.10	818.29	35.6
Canada	737.68	1566.19	2298.87	100.0

[a]Business surveys completed for the Pembina Valley Water Task Force Study, (MacMillan, Coyle and Grunau, 1991). Manufacturing sector value added or gross domestic product at factor cost by industry components include: wages and salaries, supplementary labour income, net income of unincorporated business and operating surplus. The present value of the 1991-2010 series of increments in direct value added is calculated using a 10 percent discount rate. See Table 10 for initial 1991 values.

[b]The present value of the 1991-2010 series of increments in indirect value added is calculated using a 10 percent discount rate. See Table 10 for initial 1991 values.

A sensitivity analysis could be completed to show the effect of a range of possible interest rates, alternative forecasts of regional growth and project timing. Municipal and town water supply operating charges could also be estimated and included in a sensitivity analysis. The regional water cooperative can act as the entity to finance and operate the water supply project on behalf of the region to achieve the regional development benefits associated with the water supply project.

Forecasts of net increases in value added by local manufactures and businesses were obtained from a business survey. Reasons for the rapid growth include: high reinvestment of savings by households, highly skilled work force, locational advantages relative to U.S. and Western Canadian markets and dynamic business leadership. Projected net increases in value added over the project life of the Manitoba water project provide a measure of future regional income at risk in Canada due to declining water supply in the region. The first twenty years of the project life are used to provide a conservative estimate of benefits. Economic growth in the Pembina Valley region has been stimulated by the increasing output of manufacturing firms in the region which have historically outperformed Manitoba and Canada in terms of value added and employment growth.

4.   CONCLUSIONS

The Manitoba/Canada two region model is well suited to analysis of the distribution of economic impacts associated with regional development projects such as the Pembina Valley water supply project and other important regional changes in final demand. The model can provide estimates of value added and employment for Manitoba and the Rest of Canada which are important inputs

for the process of negotiating regional cost shares for water resource, energy and transport regional development projects by corporate, region, provincial and federal entities.

Further development of the model is required to endogenize the re-spending of labour income by households on a regional and Canadian basis. Regional industry structure is changing rapidly in Canadian manufacturing sectors. Analysis is required to incorporate changing labour productivity, industrial structure and interprovincial trade relations in the model.

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APPENDIX

Table 12 - IMPACT MATRIX -> [I - D (I - P - J) R B] -1 D -> (32 x 86)

	1	2	3	4	5	6	7	8	9	10
1	1.1768	1.1706	0.1453	0.0042	0.0067	0.0067	0.0159	0.0067	0.1576	0.1341
2	0.0001	0.0001	0.0001	1.0032	0.0000	0.0000	0.0001	0.0000	0.0009	0.0009
3	0.0007	0.0009	0.9938	0.0002	0.0003	0.0003	0.0008	0.0003	0.0079	0.0078
4	0.0057	0.0060	0.0050	0.0023	1.0252	1.0254	0.9484	1.0254	0.0537	0.0536
5	0.0854	0.0905	0.0780	0.0270	0.0336	0.0333	0.1104	0.0333	1.0901	1.0886
6	0.0125	0.0125	0.0222	0.0099	0.0162	0.0162	0.0155	0.0162	0.0072	0.0071
7	0.0047	0.0056	0.0705	0.0054	0.0068	0.0068	0.0070	0.0068	0.0085	0.0086
8	0.0057	0.0058	0.0067	0.0013	0.0047	0.0047	0.0053	0.0047	0.0108	0.0112
9	0.0129	0.0130	0.0079	0.0009	0.0170	0.0170	0.0168	0.0170	0.0160	0.0159
10	0.0226	0.0226	0.0259	0.0121	0.0138	0.0138	0.0228	0.0138	0.0233	0.0368
11	0.0071	0.0071	0.0096	0.0059	0.0043	0.0043	0.0043	0.0043	0.0190	0.0256
12	0.0272	0.0272	0.0245	0.0054	0.0394	0.0394	0.0375	0.0394	0.0152	0.0152
13	0.0117	0.0118	0.0406	0.0076	0.0233	0.0233	0.0230	0.0233	0.0197	0.0199
14	0.0358	0.0358	0.0864	0.0060	0.0347	0.0347	0.0343	0.0347	0.0306	0.0302
15	0.0038	0.0039	0.0088	0.0016	0.0091	0.0091	0.0103	0.0091	0.0227	0.0235
16	0.0034	0.0034	0.0017	0.0022	0.0016	0.0016	0.0018	0.0016	0.0047	0.0046
17	0.0492	0.0492	0.0155	0.0112	0.0064	0.0064	0.0094	0.0064	0.0494	0.0485
18	0.0008	0.0008	0.0005	0.0047	0.0003	0.0003	0.0004	0.0003	0.0019	0.0019
19	0.0063	0.0063	0.0232	0.0047	0.0021	0.0021	0.0024	0.0021	0.0072	0.0071
20	0.0379	0.0379	0.0244	0.0293	0.0322	0.0322	0.0329	0.0322	0.0444	0.0439
21	0.2738	0.2736	0.1646	0.2118	0.0915	0.0915	0.1037	0.0915	0.2651	0.2610
22	0.0057	0.0057	0.0092	0.0032	0.0044	0.0044	0.0045	0.0044	0.0056	0.0056
23	0.0319	0.0320	0.1608	0.0257	0.0235	0.0235	0.0250	0.0235	0.0447	0.0445
24	0.0063	0.0063	0.0077	0.0038	0.0041	0.0041	0.0044	0.0041	0.0070	0.0070
25	0.0072	0.0072	0.0065	0.0045	0.0042	0.0042	0.0044	0.0042	0.0074	0.0073
26	0.0297	0.0296	0.0208	0.0172	0.0160	0.0160	0.0169	0.0160	0.0299	0.0295
27	0.0033	0.0033	0.0037	0.0017	0.0017	0.0017	0.0018	0.0017	0.0033	0.0033
28	0.0523	0.0522	0.0467	0.0184	0.0612	0.0612	0.0593	0.0612	0.0381	0.0379
29	0.0189	0.0189	0.0281	0.0117	0.0215	0.0215	0.0217	0.0215	0.0240	0.0240
30	0.0113	0.0113	0.0120	0.0077	0.0055	0.0055	0.0060	0.0055	0.0117	0.0115
31	0.0087	0.0087	0.0084	0.0059	0.0048	0.0048	0.0051	0.0048	0.0088	0.0087
32	0.0180	0.0180	0.0096	0.0117	0.0078	0.0078	0.0089	0.0078	0.0230	0.0227
Total	1.9775	1.9777	2.0687	1.4687	1.5239	1.5238	1.5612	1.5238	2.0596	2.0480

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	11	12	13	14	15	16	17	18	19	20
1	0.1386	0.0000	0.1374	0.1367	0.1382	0.1298	0.1383	0.1373	0.1384	0.1382
2	0.0010	0.0000	0.0010	0.0010	0.0010	0.0009	0.0010	0.0010	0.0010	0.0010
3	0.0081	0.0000	0.0080	0.0080	0.0081	0.0076	0.0081	0.0080	0.0081	0.0081
4	0.0554	0.0000	0.0550	0.0547	0.0553	0.0518	0.0553	0.0549	0.0554	0.0553
5	1.1271	0.0000	1.1171	1.1115	1.1235	1.0523	1.1243	1.1164	1.1257	1.1242
6	0.0071	0.0000	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071
7	0.0086	0.0000	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086
8	0.0106	0.0000	0.0108	0.0109	0.0107	0.0117	0.0107	0.0108	0.0107	0.0107
9	0.0159	0.0000	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159
10	0.0231	0.0000	0.0321	0.0314	0.0264	0.0514	0.0257	0.0327	0.0244	0.0257
11	0.0048	0.0000	0.0048	0.0105	0.0048	0.0432	0.0048	0.0048	0.0048	0.0048
12	0.0146	0.0000	0.0146	0.0148	0.0146	0.0158	0.0146	0.0147	0.0146	0.0146
13	0.0197	0.0000	0.0198	0.0198	0.0198	0.0200	0.0198	0.0198	0.0198	0.0198
14	0.0307	0.0000	0.0306	0.0305	0.0307	0.0297	0.0307	0.0305	0.0307	0.0307
15	0.0228	0.0000	0.0230	0.0231	0.0228	0.0242	0.0228	0.0230	0.0228	0.0228
16	0.0048	0.0000	0.0047	0.0047	0.0047	0.0045	0.0047	0.0047	0.0047	0.0047
17	0.0501	0.0000	0.0497	0.0494	0.0499	0.0471	0.0500	0.0496	0.0500	0.0499
18	0.0019	0.0000	0.0019	0.0019	0.0019	0.0018	0.0019	0.0019	0.0019	0.0019
19	0.0073	0.0000	0.0073	0.0073	0.0073	0.0069	0.0073	0.0073	0.0073	0.0073
20	0.0450	0.0000	0.0447	0.0445	0.0449	0.0428	0.0449	0.0447	0.0450	0.0449
21	0.2679	0.0000	0.2660	0.2651	0.2672	0.2545	0.2673	0.2659	0.2676	0.2673
22	0.0057	0.0000	0.0056	0.0056	0.0057	0.0055	0.0057	0.0056	0.0057	0.0057
23	0.0453	0.0000	0.0452	0.0450	0.0453	0.0438	0.0453	0.0451	0.0453	0.0453
24	0.0070	0.0000	0.0070	0.0070	0.0070	0.0070	0.0070	0.0070	0.0070	0.0070
25	0.0074	0.0000	0.0074	0.0074	0.0074	0.0071	0.0074	0.0074	0.0074	0.0074
26	0.0303	0.0000	0.0301	0.0300	0.0302	0.0288	0.0302	0.0301	0.0302	0.0302
27	0.0033	0.0000	0.0033	0.0033	0.0033	0.0032	0.0033	0.0033	0.0033	0.0033
28	0.0375	0.0000	0.0375	0.0376	0.0375	0.0382	0.0375	0.0375	0.0375	0.0375
29	0.0241	0.0000	0.0241	0.0241	0.0241	0.0239	0.0241	0.0241	0.0241	0.0241
30	0.0118	0.0000	0.0117	0.0117	0.0118	0.0113	0.0118	0.0117	0.0118	0.0118
31	0.0089	0.0000	0.0088	0.0088	0.0089	0.0086	0.0089	0.0088	0.0089	0.0089
32	0.0234	0.0000	0.0232	0.0231	0.0234	0.0221	0.0234	0.0232	0.0234	0.0234
Total	2.0702	0.0000	2.0640	2.0610	2.0679	2.0271	2.0684	2.0635	2.0693	2.0684

	21	22	23	24	25	26	27	28	29	30
1	0.1374	0.1361	0.1338	0.1247	0.1380	0.1034	0.3518	0.1291	0.0222	0.0222
2	0.0010	0.0009	0.0009	0.0009	0.0010	0.0007	0.0008	0.0009	0.0001	0.0001
3	0.0080	0.0080	0.0078	0.0073	0.0081	0.0060	0.0064	0.0076	0.0014	0.0014
4	0.0550	0.0591	0.0536	0.0499	0.0559	0.2332	0.0440	0.0516	0.0210	0.0210
5	1.1173	1.1063	1.0876	1.0133	1.1218	0.8362	0.8882	1.0491	0.1447	0.1447
6	0.0071	0.0071	0.0082	0.0079	0.0071	0.0116	0.0082	0.0069	1.0029	1.0029
7	0.0086	0.0086	0.0386	0.0086	0.0086	0.0807	0.0078	0.0087	0.0066	0.0066
8	0.0108	0.0108	0.0110	0.0904	0.0107	0.0102	0.0099	0.0117	0.0072	0.0072
9	0.0159	0.0158	0.0157	0.0154	0.0159	0.0195	0.0152	0.0154	0.0045	0.0045
10	0.0319	0.0372	0.0297	0.0484	0.0272	0.0244	0.0429	0.0927	0.0316	0.0316
11	0.0048	0.0048	0.0049	0.0051	0.0048	0.0049	0.0053	0.0047	0.0116	0.0116
12	0.0146	0.0148	0.0147	0.0146	0.0146	0.0194	0.0174	0.0151	0.0121	0.0121
13	0.0198	0.0198	0.0204	0.0216	0.0198	0.0218	0.0182	0.0200	0.0512	0.0512
14	0.0306	0.0305	0.0304	0.0306	0.0306	0.0307	0.0314	0.0294	0.0180	0.0180
15	0.0230	0.0230	0.0227	0.0233	0.0229	0.0196	0.0192	0.0242	0.0110	0.0110
16	0.0047	0.0047	0.0046	0.0043	0.0047	0.0039	0.0044	0.0045	0.0040	0.0040
17	0.0497	0.0492	0.0486	0.0453	0.0498	0.0387	0.0490	0.0468	0.0219	0.0219
18	0.0019	0.0019	0.0019	0.0017	0.0019	0.0015	0.0016	0.0018	0.0010	0.0010
19	0.0073	0.0072	0.0072	0.0067	0.0073	0.0061	0.0070	0.0069	0.0076	0.0076
20	0.0447	0.0445	0.0444	0.0413	0.0449	0.0413	0.0428	0.0426	0.0443	0.0443
21	0.2661	0.2642	0.2636	0.2468	0.2669	0.2262	0.2651	0.2537	0.3300	0.3300
22	0.0056	0.0056	0.0057	0.0053	0.0057	0.0054	0.0056	0.0055	0.0054	0.0054
23	0.0452	0.0449	0.0465	0.0428	0.0452	0.0442	0.0421	0.0439	0.0396	0.0396
24	0.0070	0.0070	0.0070	0.0070	0.0070	0.0065	0.0068	0.0069	0.0079	0.0079
25	0.0074	0.0073	0.0073	0.0069	0.0074	0.0067	0.0073	0.0071	0.0076	0.0076
26	0.0301	0.0299	0.0297	0.0280	0.0302	0.0265	0.0297	0.0288	0.0380	0.0380
27	0.0033	0.0033	0.0033	0.0031	0.0033	0.0030	0.0033	0.0032	0.0037	0.0037
28	0.0375	0.0376	0.0374	0.0360	0.0375	0.0416	0.0405	0.0372	0.0346	0.0346
29	0.0241	0.0240	0.0241	0.0238	0.0241	0.0236	0.0229	0.0238	0.0440	0.0440
30	0.0117	0.0117	0.0117	0.0110	0.0118	0.0103	0.0115	0.0112	0.0130	0.0130
31	0.0088	0.0088	0.0088	0.0083	0.0089	0.0079	0.0088	0.0085	0.0107	0.0107
32	0.0232	0.0231	0.0228	0.0214	0.0233	0.0192	0.0219	0.0220	0.0211	0.0211
Total	2.0641	2.0578	2.0544	2.0016	2.0670	1.9349	2.0371	2.0217	1.9806	1.9806

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	31	32	33	34	35	36	37	38	39	40
1	0.0222	0.0049	0.0052	0.0012	0.0134	0.0117	0.0024	0.0064	0.0138	0.0141
2	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0002
3	0.0014	0.0002	0.0003	0.0001	0.0010	0.0002	0.0001	0.0002	0.0005	0.0007
4	0.0210	0.0033	0.0024	0.0011	0.0055	0.0020	0.0017	0.0041	0.0042	0.0108
5	0.1447	0.0295	0.0351	0.0073	0.0978	0.0279	0.0149	0.0176	0.0700	0.0719
6	1.0029	0.0464	0.0182	0.0252	0.0041	0.0091	0.0486	0.0500	0.0078	0.0104
7	0.0066	1.0366	0.0072	0.0014	0.0123	0.0095	0.0026	0.0099	0.0107	0.0158
8	0.0072	0.0195	1.0392	0.0041	0.0251	0.0269	0.0166	0.0171	0.0608	0.0277
9	0.0045	0.0094	0.0123	1.0017	0.0084	0.0267	0.0151	0.0155	0.0193	0.0196
10	0.0316	0.0128	0.0080	0.0019	0.9368	0.0052	0.0035	0.0092	0.0160	0.0607
11	0.0116	0.0074	0.0083	0.0010	0.0035	0.9877	0.0025	0.0090	0.0102	0.1073
12	0.0121	0.0166	0.0121	0.0141	0.0210	0.0401	1.0292	0.9931	0.0276	0.0554
13	0.0512	0.0422	0.0421	0.0064	0.0253	0.0331	0.0251	0.0325	0.9769	0.8171
14	0.0180	0.0226	·0.0354	0.0063	0.0138	0.0188	0.0095	0.0100	0.0352	0.0317
15	0.0110	0.0146	0.0219	0.0045	0.0417	0.0440	0.0164	0.0167	0.0301	0.0316
16	0.0040	0.0011	0.0006	0.0003	0.0008	0.0006	0.0003	0.0004	0.0010	0.0010
17	0.0219	0.0095	0.0046	0.0017	0.0075	0.0070	0.0026	0.0030	0.0085	0.0085
18	0.0010	0.0005	0.0002	0.0001	0.0003	0.0002	0.0001	0.0001	0.0004	0.0004
19	0.0076	0.0038	0.0015	0.0006	0.0020	0.0017	0.0009	0.0009	0.0022	0.0022
20	0.0443	0.0302	0.0089	0.0106	0.0125	0.0131	0.0074	0.0080	0.0146	0.0147
21	0.3300	0.1693	0.0640	0.0278	0.0818	0.0734	0.0373	0.0409	0.0958	0.0938
22	0.0054	0.0060	0.0022	0.0014	0.0031	0.0039	0.0025	0.0025	0.0033	0.0034
23	0.0396	0.0907	0.0191	0.0052	0.0270	0.0209	0.0080	0.0091	0.0191	0.0200
24	0.0079	0.0072	0.0067	0.0015	0.0055	0.0059	0.0038	0.0039	0.0060	0.0059
25	0.0076	0.0055	0.0025	0.0012	0.0030	0.0037	0.0024	0.0025	0.0036	0.0036
26	0.0380	0.0169	0.0083	0.0027	0.0107	0.0070	0.0043	0.0047	0.0118	0.0113
27	0.0037	0.0027	0.0015	0.0005	0.0014	0.0015	0.0010	0.0011	0.0020	0.0020
28	0.0346	0.0339	0.0197	0.0214	0.0334	0.0580	0.0416	0.0416	0.0399	0.0421
29	0.0440	0.0253	0.0216	0.0066	0.0199	0.0216	0.0228	0.0228	0.0256	0.0249
30	0.0130	0.0087	0.0034	0.0017	0.0043	0.0043	0.0026	0.0027	0.0048	0.0048
31	0.0107	0.0069	0.0031	0.0014	0.0040	0.0041	0.0026	0.0027	0.0044	0.0044
32	0.0211	0.0071	0.0036	0.0018	0.0047	0.0036	0.0020	0.0023	0.0057	0.0055
Total	1.9806	1.6915	1.4191	1.1627	1.4320	1.4737	1.3302	1.3404	1.5322	1.5234

	41	42	43	44	45	46	47	48	49	50
1	0.0021	0.0507	0.0244	0.0162	0.0161	0.0012	0.0007	0.0008	0.0004	0.0006
2	0.0000	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0001	0.0022	0.0014	0.0001	0.0001	0.0004	0.0000	0.0000	0.0000	0.0000
4	0.0014	0.0158	0.0110	0.0007	0.0007	0.0004	0.0004	0.0006	0.0004	0.0005
5	0.0107	0.3033	0.1841	0.0051	0.0051	0.0019	0.0013	0.0014	0.0010	0.0011
6	0.0157	0.0031	0.0079	0.0003	0.0003	0.0003	0.0001	0.0002	0.0002	0.0002
7	0.3499	0.0070	0.0705	0.0016	0.0017	0.0054	0.0013	0.0012	0.0010	0.0010
8	0.0067	0.0071	0.1037	0.0003	0.0003	0.0002	0.0001	0.0002	0.0001	0.0002
9	0.0032	0.0065	0.0086	0.0003	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001
10	0.0049	0.0717	0.0225	0.0017	0.0017	0.0011	0.0010	0.0008	0.0007	0.0008
11	0.0025	0.0482	0.0305	0.0002	0.0002	0.0001	0.0000	0.0001	0.0001	0.0001
12	0.0060	0.0088	0.0159	0.0013	0.0013	0.0011	0.0004	0.0022	0.0024	0.0024
13	0.0146	0.0266	0.1940	0.0006	0.0006	0.0007	0.0003	0.0006	0.0006	0.0006
14	0.0077	1.0110	0.0164	0.0007	0.0007	0.0003	0.0001	0.0002	0.0001	0.0001
15	0.0050	0.0115	1.0137	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001
16	1.0006	0.0061	0.0019	0.0010	0.0010	0.0004	0.0007	0.0004	0.0003	0.0003
17	0.0101	0.0325	0.0181	1.2260	1.2164	0.0443	0.0130	0.0151	0.0063	0.0094
18	0.0005	0.0014	0.0008	0.0009	0.0009	0.0005	1.0096	0.0007	0.0003	0.0004
19	0.0046	0.0090	0.0055	0.0086	0.0142	1.1659	0.0058	0.0065	0.0024	0.0038
20	0.0347	0.0449	0.0326	0.0461	0.0461	0.0276	0.0368	0.9110	1.0487	0.9945
21	0.1862	0.3878	0.2312	0.3496	0.3498	0.2051	0.2634	0.2935	0.1051	0.1724
22	0.0289	0.0062	0.0094	0.0195	0.0196	0.0272	0.0134	0.0194	0.0205	0.0200
23	0.7430	0.0507	0.1599	0.0328	0.0356	0.1344	0.0289	0.0261	0.0223	0.0238
24	0.0196	0.0099	0.0200	0.0121	0.0121	0.0117	0.0069	0.0106	0.0097	0.0102
25	0.0148	0.0089	0.0084	0.0217	0.0217	0.0108	0.0073	0.0226	0.0224	0.0224
26	0.0232	0.0791	0.0232	0.0407	0.0406	0.0329	0.0291	0.0232	0.0213	0.0269
27	0.0075	0.0041	0.0067	0.0106	0.0106	0.0138	0.0083	0.0064	0.0063	0.0063
28	0.0427	0.0340	0.0362	0.0693	0.0693	0.0762	0.0294	0.1735	0.1944	0.1863
29	0.0524	0.0276	0.0908	0.0291	0.0294	0.0680	0.0267	0.0487	0.0489	0.0489
30	0.0243	0.0151	0.0141	0.0400	0.0403	0.1124	0.0147	0.0442	0.0445	0.0443
31	0.0181	0.0137	0.0114	0.0118	0.0119	0.0154	0.0085	0.0161	0.0138	0.0148
32	0.0074	0.0302	0.0115	0.0184	0.0184	0.0085	0.0132	0.0084	0.0058	0.0067
Total	2.6493	2.3351	2.3863	1.9676	1.9671	1.9689	1.5219	1.6351	1.5803	1.5994

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	51	52	53	54	55	56	57	58	59	60
1	0.0004	0.0035	0.0033	0.0034	0.0034	0.0034	0.0034	0.0033	0.0033	0.0034
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
4	0.0004	0.0018	0.0018	0.0019	0.0019	0.0019	0.0019	0.0019	0.0018	0.0019
5	0.0010	0.0039	0.0039	0.0040	0.0040	0.0040	0.0040	0.0040	0.0039	0.0040
6	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
7	0.0010	0.0022	0.0022	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
8	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
9	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
10	0.0007	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
11	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
12	0.0025	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
13	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
14	0.0001	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
15	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
16	0.0003	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
17	0.0061	0.0782	0.0660	0.0653	0.0654	0.0652	0.0652	0.0651	0.0641	0.0653
18	0.0003	0.0037	0.0032	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
19	0.0023	0.0290	0.0288	0.0298	0.0298	0.0297	0.0297	0.0297	0.0332	0.0297
20	1.0517	0.1243	0.1232	0.1273	0.1273	0.1269	0.1270	0.1268	0.1248	0.1271
21	0.1011	1.3304	1.3189	1.3651	1.3654	1.3615	1.3625	1.3603	1.3366	1.3634
22	0.0206	0.0127	0.0126	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127
23	0.0222	0.0472	0.0472	0.0478	0.0478	0.0478	0.0477	0.0478	0.0478	0.0478
24	0.0097	0.0158	0.0162	0.0155	0.0155	0.0156	0.0155	0.0156	0.0159	0.0155
25	0.0224	0.0239	0.0238	0.0239	0.0239	0.0239	0.0239	0.0239	0.0238	0.0239
26	0.0212	0.0347	0.0464	0.0348	0.0346	0.0376	0.0357	0.0384	0.0417	0.0361
27	0.0063	0.0245	0.0297	0.0072	0.0072	0.0072	0.0082	0.0073	0.0193	0.0072
28	0.1948	0.0559	0.0562	0.0550	0.0550	0.0551	0.0551	0.0551	0.0557	0.0550
29	0.0489	0.0474	0.0476	0.0476	0.0476	0.0476	0.0476	0.0477	0.0477	0.0476
30	0.0445	0.0418	0.0415	0.0422	0.0422	0.0421	0.0421	0.0421	0.0420	0.0422
31	0.0137	0.0297	0.0304	0.0296	0.0296	0.0297	0.0297	0.0297	0.0300	0.0297
32	0.0058	0.0226	0.0224	0.0230	0.0230	0.0230	0.0230	0.0230	0.0226	0.0230
Total	1.5791	1.9386	1.9307	1.9470	1.9471	1.9457	1.9461	1.9453	1.9380	1.9464

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	61	62	63	64	65	66	67	68	69	70
1	0.0034	0.0034	0.0034	0.0033	0.0033	0.0033	0.0032	0.0033	0.0032	0.0036
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
4	0.0019	0.0019	0.0019	0.0019	0.0018	0.0019	0.0018	0.0019	0.0018	0.0018
5	0.0040	0.0040	0.0040	0.0039	0.0039	0.0039	0.0038	0.0039	0.0038	0.0038
6	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
7	0.0023	0.0023	0.0023	0.0023	0.0023	0.0022	0.0023	0.0022	0.0023	0.0022	0.0022
8	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
9	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
10	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0012	0.0013	0.0012	0.0013
11	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
12	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010
13	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
14	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
15	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
16	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0012	0.0011	0.0011
17	0.0652	0.0653	0.0652	0.0651	0.0634	0.0647	0.0622	0.0650	0.0615	0.1030
18	0.0033	0.0033	0.0033	0.0033	0.0032	0.0033	0.0032	0.0033	0.0031	0.0031
19	0.0297	0.0298	0.0297	0.0296	0.0289	0.0295	0.0283	0.0296	0.0280	0.0275
20	0.1270	0.1272	0.1275	0.1267	0.1410	0.1262	0.1213	0.1301	0.1854	0.1709
21	1.3617	1.3643	1.3629	1.3593	1.3245	1.3517	1.2988	1.3582	1.2835	1.2570
22	0.0127	0.0127	0.0127	0.0126	0.0127	0.0130	0.0130	0.0127	0.0132	0.0133
23	0.0478	0.0478	0.0478	0.0478	0.0473	0.0589	0.0467	0.0477	0.0481	0.0459
24	0.0156	0.0155	0.0155	0.0156	0.0158	0.0157	0.0565	0.0155	0.0152	0.0152
25	0.0239	0.0239	0.0239	0.0239	0.0237	0.0238	0.0231	0.0239	0.0239	0.0237
26	0.0375	0.0355	0.0361	0.0394	0.0499	0.0360	0.0459	0.0369	0.0338	0.0404
27	0.0072	0.0072	0.0072	0.0072	0.0071	0.0072	0.0072	0.0072	0.0071	0.0072
28	0.0551	0.0550	0.0551	0.0551	0.0576	0.0550	0.0541	0.0555	0.0638	0.0628
29	0.0476	0.0476	0.0476	0.0477	0.0478	0.0478	0.0481	0.0476	0.0477	0.0471
30	0.0421	0.0422	0.0422	0.0421	0.0419	0.0421	0.0413	0.0421	0.0423	0.0421
31	0.0297	0.0296	0.0297	0.0298	0.0299	0.0296	0.0296	0.0296	0.0286	0.0284
32	0.0230	0.0230	0.0230	0.0229	0.0225	0.0229	0.0220	0.0229	0.0219	0.0219
Total	1.9458	1.9467	1.9463	1.9449	1.9339	1.9443	1.9178	1.9448	1.9235	1.9262

	81	82	83	84	85	86
1	0.0002	0.0007	0.0007	0.0008	0.0028	0.0016
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
4	0.0001	0.0003	0.0003	0.0005	0.0013	0.0008
5	0.0006	0.0019	0.0018	0.0023	0.0083	0.0050
6	0.0001	0.0001	0.0001	0.0019	0.0002	0.0005
7	0.0005	0.0009	0.0010	0.0414	0.0027	0.0086
8	0.0002	0.0002	0.0002	0.0009	0.0004	0.0008
9	0.0001	0.0001	0.0001	0.0005	0.0002	0.0003
10	0.0003	0.0006	0.0006	0.0013	0.0047	0.0012
11	0.0000	0.0001	0.0001	0.0003	0.0002	0.0002
12	0.0010	0.0008	0.0009	0.0013	0.0008	0.0009
13	0.0006	0.0006	0.0006	0.0022	0.0008	0.0026
14	0.0001	0.0001	0.0001	0.0010	0.0004	0.0005
15	0.0001	0.0001	0.0001	0.0007	0.0004	0.0003
16	0.0001	0.0003	0.0003	0.0004	0.0017	0.0007
17	0.0043	0.0126	0.0128	0.0106	0.0433	0.0223
18	0.0002	0.0006	0.0006	0.0005	0.0019	0.0011
19	0.0013	0.0034	0.0052	0.0050	0.0150	0.0098
20	0.0227	0.0194	0.0215	0.0374	0.0686	0.0482
21	0.0554	0.1521	0.1538	0.1978	0.6789	0.4250
22	0.0459	0.0086	0.0132	0.0400	0.0090	0.0164
23	0.0139	0.0235	0.0299	1.0582	0.0540	0.2145
24	0.0238	0.0311	0.0278	0.0257	0.0160	0.1272
25	0.0178	0.0170	0.0198	0.0194	0.0153	0.0159
26	0.0103	0.0196	0.0581	0.0265	0.1369	0.0377
27	0.0082	0.0120	0.1113	0.0098	0.0527	0.0353
28	1.0472	0.0626	0.0978	0.0477	0.0431	0.0514
29	0.0583	1.0294	0.8440	0.0660	0.0480	0.2796
30	0.0159	0.0335	0.0315	0.0320	1.0254	0.0285
31	0.0229	0.0320	0.0344	0.0237	0.0249	1.0241
32	0.0024	0.0056	0.0055	1.0077	0.0336	0.0125
Total	1.3545	1.4697	1.4741	2.6637	2.2917	2.3733

	71	72	73	74	75	76	77	78	79	80
1	0.0033	0.0012	0.0012	0.0012	0.0007	0.0003	0.0002	0.0011	0.0006	0.0002
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0019	0.0009	0.0009	0.0009	0.0004	0.0002	0.0010	0.0005	0.0002	0.0001
5	0.0039	0.0033	0.0033	0.0033	0.0014	0.0008	0.0004	0.0017	0.0011	0.0005
6	0.0002	0.0002	0.0002	0.0002	0.0003	0.0001	0.0001	0.0002	0.0001	0.0001
7	0.0023	0.0018	0.0018	0.0018	0.0058	0.0009	0.0007	0.0019	0.0011	0.0004
8	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002
9	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
10	0.0013	0.0018	0.0018	0.0018	0.0010	0.0004	0.0002	0.0008	0.0004	0.0002
11	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000
12	0.0009	0.0007	0.0007	0.0007	0.0008	0.0004	0.0007	0.0009	0.0012	0.0010
13	0.0007	0.0010	0.0010	0.0010	0.0008	0.0005	0.0003	0.0007	0.0005	0.0006
14	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001
15	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
16	0.0012	0.0010	0.0010	0.0010	0.0004	0.0002	0.0004	0.0004	0.0002	0.0001
17	0.0645	0.0202	0.0202	0.0202	0.0111	0.0043	0.0033	0.0177	0.0142	0.0030
18	0.0033	0.0009	0.0009	0.0009	0.0005	0.0002	0.0002	0.0008	0.0003	0.0001
19	0.0294	0.0082	0.0082	0.0082	0.0053	0.0017	0.0014	0.0083	0.0023	0.0011
20	0.1257	0.0953	0.0953	0.0953	0.0393	0.0107	0.0817	0.0365	0.0173	0.0116
21	1.3470	0.3457	0.3457	0.3457	0.2073	0.0745	0.0611	0.3401	0.0992	0.0491
22	0.0126	1.0073	1.0073	1.0073	0.0430	0.0234	0.0282	0.0092	0.0125	0.0436
23	0.0477	0.0379	0.0379	0.0379	1.1392	0.0225	0.0152	0.0456	0.0283	0.0105
24	0.0159	0.0119	0.0119	0.0119	0.0275	1.0427	0.0065	0.0360	0.0318	0.0235
25	0.0238	0.0102	0.0102	0.0102	0.0207	0.0079	1.0046	0.0147	0.0290	0.0169
26	0.0489	0.0534	0.0534	0.0534	0.0280	0.0114	0.0069	0.8404	0.0105	0.0069
27	0.0072	0.0123	0.0123	0.0123	0.0105	0.0085	0.0024	0.0062	0.9907	0.0039
28	0.0552	0.0478	0.0478	0.0478	0.0502	0.0280	0.0518	0.0677	0.0959	1.0780
29	0.0479	0.0800	0.0800	0.0800	0.0703	0.0567	0.0191	0.0591	0.0535	0.0538
30	0.0419	0.0269	0.0269	0.0269	0.0342	0.0270	0.0122	0.0250	0.0226	0.0153
31	0.0301	0.0183	0.0183	0.0183	0.0253	0.0201	0.0078	0.0565	0.0478	0.0228
32	0.0228	0.0201	0.0201	0.0201	0.0081	0.0030	0.0087	0.0080	0.0039	0.0022
Total	1.9406	1.8094	1.8094	1.8094	1.7329	1.3465	1.3155	1.5806	1.4657	1.3463

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Table 13 - 1984 EMPLOYMENT AT "SMALL" LEVEL

	NFLD	PEI	N.S.	N.B.	QUE	ONT	MAN	SASK	ALTA	B.C.	YUKON	N.W.T.	TOTAL
1 AGRICULTURAL & RELATED SERVICES IND	2,166	7,179	13,052	10,267	78,325	153,581	37,912	60,323	73,642	59,747	0	0	496,192
2 FISHING & TRAPPING INDUSTRIES	6,286	274	14,346	3,797	1,879	1,997	190	141	106	5,005	0	47	34,068
3 LOGGING & FORESTRY INDUSTRIES	2,702	22	2,011	5,379	13,854	12,353	999	635	860	21,562	0	0	60,378
4 MINING, QUARRYING & OIL WELL IND.	5,498	0	3,794	2,818	15,975	27,620	5,005	9,477	62,344	13,560	397	5,936	152,422
5 MANUFACTURING INDUSTRIES	15,822	2,991	34,851	28,420	483,550	877,728	51,291	18,875	71,164	131,942	66	225	1,716,931
6 CONSTRUCTION INDUSTRIES	7,850	2,422	18,375	10,689	133,139	255,058	20,288	21,385	83,910	60,807	516	1,766	616,211
7 TRANSPORTATION & STORAGE INDUSTRIES	5,445	1,980	11,238	10,897	101,275	158,956	22,315	19,751	55,119	58,955	1,125	786	447,840
8 COMMUNICATION INDUSTRIES	3,796	736	7,072	5,295	48,421	73,948	9,227	8,415	22,845	26,315	502	706	207,283
9 OTHER UTILITY INDUSTRIES	2,153	197	2,533	2,527	25,022	37,262	4,673	3,724	7,628	8,485	106	315	94,623
10 WHOLESALE TRADE INDUSTRIES	6,697	1,417	12,692	9,802	126,527	220,603	23,792	19,161	42,416	52,459	354	1,890	517,808
11 RETAIL TRADE INDSUTRIES	24,720	5,344	45,867	37,298	334,536	508,151	54,401	49,851	136,298	154,986	1,540	2,922	1,355,915
12 FINANCE INSURANCE & REAL EST. IND.	3,712	1,309	8,456	5,877	192,422	231,657	14,931	13,333	35,416	52,234	436	684	560,467
13 COMMUNITY, BUSINESS, PERSON. SERV.	15,151	5,024	39,722	22,449	368,673	787,871	65,368	48,929	188,370	217,961	1,618	3,992	1,765,130
14 OPERATING, OFF., CAFET. & LAB. SUP.	0	0	0	0	0	0	0	0	0	0	0	0	0
15 TRAVEL, ADVERTISING & PROMOTION	0	0	0	0	0	0	0	0	0	0	0	0	0
16 TRANSPORTATION MARGINS	0	0	0	0	0	0	0	0	0	0	0	0	0
	101,998	28,895	214,009	155,515	1,923,598	3,346,785	310,392	274,000	780,118	864,018	6,660	19,269	8,025,268

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Table 14 - Rest of Canada Use Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Agricult	FishgTra	Forestry	MiQuOiWo	Manufact	Construc	TranStor	Communic	ElPoGaOU	WholeTra	RtailTra	FilnReEs	CoBuPeSe	OpOfLaFo	TraAdvPr	TransMar	Total
1 Grains	1,462.4	0.0	0.0	0.0	1,289.2	0.0	0.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	2,773.6
2 OthAgrPr	2,963.6	0.0	0.0	0.0	8,899.7	140.6	6.3	0.0	0.0	6.9	287.5	0.0	227.8	109.4	0.0	0.0	12,641.8
3 ForestPr	1.4	0.0	1,080.9	0.0	4,442.5	20.7	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	5,558.8
4 FishTrap	0.0	10.2	0.0	0.0	692.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7	5.0	0.0	0.0	719.7
5 MetalCon	0.0	0.0	0.0	0.8	5,049.8	0.0	0.0	0.0	188.0	2.0	0.0	0.0	7.5	0.0	0.0	0.0	5,248.1
6 MinFuels	23.7	0.7	0.6	108.1	20,542.2	7.1	291.1	7.1	1,253.9	24.1	99.4	156.6	88.4	0.0	0.0	0.0	22,603.0
7 NonMetMn	18.5	1.7	0.0	53.0	794.8	366.9	9.0	0.0	0.0	1.0	0.2	0.0	3.4	1.1	0.0	0.0	1,249.6
8 MinServ	0.0	0.0	0.0	1,361.0	0.0	3,216.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,577.7
9 McFiDaPr	11.2	0.0	0.0	0.0	3,474.7	0.0	0.0	0.0	0.0	3.7	14.3	0.0	1,867.6	803.7	0.0	0.0	6,175.2
10 FrVoPcMF	1,891.4	0.0	0.0	0.0	3,192.1	0.0	2.6	0.0	0.0	49.7	78.3	0.0	810.3	346.8	0.0	0.0	6,371.2
11 Beverage	0.0	0.0	0.0	0.0	345.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.2	47.7	103.1	0.0	592.3
12 TobaToPr	0.0	0.0	0.0	0.0	260.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	260.3
13 RuLePlFP	42.9	0.0	0.0	4.8	2,744.3	998.9	185.1	0.2	0.0	95.4	121.1	0.0	49.0	1,071.7	4.1	0.0	5,317.5
14 TextileP	32.2	19.8	9.4	2.9	4,067.1	587.3	26.1	3.1	0.0	14.6	33.9	0.0	170.3	140.4	0.0	0.0	5,107.1
15 KnitPrCl	0.0	0.0	0.0	0.0	392.5	0.0	0.0	0.0	0.0	0.0	31.8	0.0	10.3	155.2	0.0	0.0	589.8
16 LuSawOWP	8.2	6.2	0.0	1.6	2,597.4	2,730.4	0.0	0.0	0.0	60.2	13.7	0.0	49.7	23.9	0.0	0.0	5,491.3
17 FurnFix	0.0	0.0	0.0	0.0	168.7	46.9	0.0	0.7	0.0	0.0	1.8	6.4	4.7	0.0	0.0	0.0	229.2
18 PapPapPr	10.4	0.0	0.0	21.2	6,486.7	427.7	21.1	0.0	0.0	255.1	509.6	0.0	176.9	775.8	4.6	0.0	8,689.1
19 PrintPub	0.0	0.0	0.0	1.2	942.6	0.0	17.8	47.1	6.2	40.5	39.6	135.1	74.7	2,296.3	3,023.9	0.0	6,625.0
20 PrimMcPr	0.0	0.0	0.0	313.6	12,210.0	1,352.7	40.4	0.0	0.0	49.1	0.0	0.0	12.8	84.8	0.0	0.0	14,063.4
21 MetFabPr	66.3	3.8	42.9	24.5	4,724.8	4,681.5	27.9	0.0	0.0	118.9	102.2	0.0	24.3	940.6	0.0	0.0	10,757.7
22 MachEqui	133.2	8.4	36.8	617.2	2,495.2	471.7	8.6	0.0	0.0	32.4	0.0	21.4	0.7	1,617.0	0.0	0.0	5,442.6
23 AuTruOte	3.7	50.8	14.4	150.4	16,058.1	77.1	1,027.1	0.4	0.0	7.3	0.0	0.0	0.0	941.9	63.2	0.0	18,394.4
24 EleComPr	0.0	16.2	0.0	43.5	3,580.8	1,922.2	79.4	390.7	0.0	40.9	0.0	0.0	1.1	999.0	5.9	0.0	7,079.7
25 NoMetMiP	13.5	1.0	0.4	80.5	1,931.8	2,749.0	16.5	0.0	0.0	11.7	4.4	0.0	28.2	141.4	0.0	0.0	4,978.4
26 PetCoalP	1,123.3	132.4	221.6	765.1	5,235.0	1,295.0	3,067.7	120.3	385.7	751.5	591.3	482.2	742.5	23.4	602.2	0.0	15,539.2
27 ChemChPr	1,980.7	1.4	8.0	373.4	10,051.6	730.9	34.8	3.7	0.0	66.9	27.8	0.0	207.0	1,290.9	3.5	0.0	14,780.6
28 MiManuPr	0.0	12.5	0.0	0.3	1,461.2	419.7	20.8	25.3	0.0	21.1	28.6	0.0	326.8	832.8	191.7	0.0	3,340.8
29 ResConst	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 NonResCo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31 RepConst	219.6	8.3	87.6	421.1	897.8	27.6	1,079.4	288.1	384.0	49.6	181.6	3,323.4	170.2	0.0	0.0	0.0	7,138.3
32 TransSto	66.8	7.2	581.0	399.4	1,734.1	313.9	3,959.5	179.7	31.0	627.9	351.8	129.9	238.0	0.0	2,374.9	13,185.9	24,181.0
33 CommunSe	82.6	1.2	10.6	71.1	1,219.9	110.9	557.6	535.1	49.8	771.8	760.4	1,490.4	977.7	0.0	1,450.3	0.0	8,089.4
34 OthUtil	269.3	1.4	5.7	776.7	3,564.7	47.0	373.3	77.3	62.4	236.7	769.9	1,324.1	662.4	0.0	0.0	0.0	8,170.9
35 WhislMrg	547.7	22.8	39.8	552.7	4,804.8	2,899.4	518.2	50.4	26.4	379.9	104.4	45.2	452.1	2,470.8	166.5	0.0	13,081.1
36 RtlMarg	64.6	4.2	1.3	9.9	22.0	327.6	27.0	31.3	1.6	12.2	8.9	10.0	271.7	779.4	115.1	0.0	1,686.8
37 ImpRent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38 OthFinan	865.2	11.9	284.4	7,996.5	3,549.6	842.4	876.6	262.6	550.5	1,606.4	3,032.7	6,189.2	2,776.5	0.0	0.0	0.0	28,844.5
39 BusServ	39.6	1.7	19.5	919.8	3,097.6	2,770.0	383.5	311.0	91.0	711.5	719.4	3,273.8	1,655.6	0.0	1,377.4	0.0	15,371.4
40 PersOMiS	171.1	14.4	293.1	689.3	2,825.6	1,612.3	1,436.4	520.9	73.8	303.8	227.9	841.9	1,749.2	310.3	2,882.5	0.0	13,952.3
41 TransMar	208.0	8.0	7.8	109.9	3,682.8	837.2	89.5	8.9	113.7	46.9	37.6	14.3	114.5	381.8	47.7	0.0	5,708.6
42 OpOfLaFo	465.2	4.1	511.4	1,548.0	5,133.1	614.6	671.5	310.2	93.7	351.7	528.8	870.2	1,510.8	0.0	0.0	0.0	12,613.3
43 TraAdvPr	1.0	0.0	20.9	215.2	4,043.9	286.4	460.0	216.4	63.1	1,482.6	1,434.9	1,536.2	1,462.8	0.0	0.0	0.0	11,223.4
Total	21,459.0	928.1	5,993.2	43,524.3	235,468.6	59,955.2	32,357.3	14,685.3	15,939.5	26,952.5	34,360.9	86,176.1	58,664.6	17,030.3	13,373.3	13,185.9	680,054.1

Table 15 - Rest of Canada Make Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Agricult	FishgTra	Forestry	MiQuOiWo	Manufact	Construc	TranStor	Communic	ElPoGaOU	WholeTra	RtailTra	FilnRcEs	CoBuPcSe	OpOfLaFo	TraAdvPr	TransMar	Total
1 Grains	5,352.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,352.3
2 OthAgrPr	15,053.4	0.0	70.5	0.0	19.1	0.0	31.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15,174.3
3 ForestPr	135.0	0.0	5,789.9	0.0	65.5	0.0	0.0	0.0	8.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	6,008.9
4 FishTrap	0.0	915.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	915.6
5 MetalCon	0.0	0.0	0.0	6,281.2	1,127.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,409.0
6 MinFuels	0.0	0.0	0.0	27,432.7	87.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	27,520.8
7 NonMctMn	0.0	0.0	0.0	1,847.2	110.8	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0	1,967.8
8 MinServ	0.0	0.0	0.0	4,573.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,573.5
9 McFiDaPr	202.0	7.8	0.0	0.0	16,557.3	0.0	0.0	0.0	0.0	7.6	295.4	0.0	0.0	0.0	0.0	0.0	17,070.1
10 FrVcFeMF	29.7	0.0	0.0	0.0	13,242.3	0.0	0.0	0.0	0.0	172.7	310.7	0.0	0.0	0.0	0.0	0.0	13,755.4
11 Beverage	0.0	0.0	0.0	0.0	4,309.4	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	4,310.2
12 TobaToPr	0.0	0.0	0.0	0.0	1,629.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,629.4
13 RuLePlFP	0.0	0.0	0.0	0.0	6,221.4	0.0	0.0	0.0	0.0	19.2	0.0	0.0	0.0	0.0	0.0	0.0	6,240.6
14 TextileP	0.0	0.0	0.0	0.0	4,967.2	0.0	0.0	0.0	0.0	5.9	5.3	0.0	0.0	0.0	0.0	0.0	4,978.4
15 KnitPrCl	0.0	0.0	0.0	0.0	5,044.1	0.0	0.0	0.0	0.0	19.5	0.9	0.0	0.0	0.0	0.0	0.0	5,064.5
16 LuSawOWP	0.0	0.0	33.5	0.0	9,807.0	0.0	0.0	0.0	0.0	76.0	122.1	0.0	0.0	0.0	0.0	0.0	10,038.6
17 FurnFix	0.0	0.0	0.0	0.0	3,053.6	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	3,058.4
18 PapPapPr	0.0	0.0	0.0	0.0	18,023.5	0.0	0.0	0.0	0.0	52.5	0.0	0.0	0.0	0.0	0.0	0.0	18,076.0
19 PrintPub	0.0	0.0	0.0	0.0	8,033.9	0.0	0.0	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	8,041.0
20 PrimMePr	0.0	0.0	0.0	7.7	17,694.8	0.0	0.0	0.0	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	17,729.9
21 MctFabPr	0.0	0.0	0.0	0.0	10,743.1	0.0	0.0	0.0	0.0	52.8	0.0	0.0	0.0	0.0	0.0	0.0	10,795.9
22 MachEqui	0.0	0.0	0.0	148.8	8,592.3	0.0	0.0	0.0	0.0	140.2	0.0	0.0	0.0	0.0	0.0	0.0	8,881.3
23 AuTruOto	0.0	0.0	0.0	0.0	37,362.0	0.0	383.7	0.0	0.0	56.4	0.0	0.0	0.0	0.0	0.0	0.0	37,802.1
24 EleComPr	0.0	0.0	0.0	0.0	10,577.1	0.0	0.0	442.1	0.0	138.1	0.0	0.0	0.0	0.0	0.0	0.0	11,157.3
25 NoMctMiP	0.0	0.0	0.0	17.3	5,139.9	0.0	0.0	0.0	0.0	12.3	0.0	0.0	0.0	0.0	0.0	0.0	5,169.5
26 PctCoalP	0.0	0.0	0.0	1,663.9	24,693.2	0.0	47.2	0.0	1.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0	26,406.6
27 ChemChPr	646.1	0.0	0.0	933.6	16,585.9	0.0	0.0	0.0	0.0	116.4	0.0	0.0	0.0	0.0	0.0	0.0	18,282.0
28 MiManuPr	0.0	0.0	0.0	0.0	5,150.6	0.0	0.0	0.0	0.0	76.0	0.0	0.0	0.9	0.0	0.0	0.0	5,227.5
29 ResConst	0.0	0.0	0.0	0.0	0.0	18,093.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18,093.1
30 NonResCo	0.0	0.0	0.0	0.0	0.0	32,319.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32,319.7
31 RepConst	0.0	0.0	0.0	0.0	0.0	9,219.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9,219.5
32 TransSto	0.0	0.0	14.7	0.0	0.0	0.0	31,277.0	0.0	84.5	0.0	21.0	0.0	74.0	0.0	0.0	0.0	31,471.2
33 CommunSe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14,000.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14,000.1
34 OthUtil	0.0	0.0	0.0	2.9	34.1	0.0	0.0	0.0	15,430.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15,467.2
35 WhlslMrg	0.0	0.0	8.2	3.3	5,111.7	0.0	14.2	0.0	0.0	23,573.7	0.0	0.0	107.7	0.0	0.0	0.0	28,818.8
36 RtlMarg	0.0	0.0	0.0	0.0	0.0	0.0	39.3	0.1	132.6	0.0	28,189.1	0.0	237.2	0.0	0.0	0.0	28,598.3
37 ImpRent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30,951.5	0.0	0.0	0.0	0.0	30,951.5
38 OthFinan	41.2	0.0	2.2	546.9	145.3	168.8	136.7	24.4	46.4	157.4	229.2	53,420.5	247.6	0.0	0.0	0.0	55,166.6
39 BusServ	0.0	0.0	0.0	1.5	270.5	0.0	57.0	116.0	37.2	54.0	2.4	64.9	17,640.6	0.0	0.0	0.0	18,244.1
40 PersOMiS	0.0	4.7	73.9	65.7	1,069.3	153.9	370.5	102.9	199.8	2,159.4	5,184.5	1,738.8	40,357.0	0.0	0.0	0.0	51,480.4
41 TransMar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13,185.9	13,185.9
42 OpOfLaFo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17,030.4	0.0	0.0	17,030.4
43 TraAdvPr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13,373.2	0.0	13,373.2
Total	21,459.7	928.1	5,992.9	43,526.2	235,469.4	59,955.0	32,356.9	14,685.6	15,939.8	26,952.5	34,360.6	86,175.7	58,665.0	17,030.4	13,373.2	13,185.9	680,056.9

Table 16 - Manitoba Final Demand

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	29	42	43	44
	PerExpDu	PerExpSD	PerExpND	PerExpSe	ConstBus	ConstGov	MacEqpBu	MacEqpGo	GoCuExGr	GoReGoSe	DomDemnd	Inventor	ExpForgn	Re-Expor	ImpForgn	TrdBalfo	ExpInPrv	ImpInPrv	TrdBlTot	FinDemnd
1 Grains		0	0	0	0	0	0	0	0	0	0	-86	435	0	-17	418	381	-8	791	705
2 OthAgrPr	0	1	100	8	0	0	0	0	4	-5	109	58	271	1	-47	225	238	-224	238	405
3 ForestPr	0	0	6	0	0	0	0	0	0	0	6	-0	0	0	-0	-0	11	-6	4	10
4 FishTrap	0	0	2	0	0	0	0	0	0	0	2	0	16	0	-1	15	0	-9	6	8
5 MetalCon	0	0	0	0	0	0	0	0	0	-10	-10	-29	3	0	-0	3	165	-22	146	106
6 MinFuels	0	0	49	2	0	0	0	0	11	-7	55	1	19	0	-0	19	151	-158	12	67
7 NonMetMn	0	0	1	0	0	0	0	0	8	-0	10	1	18	0	-7	11	4	-14	1	12
8 MinServ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	-23	3	3
9 McFiDaPr	0	0	414	0	0	0	0	0	0	0	414	-2	94	0	-46	48	314	-160	202	614
10 FrVeFeMP	0	0	360	0	0	0	0	0	0	0	360	138	61	0	-105	-44	272	-411	-183	315
11 Beverage	0	0	157	0	0	0	0	0	0	0	157	17	8	0	-24	-16	43	-66	-39	135
12 TobaToPr	0	0	48	0	0	0	0	0	0	0	48	0	0	0	-3	-3	0	-45	-48	0
13 RuLePlFP	13	60	6	0	0	0	3	0	0	0	82	-7	15	1	-87	-72	57	-142	-156	-81
14 TextileP	8	39	1	1	0	0	2	0	5	0	55	-10	3	1	-92	-88	27	-115	-176	-131
15 KnitPrCl	0	255	0	0	0	0	0	0	4	-0	258	6	13	0	-83	-70	235	-143	22	286
16 LuSawOWP	4	3	0	0	0	0	1	0	0	0	8	10	34	0	-19	15	41	-104	-48	-30
17 FurnFix	74	3	0	1	0	0	25	7	1	0	110	3	7	0	-12	-5	63	-62	-4	109
18 PapPrpPr	0	4	55	0	0	0	0	0	0	0	58	18	84	0	-52	32	107	-204	-65	11
19 PrintPub	0	66	0	6	0	0	0	0	18	-4 .	86	1	6	0	-56	-49	112	-70	-6	80
20 PrimMePr	0	0	0	0	0	0	-10	0	0	0	-10	-15	380	1	-48	333	132	-209	256	231
21 MetFabPr	1	18	2	0	0	0	21	2	6	0	51	36	13	1	-90	-77	177	-216	-116	-29
22 MachEqui	10	7	0	1	0	0	328	24	10	-4	374	35	295	44	-499	-160	150	-89	-99	311
23 AuTruOte	320	0	0	0	7	0	257	21	29	-1	634	-263	335	21	-591	-235	262	-165	-139	232
24 EleComPr	176	9	0	0	0	0	122	5	6	0	318	143	78	2	-258	-177	153	-357	-382	79
25 NoMetMiP	0	21	0	0	0	0	3	0	0	0	24	315	6	0	-36	-31	19	-355	-367	-29
26 PetCoalP	0	0	252	10	0	0	0	0	43	-1	304	-0	5	0	-22	-17	10	-796	-803	-499
27 ChemChPr	1	4	117	0	0	0	0	0	56	-6	172	-6	53	1	-148	-94	98	-427	-424	-258
28 MiManuPr	73	53	17	2	0	0	24	10	20	-2	195	-31	31	2	-143	-109	32	-140	-218	-54
29 ResConst	0	0	0	0	676	3	0	0	0	0	679	0	0	0	0	0	0	0	0	679
30 NonResCo	0	0	0	0	639	358	0	0	8	0	1,005	0	0	0	0	0	0	0	0	1,005
31 RepConst	0	0	0	9	0	0	0	0	105	0	113	0	0	0	0	0	0	0	0	113
32 TransSto	0	0	27	243	0	0	0	0	30	-9	292	0	27	0	-57	-29	1,128	-732	367	659
33 CommunSe	0	0	0	210	0	0	0	0	42	-2	251	0	1	0	-5	-4	48	-52	-8	243
34 OthUtil	0	0	212	44	0	0	0	0	64	-74	245	0	96	0	0	96	30	-24	102	347
35 WhlslMrg	100	56	180	3	1	0	119	14	21	-1	493	0	115	0	-12	103	727	-540	291	784
36 RtlMarg	270	334	467	3	0	0	26	1	21	0	1,122	0	0	0	0	0	7	0	7	1,129
37 ImpRent	0	0	0	1,280	0	0	0	0	0	0	1,280	0	0	0	0	0	0	0	0	1,280
38 OthFinan	0	0	0	941	164	0	0	0	84	:65	1,124	0	0	0	-15	-15	676	-1,127	-467	657
39 BusServ	0	0	42	0	0	0	0	0	123	-38	127	0	28	0	-71	-43	249	-312	-106	22
40 PersOMiS	128	6	0	1,393	0	0	0	0	531	-224	1,834	0	5	0	-42	-37	234	-338	-141	1,693
41 TransMar	12	17	43	1	0	0	14	1	5	0	93	0	2	0	0	3	384	-224	162	255
42 OpOfLaFo	0	0	0	38	0	0	0	0	187	0	225	0	0	0	0	0	2	-0	2	227
43 TraAdvPr	0	0	0	20	0	0	0	0	95	0	115	0	0	0	0	0	0	0	-3	112
Total	1,325	1,017	2,957	4,968	1,488	362	999	94	4,365	-452	17,122	332	2,724	80	-2,945	-141	6,764	-8,094	-1,470	15,984

Table 17 - Rest of Canada Final Demand

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	23	36	43	44
	PerExpDu	PerExpSD	PerExpND	PerExpSe	ConstBus	ConstGov	MacEqpBu	MacEqpGo	GoCuExGr	GoReGoSe	DomDemnd	Inventor	ExpForgn	Re-Expor	ImpForgn	TrdBalfo	ExpMAN	ImpMAN	TrdBlTot	FinDemnd
1 Grains	0	0	0	0	0	0	0	0	0	-4	-4	-922	3,970	1	-93	3,877	8	-381	3,505	2,579
2 OthAgrPr	0	29	2,353	184	0	0	0	0	137	-26	2,677	51	1,313	16	-1,510	-182	224	-238	-195	2,533
3 ForestPr	0	0	312	0	0	0	0	0	0	-1	311	48	251	1	-157	96	6	-11	91	450
4 FishTrap	0	0	50	0	0	0	0	0	0	-3	47	4	280	4	-148	136	9	0	145	196
5 MetalCon	0	0	0	0	0	0	0	0	0	0	0	-479	4,045	7	-1,269	2,783	22	-165	2,639	2,161
6 MinFuels	0	0	898	32	0	0	0	0	206	-195	940	291	8,552	0	-4,872	3,679	158	-151	3,686	4,918
7 NonMetMn	0	6	27	0	0	0	0	0	148	-6	175	-182	1,090	2	-378	714	15	-4	724	718
8 MinServ	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	0	23	-26	-3	-4
9 MeFiDaPr	0	0	9,653	0	0	0	0	0	5	-1	9,657	97	2,420	26	-1,152	1,294	160	-314	1,140	10,895
10 PrVeFeMF	0	0	8,396	0	0	0	0	0	0	0	8,396	-132	1,222	36	-2,276	-1,019	411	-272	-880	7,384
11 Beverage	0	0	3,634	0	0	0	0	0	0	0	3,634	129	580	0	-648	-68	65	-43	-45	3,718
12 TobaToPr	0	0	1,208	0	0	0	0	0	0	0	1,208	57	105	3	-50	59	45	0	104	1,369
13 RuLePlFP	305	1,622	121	0	0	0	88	11	0	0	2,149	169	1,098	32	-2,609	-1,479	142	-57	-1,394	923
14 TextileP	261	1,014	35	11	0	0	40	4	125	0	1,490	103	500	36	-2,345	-1,810	115	-27	-1,722	-129
15 KnitPrCl	0	5,927	0	0	0	0	0	0	59	-4	5,982	248	302	15	-1,981	-1,664	143	-235	-1,755	4,475
16 LuSawOWP	103	87	2	0	0	0	34	1	0	-2	225	-165	4,982	48	-606	4,424	104	-41	4,488	4,547
17 FurnFix	1,894	76	0	15	0	0	663	142	10	-3	2,796	-97	529	9	-407	132	62	-62	131	2,829
18 PapPapPr	0	103	1,207	0	0	0	0	0	0	0	1,309	94	9,395	16	-1,526	7,885	204	-107	7,983	9,387
19 PrintPub	0	1,892	0	134	0	0	0	0	319	-74	2,271	-13	394	30	-1,223	-799	69	-112	-842	1,416
20 PrimMePr	0	0	0	0	0	0	-380	0	0	-5	-385	488	7,055	56	-3,624	3,487	209	-133	3,564	3,667
21 MetFabPr	39	441	45	0	0	0	888	69	91	-1	1,572	-207	1,522	71	-2,959	-1,366	216	-177	-1,327	39
22 MachEqui	288	196	0	10	0	0	8,538	567	152	-46	9,706	1,148	4,334	836	-12,524	-7,353	88	-150	-7,415	3,439
23 AuTruOte	8,897	0	0	0	123	0	4,840	567	1,558	-4	15,981	1,767	30,206	874	-29,323	1,756	165	-261	1,659	19,407
24 ElcComPr	3,710	254	0	0	0	0	3,495	159	104	0	7,722	322	3,570	300	-8,040	-4,171	357	-153	-3,966	4,078
25 NoMetMiP	0	459	0	0	0	0	141	1	0	0	601	-328	720	16	-1,154	-418	355	-18	-82	191
26 PetCoalP	0	0	6,782	199	0	0	0	0	1,142	-54	8,069	420	3,610	7	-2,024	1,593	796	-10	2,378	10,868
27 ChemChPr	35	128	2,962	3	0	0	331	0	1,002	-66	4,394	465	3,997	116	-5,800	-1,686	427	-97	-1,357	3,501
28 MiManuPr	1,798	1,370	439	37	0	0	804	267	444	-75	5,085	168	1,617	267	-5,358	-3,475	140	-32	-3,366	1,886
29 ResConst	0	0	0	0	18,076	17	0	0	0	0	18,093	0	0	0	0	0	0	0	0	18,093
30 NonResCo	0	0	0	0	23,683	8,525	0	0	112	0	32,320	0	0	0	0	0	0	0	0	32,320
31 RepConst	0	0	0	125	0	0	0	0	1,956	0	2,081	0	0	0	0	0	0	-0	-0	2,081
32 TransSto	0	0	504	5,003	0	0	0	0	1,375	-401	6,481	0	2,025	0	-819	1,206	732	-1,128	810	7,290
33 CommunSe	0	0	0	4,829	0	0	0	0	1,082	-39	5,871	0	331	0	-295	36	52	-48	39	5,911
34 OthUtil	0	0	5,394	1,068	0	0	0	0	1,347	-1,788	6,022	0	1,297	0	-17	1,280	24	-30	1,274	7,296
35 WhlslMrg	2,410	1,417	4,517	50	15	0	3,384	346	467	-14	12,593	0	3,772	0	-439	3,333	540	-728	3,145	15,738
36 RtlMarg	6,573	8,120	11,203	64	6	0	464	20	481	-13	26,918	0	0	0	0	0	0	-7	-7	26,911
37 ImpRent	0	0	0	30,951	0	0	0	0	0	0	30,951	0	0	0	0	0	0	0	0	30,951
38 OthFinan	0	0	0	23,414	3,596	0	0	0	1,744	-1,501	27,253	0	541	0	-1,923	-1,382	1,127	-676	-930	26,323
39 BusServ	0	0	0	964	0	0	0	0	3,358	-553	3,769	0	1,759	0	-2,718	-959	312	-249	-897	2,873
40 PersOMiS	3,242	157	0	30,365	0	0	0	0	9,653	-5,591	37,826	0	422	0	-822	-401	338	-234	-297	37,530
41 TransMar	312	418	1,020	11	3	0	354	35	112	0	2,266	0	5,361	10	0	5,371	224	-384	5,211	7,477
42 OpOfLaFo	0	0	0	798	0	0	0	0	3,620	0	4,418	0	0	0	0	0	0	-2	-2	4,417
43 TraAdvPr	0	0	0	379	0	0	0	0	1,767	0	2,146	0	0	0	0	0	3	0	3	2,150
Total	33,375	25,065	71,676	111,265	45,515	8,541	25,306	2,392	95,645	-10,469	408,310	3,568	120,364	2,867	-107,688	15,543	8,094	-6,764	16,871	428,751

Table 18 - Imports , Inventory Withdrawals and Government Sales of Goods and Services , Leakage Coefficients .

MANITOBA	P	J		CANADA	P	J
1 Grains	-0.0285	-0.0821		1 Grains	-0.0388	-0.1453
2 OthAgrPr	-0.0461	0.0411		2 OthAgrPr	-0.0984	0.0015
3 ForestPr	-0.0031	-0.0015		3 ForestPr	-0.0267	0.0077
4 FishTrap	-0.1857	0.0000		4 FishTrap	-0.1889	0.0002
5 MetalCon	-0.0002	-0.0901		5 MetalCon	-0.2482	-0.0524
6 MinFuels	-0.0006	-0.0336		6 MinFuels	-0.2052	0.0030
7 NonMetMn	-0.1404	0.0201		7 NonMetMn	-0.2621	-0.0741
8 MinServ	0.0000	0.0000		8 MinServ	0.0000	-0.0002
9 MeFiDaPr	-0.0558	-0.0020		9 MeFiDaPr	-0.0734	0.0053
10 FrVeFeMF	-0.1973	0.2336		10 FrVeFeMF	-0.1523	-0.0082
11 Beverage	-0.1492	0.0994		11 Beverage	-0.1526	0.0267
12 TobaToPr	-1.0741	0.1111		12 TobaToPr	-0.0328	0.0352
13 RuLePlFP	-0.4612	-0.0323		13 RuLePlFP	-0.3441	0.0195
14 TextileP	-0.6815	-0.0739		14 TextileP	-0.3489	0.0143
15 KnitPrCl	-0.2257	0.0148		15 KnitPrCl	-0.3048	0.0359
16 LuSawOWP	-0.1753	0.0694		16 LuSawOWP	-0.1039	-0.0155
17 FurnFix	-0.0981	0.0254		17 FurnFix	-0.1339	-0.0282
18 PapPapPr	-0.2258	0.0575		18 PapPapPr	-0.1509	0.0048
19 PrintPub	-0.1549	-0.0082		19 PrintPub	-0.1365	-0.0092
20 PrimMePr	-0.2259	-0.0259		20 PrimMePr	-0.2623	0.0232
21 MetFabPr	-0.2624	0.1014		21 MetFabPr	-0.2379	-0.0150
22 MachEqui	-0.7330	0.0337		22 MachEqui	-0.7843	0.0566
23 AuTruOte	-0.6311	-0.2107		23 AuTruOte	-0.8341	0.0273
24 EleComPr	-0.8446	0.3746		24 EleComPr	-0.5253	0.0173
25 NoMetMiP	0.2613	-2.3611		25 NoMetMiP	-0.1946	-0.0495
26 PetCoalP	-0.4920	-0.0286		26 PetCoalP	-0.0828	0.0131
27 ChemChPr	-0.3661	-0.0265		27 ChemChPr	-0.2946	0.0169
28 MiManuPr	-0.7142	-0.1455		28 MiManuPr	-0.6037	0.0091
29 ResConst	0.0000	0.0000		29 ResConst	0.0000	0.0000
30 NonResCo	0.0000	0.0000		30 NonResCo	0.0000	0.0000
31 RepConst	0.0000	0.0000		31 RepConst	0.0000	0.0000
32 TransSto	-0.0372	-0.0055		32 TransSto	-0.0267	-0.0123
33 CommunSe	-0.0085	-0.0028		33 CommunSe	-0.0211	-0.0027
34 OthUtil	0.0000	-0.1101		34 OthUtil	-0.0011	-0.1035
35 WhlslMrg	-0.0102	-0.0005		35 WhlslMrg	-0.0172	-0.0005
36 RtlMarg	0.0000	0.0000		36 RtlMarg	0.0000	-0.0005
37 ImpRent	0.0000	0.0000		37 ImpRent	0.0000	0.0000
38 OthFinan	-0.0097	-0.0405		38 OthFinan	-0.0331	-0.0256
39 BusServ	-0.1260	-0.0636		39 BusServ	-0.1376	-0.0257
40 PersOMiS	-0.0172	-0.0911		40 PersOMiS	-0.0143	-0.0966
41 TransMar	0.0000	0.0000		41 TransMar	0.0000	0.0000
42 OpOfLaFo	0.0000	0.0000		42 OpOfLaFo	0.0000	0.0000
43 TraAdvPr	0.0000	0.0000		43 TraAdvPr	0.0000	0.0000