

APPENDIX 1 THE SPECIFICATION OF THE ECONOMY MODEL

A1.1 The Main Relationships

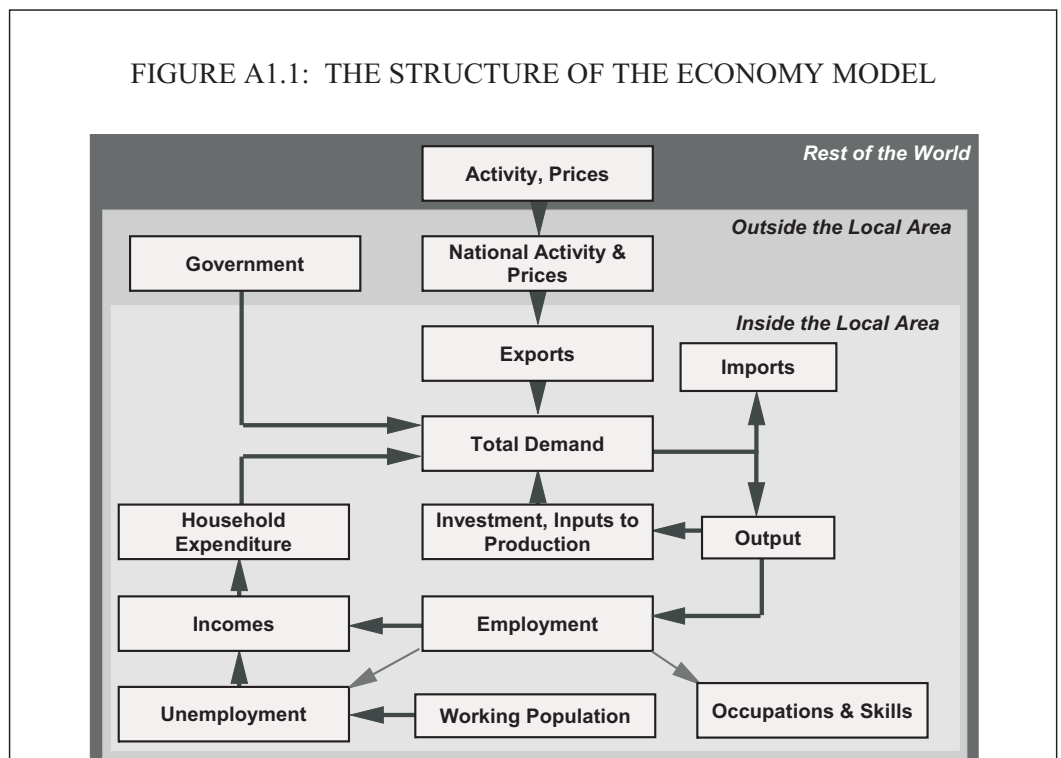
The accounting structure

Figure A1.1 summarises the model’s accounting structure, which follows the social accounting matrix approach adopted in CE’s Multisectoral Dynamic Model of the UK economy (MDM). In most cases, the variables shown in the diagram are disaggregated (eg by sector for output and employment).

Each industry’s gross output is determined as the difference between commodity demand (the sum of demand coming from the final expenditure components together with intermediate demand coming from production in the local economy) and imports to the local area. Each industry’s value added is calculated from gross output.

How the main variables are determined

Employment in the local area generates incomes. Assumptions are made for net commuting, which determines the extent to which incomes from local employment accrue to non-residents. Similarly, some incomes in the local area are derived from employment outside of the area, or from non-employment sources (eg unemployment benefit). Aggregate consumers’ expenditure by residents of the local area is determined by real personal disposable incomes (deflated by the national consumers’ expenditure deflator) and projections for the personal saving ratio (derived from changes in the regional personal saving ratio). Consumers’ expenditure is then disaggregated into spending by function according to the proportions forecast for the region.



Government final expenditure (disaggregated by type) is projected on the basis of changes in the local area's share of the region's population.

Investment by sector is determined by a simple relationship with output. Projections for social investment (eg education, health) and investment in economic services (eg roads), which are treated as assumptions at the UK level in MDM, are allocated to the local area according to population changes.

Intermediate expenditure by sector and commodity is determined by applying the national input-output coefficients to local economy gross output by sector.

Exports by sector from the local economy are linked to national gross commodity output in each sector. In effect, local firms are treated as competing in the national pool. Export projections then depend upon UK gross commodity output in each sector, and on assumptions for trends in the local economy's share of this output. In some cases, simple methods have been tried to model these export shares (eg to represent the effect of policies to promote inward investment). Imports by sector to the local economy depend on the demand for commodities in the local economy and on assumptions for import shares.

Employment by sector is determined by gross output and trends in productivity per person derived from regional projections (which in turn are derived from econometric estimates). Employment by gender and type is determined by the sectoral composition of employment and local information on the representation of genders and types of employment in each industry. The default projections for trends in this representation are based on historical data for the local area, with the user given the option to change these default values. A similar procedure is followed for employment by occupation.

Projections of the resident workforce are derived from assumptions for the population of working age (by gender) and projected participation rates which vary with the unemployment rate. Unemployment is the difference between the workforce, local employment and net commuting.

Key outputs The key outputs include:

- gross output, value added and employment by sector
- employment by gender and status
- employment by occupation
- components of final expenditure (exports and imports are treated as to/from the local economy)
- personal incomes
- demographic indicators, including unemployment

Classifications The main classifications used are presented in Tables A1.1-A1.3. In summary, the model distinguishes

- 50 employing activities, or industries (Table A1.1)

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- six types of employment (Table A1.2)
- 25 occupational categories (Table A1.3)

The industrial classification underlies most of the analysis of commodity demand and supply, including value-added by industry, although some more aggregate classifications are adopted for certain components of demand such as investment.

**TABLE A1.1: LEFM INDUSTRIES DEFINED IN TERMS OF THE 1992
AND 1980 STANDARD INDUSTRIAL CLASSIFICATIONS**

	Industry Group	SIC92	SIC80
1	Agriculture	01, 02, 05	0
2	Coal	10	11
3	Oil & Gas etc	11, 12	13
4	Other Mining	13, 14	21, 23
5	Food	15.1-15.8	41-423
6	Drink	15.9	424-428
7	Tobacco	16	429
8	Textiles	17	43
9	Clothing & Leather	18, 19	44, 45
10	Wood & Wood Products	20	461-466
11	Paper, Printing & Publishing	21, 22	471-475
12	Manufactured Fuels	23	12, 14, 152
13	Pharmaceuticals	24.4	257
14	Chemicals nes	24 (ex 24.4)	25 (ex 257), 26
15	Rubber & Plastics	25	48
16	Non-Metallic Mineral Products	26	24
17	Basic Metals	27	221-224, 311
18	Metal Goods	28	312-319, 320
19	Mechanical Engineering	29	321-329, 346
20	Electronics	30, 32	33, 344, 345
21	Electrical Engineering	31	341-343, 347, 348
22	Instruments	33	37
23	Motor Vehicles	34	35
24	Aerospace	35.3	364
25	Other Transport Equipment	35 (ex 35.3)	36 (ex 364)
26	Manufacturing nes & Recycling	36, 37	467, 49
27	Electricity	40.1	161
28	Gas Supply	40.2, 40.3	162, 163
29	Water Supply	41	17
30	Construction	45	5
31	Retailing	52	64/65 (ex 651/652)
32	Distribution nes	50, 51	61-63, 651/652, 67
33	Hotels & Catering	55	66
34	Rail Transport	60.1	71
35	Other Land Transport	60.2, 60.3	72
36	Water Transport	61	74
37	Air Transport	62	75
38	Other Transport Services	63	76, 77
39	Communications	64	79
40	Banking & Finance	65	81
41	Insurance	66	82
42	Professional Services	67, 73, 74.1-74.4	831, 832, 835-838, 94
43	Computing Services	72	8394
44	Other Business Services	70, 71, 74.5-74.8	834, 8395-6, 84-5, 923
45	Public Administration & Defence	75	91
46	Education	80	93
47	Health & Social Work	85	95, 961
48	Waste Treatment	90	921
49	Miscellaneous Services	91-99	9 (rest of)
50	Unallocated		

TABLE A1.2: EMPLOYMENT TYPES WITHIN INDUSTRIES

Male employees - Full-time

Female employees - Full-time

Male employees - Part-time

Female employees - Part-time

Male self-employed

Female self-employed

**TABLE A1.3: SOC 2000 CLASSIFICATION OF OCCUPATIONAL CATEGORIES
(SUB-MAJOR GROUPS)**

Sub-major groups	Occupations	Occupation minor group number
11 Corporate managers	Corporate managers and senior officials; production managers; functional managers; quality and customer care managers; financial institution and office managers; managers in distribution and storage; protective service officers; health and social services managers	111, 112, 113, 114, 115, 116, 117, 118
12 Managers/proprietors in agriculture and services	Managers in farming, horticulture, forestry and fishing; managers and proprietors in hospitality and leisure services; managers and proprietors in other service industries	121, 122, 123
21 Science and technology professionals	Engineering professionals; information and communication technology professionals	211, 212, 213
22 Health professionals	Health professionals, including medical and dental practitioners and veterinarians	221
23 Teaching and research professionals	Teaching professionals, including primary and secondary school teachers and higher and further education lecturers; research professionals (scientific)	231, 232
24 Business and public service professionals	Legal professionals; business and statistical professionals; architects, town planners, and surveyors; public service professionals; librarians and related professionals	241, 242, 243, 244, 245
31 Science and technology associate professionals	Science and engineering technicians; draughtspersons and building inspectors; IT service delivery occupations	311, 312, 313
32 Health and social welfare associate professionals	Health associate professionals, including nurses and other paramedics; therapists; social welfare associate professionals	321, 322, 323
33 Protective service occupations	Protective service occupations	331
34 Culture, media and sports occupations	Artistic and literary occupations; design associate professionals; media associate professionals; sports and fitness occupations	341, 342, 343, 344
35 Business and public service associate professionals	Transport associate professionals; legal associate professionals; financial associate professionals; business and related associate professionals; conservation associate professionals; public service and other associate professionals	351, 352, 353, 354, 355, 356
41 Administrative and clerical occupations	Administrative/clerical occupations: government and related organisations; finance; records; communications; general	411, 412, 413, 414, 415
42 Secretarial and related occupations	Secretarial and related occupations	421
51 Skilled agricultural trades	Agricultural trades	511
52 Skilled metal and electrical trades	Metal forming, welding and related trades; metal machining, fitting and instrument making trades; vehicle trades; electrical trades	521, 522, 523, 524
53 Skilled construction and building trades	Construction trades; building trades	531, 532
54 Other skilled trades	Textiles and garment trades; printing trades; food preparation trades; skilled trades n.e.c.	541, 542, 543, 549
61 Caring personal service occupations	Healthcare and related personal services; childcare and related personal services; animal care services	611, 612, 613
62 Leisure and other personal service occupations	Leisure and other personal service occupations; hairdressers and related occupations; housekeeping occupations; personal service occupations n.e.c.	621, 622, 623, 629
71 Sales occupations	Sales assistants and retail cashiers; sales related occupations	711, 712
72 Customer service occupations	Customer service occupations	721
81 Process plant and machine operatives	Process operatives; plant and machine operatives; assemblers and routine operatives	811, 812, 813
82 Transport and mobile machine drivers and operatives	Transport drivers and operatives; mobile machine drivers and operatives	821, 822

**TABLE A1.3 (continued): SOC 2000 CLASSIFICATION OF OCCUPATIONAL CATEGORIES
(SUB-MAJOR GROUPS)**

91	Elementary occupations: trades, plant and machine related	Elementary occupations: agricultural trades related; process and plant related; mobile machine related	911, 912, 913, 914
92	Elementary occupations: clerical and services related	Elementary occupations: clerical related; personal services related; cleansing services; security and safety services; sales related	921, 922, 923, 924, 925

Note(s) : (a) Standard Occupational Classification, 2000.