

Chapter 3

Data base summary: sectoral data

Robert McDougall and Aziz Elbehri

This chapter goes into more detail on the sectoral data in GTAP. The data reported here refer to the World economy as an aggregate. Country by country data can be found in the CD-ROM data base package that accompany this document. The sectoral data reported draw heavily on the source Input-Output (I/O) tables from varying years (see chapter 14). Since the version 4 data base has been constructed by combining these tables with 1995 macroeconomic data (see previous chapter), the flows reported here will not be identical to those in the I/O tables. Thus, these figures should be treated as *estimates* of inter-industry flows. Readers interested in analyzing a particular sector/region would be well-advised to thoroughly familiarize themselves with this information in advance, as it will play an important role in determining the outcome of any model simulations.

3.1 Disposition of sales

Tables 3.1 and 3.2 report sales summaries for the world region in all 50 GTAP sectors. Table 3.1 reports this sales information in value terms (millions of 1995 US\$), while table 3.2 provides the same information in share form. For purposes of discussion, we focus here on the world economy as an aggregate with columns representing sectoral sales to intermediate uses (IU), private consumption (C), investment (I), government consumption (G), and exports (X). The aggregate world region is used as a reference point to compare with data on specific regions. Starting with agricultural commodities at the top of this table, we see that raw milk, sugar plants, oilseeds, plant-based crops, wood, and forestry products are consumed much less directly and more are sold to

domestic processors. The opposite is true of fresh fruits, and vegetables. For wheat, crops n.e.c., animal products, and fish, sales to private consumption share are quite significant.

As expected, natural resources (coal, oil, gas, and other minerals) are either exported or sold to refineries or distribution networks. Manufactures can be broadly divided into those which sell a large share of their output to consumers (processed food, beverages, and tobacco, textiles, apparel, and leather, petroleum, machinery, and equipment) and those which sell mostly to other firms (pulp and paper, chemical and mineral products, chemicals, metals). Services are sold to both firms and households, by and large. The exceptions are construction services and water use, which are largely an intermediate input or an investment good, and dwellings, which are by definition a consumption good.

Construction is the most important component of investment in aggregate. This is followed by machinery and equipment, trade and transport activities, motor vehicles and electronics. The government is also a major purchaser of services relative to other services.

3.2 Structure of sectoral costs

Tables 3.3 and 3.4 report the structure of sectoral costs in the version 4 GTAP data base. As noted in the previous chapter, the primary factor shares in agriculture are based on econometric evidence. Elsewhere, the labor shares are inherited from the I/O tables, with capital's share claiming the residual (including returns to self employed labor in most cases).

Table 3.1 Sales summary, World (1995 US\$ million)

	IU	C	I	G	X	Total
Paddy rice	137036	49822	619	201	600	188278
Wheat	46842	24830	135	435	17247	89489
Cereal grains n.e.c.	88537	23582	120	1203	15842	129285
Vegetables, fruit, nuts	137855	234048	3532	1623	41886	418943
Oil seeds	50659	13869	557	177	12632	77893
Sugar cane, sugar beet	56237	9469	799	155	6442	73103
Plant-based fibers	33336	6170	41	51	10817	50415
Crops n.e.c.	64002	46937	2218	682	48501	162340
Cattle, sheep, etc.	171949	23458	2506	111	7029	205053
Animal prods n.e.c.	195142	90383	6925	375	14738	307563
Raw milk	139183	35049	3869	202	0	178303
Wool, silk-worm cocoons	12908	2076	135	137	4643	19899
Forestry	122487	20192	5908	1196	10710	160493
Fishing	79707	62114	455	196	10442	152914
Coal	106935	7618	94	910	22162	137720
Oil	223337	535	168	240	189004	413284
Gas	142359	8365	256	998	36572	188550
Minerals n.e.c.	158980	2035	846	1174	83231	246267
Cattle, sheep, etc. meat prods	76093	138953	302	3254	22706	241309
Meat prods n.e.c.	71696	192868	15	3019	29082	296680
Vegetable oils & fats	70041	57318	28	716	20051	148154
Dairy prods	83417	177640	21	6060	29098	296236
Processed rice	49046	104146	14	240	6116	159563
Sugar	56044	61128	94	598	14193	132057
Food prods n.e.c.	401140	720631	457	6828	124307	1253362
Beverages, tobacco prods	122185	434122	93	3740	42672	602812
Textiles	427025	172563	10267	3822	154849	768526
Wearing apparel	73686	338475	2366	4959	158653	578139
Leather prods	50868	76580	75	6351	83603	217477
Wood prods	323511	139636	80726	7952	101065	652890
Paper prods, publishing	875468	150571	446	37000	149363	1212848
Petroleum, coal prods	456887	196264	789	26648	66410	746998
Chemical, rubber, plastic prods	1659975	371090	10894	43444	570838	2656240
Mineral prods n.e.c.	558666	34128	3155	5194	62144	663286
Ferrous metals	729478	976	2545	620	164838	898458
Metals n.e.c.	286698	2612	608	1122	106788	397828
Metal prods	740292	45840	159477	15397	106478	1067484
Motor vehicles, parts	298692	320887	306905	9574	411640	1347698
Transport equipment n.e.c.	140245	105043	87496	98984	120490	552257
Electronic equipment	443927	148615	384618	31086	361493	1369739
Machinery, equipment n.e.c.	653507	105473	614805	85088	1061561	2520434
Manufactures n.e.c.	179531	119449	63130	7968	137989	508067
Electricity	632959	243820	272	41884	8203	927138
Gas manufacture, distribution	232650	139444	593	14632	0	387319
Water	147787	87888	30	9559	0	245264
Construction	685633	37921	2875770	382554	22550	4004428
Trade, transport	3560227	4171580	345161	182438	758249	9017652
Financial, business, etc. serv	5850692	3301292	154968	278420	329529	9914901
Public admin., education, etc.	654257	1594304	5260	2812780	133127	5199728
Dwellings	156475	1283766	3014	14776	0	1458031
Total	22716280	15735580	5143581	4156778	5890581	53642800

Table 3.2 Sales summary, World, 1995 (percent)

	IU	C	I	G	X	Total
Paddy rice	72.8	26.5	0.3	0.1	0.3	100.0
Wheat	52.3	27.7	0.2	0.5	19.3	100.0
Cereal grains n.e.c.	68.5	18.2	0.1	0.9	12.3	100.0
Vegetables, fruit, nuts	32.9	55.9	0.8	0.4	10.0	100.0
Oil seeds	65.0	17.8	0.7	0.2	16.2	100.0
Sugar cane, sugar beet	76.9	13.0	1.1	0.2	8.8	100.0
Plant-based fibers	66.1	12.2	0.1	0.1	21.5	100.0
Crops n.e.c.	39.4	28.9	1.4	0.4	29.9	100.0
Bovine cattle, sheep, etc.	83.9	11.4	1.2	0.1	3.4	100.0
Animal prods n.e.c.	63.4	29.4	2.3	0.1	4.8	100.0
Raw milk	78.1	19.7	2.2	0.1	0.0	100.0
Wool, silk-worm cocoons	64.9	10.4	0.7	0.7	23.3	100.0
Forestry	76.3	12.6	3.7	0.7	6.7	100.0
Fishing	52.1	40.6	0.3	0.1	6.8	100.0
Coal	77.6	5.5	0.1	0.7	16.1	100.0
Oil	54.0	0.1	0.0	0.1	45.7	100.0
Gas	75.5	4.4	0.1	0.5	19.4	100.0
Minerals n.e.c.	64.6	0.8	0.3	0.5	33.8	100.0
Cattle, sheep, etc. meat prods	31.5	57.6	0.1	1.3	9.4	100.0
Meat prods n.e.c.	24.2	65.0	0.0	1.0	9.8	100.0
Vegetable oils & fats	47.3	38.7	0.0	0.5	13.5	100.0
Dairy prods	28.2	60.0	0.0	2.0	9.8	100.0
Processed rice	30.7	65.3	0.0	0.2	3.8	100.0
Sugar	42.4	46.3	0.1	0.5	10.7	100.0
Food prods n.e.c.	32.0	57.5	0.0	0.5	9.9	100.0
Beverages, tobacco prods	20.3	72.0	0.0	0.6	7.1	100.0
Textiles	55.6	22.5	1.3	0.5	20.1	100.0
Wearing apparel	12.7	58.5	0.4	0.9	27.4	100.0
Leather prods	23.4	35.2	0.0	2.9	38.4	100.0
Wood prods	49.6	21.4	12.4	1.2	15.5	100.0
Paper prods, publishing	72.2	12.4	0.0	3.1	12.3	100.0
Petroleum, coal prods	61.2	26.3	0.1	3.6	8.9	100.0
Chemical, rubber, plastic prods	62.5	14.0	0.4	1.6	21.5	100.0
Mineral prods n.e.c.	84.2	5.1	0.5	0.8	9.4	100.0
Ferrous metals	81.2	0.1	0.3	0.1	18.3	100.0
Metals n.e.c.	72.1	0.7	0.2	0.3	26.8	100.0
Metal prods	69.3	4.3	14.9	1.4	10.0	100.0
Motor vehicles, parts	22.2	23.8	22.8	0.7	30.5	100.0
Transport equipment n.e.c.	25.4	19.0	15.8	17.9	21.8	100.0
Electronic equipment	32.4	10.8	28.1	2.3	26.4	100.0
Machinery, equipment n.e.c.	25.9	4.2	24.4	3.4	42.1	100.0
Manufactures n.e.c.	35.3	23.5	12.4	1.6	27.2	100.0
Electricity	68.3	26.3	0.0	4.5	0.9	100.0
Gas manufacture, distribution	60.1	36.0	0.2	3.8	0.0	100.0
Water	60.3	35.8	0.0	3.9	0.0	100.0
Construction	17.1	0.9	71.8	9.6	0.6	100.0
Trade, transport	39.5	46.3	3.8	2.0	8.4	100.0
Financial, business, etc. serv	59.0	33.3	1.6	2.8	3.3	100.0
Public admin., education, etc.	12.6	30.7	0.1	54.1	2.6	100.0
Dwellings	10.7	88.0	0.2	1.0	0.0	100.0
Total	42.3	29.3	9.6	7.7	11.0	100.0

Table 3.3 Cost summary, World (1995 US\$ million)

	Intermed. use	Unskilled labor	Skilled labor	Capital	Land	Natural resource	Other tax	Total
Paddy rice	55985	68750	724	28074	45115	0	-10369	188278
Wheat	44778	30005	1106	14421	13667	0	-14489	89489
Cereal grains n.e.c.	62582	38644	1611	21159	21490	0	-16201	129285
Vegetables, fruit, nuts	132166	141374	3745	64861	73516	0	3281	418943
Oil seeds	32182	23384	720	13193	16107	0	-7693	77893
Sugar cane, sugar beet	24562	23115	564	13366	13352	0	-1855	73103
Plant-based fibers	20077	14182	265	6112	9624	0	155	50415
Crops n.e.c.	52061	52989	1901	26570	28047	0	773	162340
Bovine cattle, sheep, etc.	136458	40080	1524	21862	20054	0	-14925	205053
Animal prods n.e.c.	194392	64215	1906	27428	31237	0	-11615	307563
Raw milk	106743	42407	1765	20129	18111	0	-10852	178303
Wool, silk-worm cocoons	11468	4586	124	2259	1803	0	-340	19899
Forestry	63950	33620	1098	48833	0	11048	1945	160493
Fishing	60273	23289	602	31467	0	34785	2497	152914
Coal	74245	19100	3945	14710	0	30784	-5064	137720
Oil	132237	20080	6813	145306	0	100985	7864	413284
Gas	73154	9794	4527	52376	0	43020	5679	188550
Minerals n.e.c.	132670	32900	9930	49893	0	16090	4785	246267
Cattle, sheep, etc. meat prod	197894	18730	5684	21380	0	0	-2379	241309
Meat prods n.e.c.	244116	26294	7876	21300	0	0	-2906	296680
Vegetable oils & fats	117982	11995	3943	13867	0	0	368	148154
Dairy prods	238680	26123	7501	33743	0	0	-9811	296236
Processed rice	142364	5318	1173	12263	0	0	-1554	159563
Sugar	105199	11154	3458	13541	0	0	-1295	132057
Food prods n.e.c.	859017	145317	51859	193260	0	0	3911	1253362
Beverages, tobacco prods	295175	52949	20055	99865	0	0	134769	602812
Textiles	528463	112105	27870	88504	0	0	11584	768526
Wearing apparel	376814	98552	21234	70706	0	0	10833	578139
Leather prods	144133	36020	7393	28305	0	0	1626	217477
Wood prods	405788	124411	37713	77796	0	0	7183	652890
Paper prods, publishing	735177	197826	101560	166615	0	0	11670	1212848
Petroleum, coal prods	546915	30271	13954	85555	0	0	70304	746998
Chem, rubber, plast. prod	1690758	306637	175646	407513	0	0	75686	2656240
Mineral prods n.e.c.	390689	108367	39436	111279	0	0	13516	663286
Ferrous metals	626858	106411	36746	111618	0	0	16825	898458
Metals n.e.c.	293353	43930	15103	40553	0	0	4889	397828
Metal prods	637711	218328	86487	113974	0	0	10985	1067484
Motor vehicles, parts	967654	165643	83170	105784	0	0	25447	1347698
Transport equip n.e.c.	302287	118106	61789	66643	0	0	3432	552257
Electronic equipment	826301	184622	118339	221565	0	0	18912	1369739
Machinery, equip, n.e.c.	1462009	420902	275859	314609	0	0	47055	2520434
Manufactures n.e.c.	300946	90774	32516	65732	0	0	18099	508067
Electricity	391253	87350	55444	350892	0	0	42198	927138
Gas manufacture, distrib	208295	37508	22689	109406	0	0	9422	387319
Water	125530	36819	22050	56903	0	0	3964	245264
Construction	2312007	787826	318209	537352	0	0	49035	4004428
Trade, transport	3691577	2381636	945062	1807241	0	0	192138	9017652
Financial, business, etc.	4226870	1377655	1423592	2646648	0	0	240134	9914901
Public admin., educ., etc.	1632511	1554323	1624743	352465	0	0	35686	5199728
Dwellings	292823	184356	0	949764	0	0	31088	1458031
Total	26727130	9790765	5691022	9898659	292122	236711	1006391	53642800

Table 3.4 Cost summary, World, 1995 (percent)

	Intermed. use	Unskilled labor	Skilled labor	Capital	Land	Natural resource	Other tax	Total
Paddy rice	29.7	36.5	0.4	14.9	24.0	0.0	-5.5	100.0
Wheat	50.0	33.5	1.2	16.1	15.3	0.0	-16.2	100.0
Cereal grains n.e.c.	48.4	29.9	1.2	16.4	16.6	0.0	-12.5	100.0
Vegetables, fruit, nuts	31.5	33.7	0.9	15.5	17.5	0.0	0.8	100.0
Oil seeds	41.3	30.0	0.9	16.9	20.7	0.0	-9.9	100.0
Sugar cane, sugar beet	33.6	31.6	0.8	18.3	18.3	0.0	-2.5	100.0
Plant-based fibers	39.8	28.1	0.5	12.1	19.1	0.0	0.3	100.0
Crops n.e.c.	32.1	32.6	1.2	16.4	17.3	0.0	0.5	100.0
Bovine cattle, sheep, etc.	66.5	19.5	0.7	10.7	9.8	0.0	-7.3	100.0
Animal prods n.e.c.	63.2	20.9	0.6	8.9	10.2	0.0	-3.8	100.0
Raw milk	59.9	23.8	1.0	11.3	10.2	0.0	-6.1	100.0
Wool, silk-worm cocoons	57.6	23.0	0.6	11.4	9.1	0.0	-1.7	100.0
Forestry	39.8	20.9	0.7	30.4	0.0	6.9	1.2	100.0
Fishing	39.4	15.2	0.4	20.6	0.0	22.7	1.6	100.0
Coal	53.9	13.9	2.9	10.7	0.0	22.4	-3.7	100.0
Oil	32.0	4.9	1.6	35.2	0.0	24.4	1.9	100.0
Gas	38.8	5.2	2.4	27.8	0.0	22.8	3.0	100.0
Minerals n.e.c.	53.9	13.4	4.0	20.3	0.0	6.5	1.9	100.0
Cattle, sheep, etc. meat prods	82.0	7.8	2.4	8.9	0.0	0.0	-1.0	100.0
Meat prods n.e.c.	82.3	8.9	2.7	7.2	0.0	0.0	-1.0	100.0
Vegetable oils & fats	79.6	8.1	2.7	9.4	0.0	0.0	0.2	100.0
Dairy prods	80.6	8.8	2.5	11.4	0.0	0.0	-3.3	100.0
Processed rice	89.2	3.3	0.7	7.7	0.0	0.0	-1.0	100.0
Sugar	79.7	8.4	2.6	10.3	0.0	0.0	-1.0	100.0
Food prods n.e.c.	68.5	11.6	4.1	15.4	0.0	0.0	0.3	100.0
Beverages, tobacco prods	49.0	8.8	3.3	16.6	0.0	0.0	22.4	100.0
Textiles	68.8	14.6	3.6	11.5	0.0	0.0	1.5	100.0
Wearing apparel	65.2	17.0	3.7	12.2	0.0	0.0	1.9	100.0
Leather prods	66.3	16.6	3.4	13.0	0.0	0.0	0.7	100.0
Wood prods	62.2	19.1	5.8	11.9	0.0	0.0	1.1	100.0
Paper prods, publishing	60.6	16.3	8.4	13.7	0.0	0.0	1.0	100.0
Petroleum, coal prods	73.2	4.1	1.9	11.5	0.0	0.0	9.4	100.0
Chem, rubber, plastics prod.	63.7	11.5	6.6	15.3	0.0	0.0	2.8	100.0
Mineral prods n.e.c.	58.9	16.3	5.9	16.8	0.0	0.0	2.0	100.0
Ferrous metals	69.8	11.8	4.1	12.4	0.0	0.0	1.9	100.0
Metals n.e.c.	73.7	11.0	3.8	10.2	0.0	0.0	1.2	100.0
Metal prods	59.7	20.5	8.1	10.7	0.0	0.0	1.0	100.0
Motor vehicles, parts	71.8	12.3	6.2	7.8	0.0	0.0	1.9	100.0
Transport equip n.e.c.	54.7	21.4	11.2	12.1	0.0	0.0	0.6	100.0
Electronic equipment	60.3	13.5	8.6	16.2	0.0	0.0	1.4	100.0
Machinery, equip n.e.c.	58.0	16.7	10.9	12.5	0.0	0.0	1.9	100.0
Manufactures n.e.c.	59.2	17.9	6.4	12.9	0.0	0.0	3.6	100.0
Electricity	42.2	9.4	6.0	37.8	0.0	0.0	4.6	100.0
Gas manufacture, distrib	53.8	9.7	5.9	28.2	0.0	0.0	2.4	100.0
Water	51.2	15.0	9.0	23.2	0.0	0.0	1.6	100.0
Construction	57.7	19.7	7.9	13.4	0.0	0.0	1.2	100.0
Trade, transport	40.9	26.4	10.5	20.0	0.0	0.0	2.1	100.0
Financial, business, etc. serv	42.6	13.9	14.4	26.7	0.0	0.0	2.4	100.0
Public admin., educ, etc.	31.4	29.9	31.2	6.8	0.0	0.0	0.7	100.0
Dwellings	20.1	12.6	0.0	65.1	0.0	0.0	2.1	100.0
Total	49.8	18.3	10.6	18.5	0.5	0.4	1.9	100.0