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Adaptation of the CSO 1960 Input-Output
Table for Decision-making Use

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The object generally is to recast the 36 x 36 Table into the form of Table 4 of [1]. This latter form has been shown to be effective for decision model making, without the troublesome iterations required for other models. Feasibility (or otherwise) of different sets of assumption is determinable from the model in one piece, so to speak. The present, purely methodological, memorandum deals only with the recasting of (a) the primary input rows and (b) the stock column in the final demand quadrant. The processes used are quite elementary. D. Simpson is attending to the inter-industry quadrant and the remaining columns of final demand.

Primary Input

Basic data are three tables prepared by CSO

- A Table 4 of 1 for 9 industrial groups in which primary inputs are in the form -
1. Disposable household income
 2. Government income
 3. Transfer payments (negative)
 4. Savings etc
 5. Depreciation
 6. Income paid abroad (imports)
- B Primary input for the 9 industrial groups at A but in the categories -

- a. Indirect taxes
- b. Subsidies (negative)
- c. Wages and salaries etc
- d. Profits and rent
- e. Depreciation

C The 36-industry table in which the primary input categories are as in B except that single totals are given for d + e.

C is of much more recent date than A and B and therefore contains amendments in totals of identical scope. A and B are completely reconcilable; for each of the 9 industry groups the totals of primary input are identical; items A3 and A5 are respectively the same as Bb and Be. The problem is to recast the C version into the A version, with identical totals for each of the 36 industries.

6 Income paid abroad. The A total (all industries) of £19.090m. was revised slightly to £19.490m. in C. In the 9 groups the figures were revised upwards proportionately. In each group the resulting totals were distributed proportionately according to d + e of C.

4 Saving and 5 Depreciation. The A group totals were distributed according to d + e of C.

2. Government income. The indirect taxes part is known from C for each of the 36 industries. Direct taxes were derived for the 9 industrial groups as the difference between A2 and Ba and shown in column (2) over:-

(1) Industrial group	(2) Direct taxes (£m)	(3) Reference income total (£m)*	(4) Ratio (2) ÷ (3)
I	3.451	133.600	.025831
II	1.409	20.609	.068368
III	0.872	12.649	.068938
IV	1.348	19.557	.068927
V	1.082	17.023	.063561
VI	3.472	34.198	.101526
VII	2.318	34.325	.067531
VIII	3.038	12.039	.252347
IX	26.966	229.500	.117499

* GNP - indirect taxes + subsidies - depreciation

From the regularity of some of the ratios in column (4), it is probable that this is like the way CSO derived the estimates, originally. The ratios in column (4) were applied to the reference income for C, to give estimated direct taxes in each of the 36 industries. Government income was then given as the total of direct and indirect income.

For reconciliation, the original (A and B) totals compare with the totals as revised for direct taxes and government income as follows (£m):-

Industrial group	Direct taxes		Govt. income	
	Original	Revised	Original	Revised
I	3.451	3.369	15.010	14.928
II	1.409	1.400	3.016	2.940
III	0.872	0.840	43.421	43.390
IV	1.348	1.478	1.726	1.781
V	1.082	1.114	3.868	3.914
VI	3.467	3.661	4.703	4.534
VII	2.318	2.285	3.045	3.011
VIII	3.038	3.313	3.557	3.778
IX	26.966	27.003	40.961	36.203

Direct taxes compare satisfactorily. The only discrepancy in government income, that at IX, is obviously due to a revision in indirect taxes given as £13.995m. in A and £9.101m. in C.

3. Transfer payments are given for all 36 industries in C.

1. Disposable household income the largest constituent, is found as a residue, the difference between industrial GNP and heads 2 - 5, determined in the manner indicated.

The final estimates of Primary Input are given in Table 1. The estimate for 2 Government income for Industry 34 - Domestic service, namely £0.779m., is probably too large, though domestics do pay taxes by way of Social Security contributions. It was decided not to lower the figure because (i) such a reduction would be speculative and (ii) the resulting tiresome modification of all the multiplicity of figures would be unlikely to affect materially any of the forecasts etc derived from the Table.

A general reconciliation of the A and C versions of 1 Disposable household income in the 9 industrial groups are as follows - (over)

Reconciliation of				
	1 Disposable household income		Profits (incl. deprn.) and wages etc	
	Original	Revised (Table 1)	Original	Revised
I	130.149	129.912		
II	15.702	15.563		
III	5.977	5.435	14.449	13.985
IV	16.190	17.890	20.657	22.506
V	12.483	12.758		
VI	25.016	26.643		
VII	31.527	31.070		
VIII	7.310	8.115	14.939	16.030
IX	183.909	184.164		

As shown, proportionately sizable deviations in III, IV and VIII are fully explained by changes in basic material from the 9-stage to the 36-stage of the I-O table in profits and wages etc.

Stock Ratios

In addition to the sources mentioned above, data for this section, as regards industries included in CIP, are derived from [2], where year-end stocks are in 4 categories -

- 1 Materials
- 2 Work in progress
- 3 Goods made by the establishments
- 4 Goods purchased for resale without change

A characteristic of the Irish I-O Table is that stock changes itemised by industry pertain to Irish-made goods, with all imported stocks in a single total, whereas totals at heads 1 and 4 contain imported as well as home-made goods. The main task here is, in fact, to isolate home-made from imported goods in 1 + 4. The doubtfully includible head 4 is relatively small in the stock totals.

The methods used was to distribute 1 + 4 totals according to the ratios derived from the I-O Table for (a) home materials in the CIP industries 2 - 24 to (b) total (a) plus imports. The ratios were then multiplied industry by industry 2 - 24 to give estimates of domestic stocks. The results are shown in column (2) of Table 2 for industries 2 - 24. A reconciliation with the original 7-industry groupings is as follows (£m):- (over)

	Home produced stocks	
	Original	Revised (Table 2)
II	14.0	16.3
III	8.6	9.4
IV	11.7	10.7
V	7.8	7.0
VI	12.5	11.2
VII	0.9	1.4
VIII	<u>2.1</u>	<u>2.0</u>
Total II - VIII	57.6	58.0

It should be pointed out that in Table 2 industries 23 and 24, namely Construction and Electricity, gas, water correspond exactly to the 9-category groups VII and VIII respectively. In VII and the considerable construction part of VIII CIP operates on a "work-done" and not a "work completed" basis. Accordingly, work in progress in the case of these two industrial groups is brought to I-O account in the fixed capital formation column, insofar as it is "new"; the interindustry entries are only in respect of repairs and maintenance. For the estimation of stocks for 23 and 24, work in progress was left out of account.

The reconciliation is quite satisfactory, having regard to the nature of the data and the rather heroic expedient to which recourse was had to identify domestic stocks. The concordance of the totals at £58 million is quite remarkable.

As to stocks for heads 1 and 25 - 36, fortunately head 1 coincides with group 1, the stock figures for which, given in [2], is £204.0m. In the 36 x 36 Table no provision is made for stock changes in

heads 26 - 36 so that one may presume stock levels nil. This means that the original end-1960 level for group IX - Services - may be attributed to head 25 - Transport, trade, i.e. £38.8 m. There has been little alteration in the import total so imports stocks are set at their original level of £59.5 m. The full estimation is shown in Table 2.

CSO has been asked to supply their version of stock levels at end-1960, classified as in the I-0 table. It will be interesting to compare the two series. The derivation of the stock ratios p_i can await the reconciliation of the two sets.

TABLE 1:

Input-Output 1960 - Adaptation of PRIMARY INPUT

Industry	£ million						
	Disp. household income	Government income	Transfer Payments	Saving etc.	Depreciation	Profits paid abroad (imports)	Total Primary Input = GNP
1	129.912	14.928	- 7.317	-	6.300	-	143.823
2	4.563	0.718	-	0.390	0.354	0.289	6.314
3	2.816	0.382	-	0.542	0.491	0.369	4.600
4	1.852	0.803	- 3.178	0.262	0.238	0.179	0.156
5	2.592	0.396	-	0.347	0.314	0.236	3.885
6	4.231	0.710	-	0.438	0.397	0.299	6.075
7	2.849	0.403	-	0.288	0.260	0.196	3.996
8	1.223	0.246	- 0.159	0.221	0.200	0.150	1.881
9	4.288	15.140	-	0.468	1.405	4.145	25.446
10	1.147	28.250	-	0.132	0.395	1.165	31.089
11	7.822	0.829	- 0.100	0.480	0.473	0.395	9.899
12	10.068	0.952	-	0.639	0.627	0.524	12.810
13	3.925	0.605	-	0.369	0.335	0.273	5.507
14	7.076	1.201	- 0.023	0.638	0.578	0.472	9.942
15	1.192	0.196	-	0.083	0.075	0.061	1.607
16	3.002	0.579	- 2.239	0.594	0.539	0.440	2.915
17	1.154	0.187	-	0.111	0.101	0.082	1.635
18	1.850	0.361	-	0.466	0.422	0.345	3.444
19	4.190	0.493	-	0.430	0.254	0.447	5.814
20	3.402	0.476	-	0.423	0.250	0.439	4.990
21	5.066	2.945	- 0.149	1.005	0.596	1.045	10.508
22	3.881	0.687	-	0.659	0.596	0.488	6.311
23	31.070	3.011	-	0.280	0.800	0.204	35.365
24	8.115	3.778	-	1.600	2.900	0.102	16.495
25	62.870	14.789	- 1.797	4.298	5.855	2.888	88.903
26	6.709	1.003	- 0.145	0.260	0.353	0.174	8.354
27	9.088	4.443	-	1.937	2.637	1.300	29.405
28	11.582	2.162	- 4.759	2.788	3.796	1.872	17.441
29	25.905	3.447	-	-	-	-	29.352
30	30.212	4.213	-	0.866	1.181	0.582	37.054
31	10.391	1.460	-	0.347	0.473	0.233	12.904
32	4.294	0.729	-	0.260	0.354	0.175	5.812
33	3.392	2.519	-	0.319	0.435	0.214	6.879
34	2.275	0.396	-	0.134	0.182	0.090	3.077
35	5.851	0.779	-	-	-	-	6.630
36	1.595	0.263	-	0.026	0.034	0.017	1.935

TABLE 2

Stocks at end of 1960

Industry i	Stocks		Definitive	Gross out- put etc 1960	Stock ratio P _i (4/5)
	ERI	CSO			
1	2	3	4	5	6
£ million					
1	204.0	204.000			
2	1.7	1.601			
3	2.3	2.096			
4	2.8	2.547			
5	4.3	3.147			
6	1.0	0.830			
7	4.5	4.192			
8	1.4	1.171			
9	6.3	6.351			
10	3.1	2.322			
11	7.0	7.998			
12	3.8	3.689			
13	0.8	1.211			
14	2.1	2.511			
15	1.2	1.149			
16	1.8	1.998			
17	0.4	0.413			
18	1.3	1.632			
19	1.9	2.125			
20	2.4	2.676			
21	2.7	2.933			
22	1.9	2.056			
23	1.5	0.822			
24	2.0	2.106			
25	38.8	38.883			
26	-	-			
27	-	-			
28	-	-			
29	-	-			
30	-	-			
31	-	-			
32	-	-			
33	-	-			
34	-	.048			
35	-	-			
36	-	-			
Total, home Imports	301.0 59.5	59.500			
Total	360.5	360.007			

REFERENCES

- [1] "Towards an Input-Output Decision Model for Ireland" by R. C. Geary, SSISI, 1964-65.
- [2] ITJSB, September 1963.