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Switzerland

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11.N.1 The Original Swiss Input-Output Table

The most recent input-output table(I-O table) for Switzerland was constructed for the year 1990 by the Laboratoire d'économie appliquée of the University of Geneva. At the Swiss Federal Institute of Technology, this input-output table was scaled for the year 1995 using macro-economic and sectoral data for the year 1995¹. This table is called IOT95. The currency is Swiss Francs.

The original input-output table includes 37 sectors presented commodity by commodity. Only ten of them correspond with the GTAP classification. Six further GTAP sectors consist of two or more IOT95 sectors. All other GTAP sectors are the result of a disaggregation of one of the original 37 sectors. The disaggregation of primary production, food industry and energy is described below². After disaggregation, the I-O table was balanced using an adjusted RAS method (MODOP). Tables 11.N.A1 and 11.N.A2 contain the concordances for the GTAP 5 and IOT95 sectors.

¹ Schnewlin, M., Ein input-output basiertes Produktionsmodell der Schweiz für 1995 mit besonderer Berücksichtigung der Energie- und Verkehrswirtschaft, Konjunkturforschungsstelle der ETH,1998, Zurich.

² A detailed description is provided in Lips, M., GTAP-Daten für die Schweiz, Institut für Agrarwirtschaft, ETH Zurich, 2000.

11.N.2 *Disaggregation of Primary Production*

Primary production (agriculture, forestry and fishery) in the IOT95 is aggregated in one sector. The disaggregation of this sector according to the GTAP sectoral classification was one of the main tasks which had to be accomplished before adding the Swiss I-O table to the GTAP data base.

Turnover for overall agriculture was estimated by the Swiss Farmers' Union³. These values, based on a "national farm" concept, were adjusted so that turnover coincides with sectoral production. The disaggregation of inputs was carried out using a number of reports prepared by the Research Station for Agricultural Economics⁴.

Some explications must be given regarding GTAP sector 11 (milk production) (see figure 11.N.1). This sector, which is one of the principal sectors in Swiss agriculture, is divided into three sub-activities: Production of roughage, breeding of cows, and milk production. Cows are considered an investment good. They are sold as capital goods and leased back by sector 11.

The sub-activity milk production produces four products: milk, cows for slaughtering, calves and fertilizer. Fertilizer is used for roughage production for other agricultural sectors or own use.

In the sub-activity breeding of cows, a distinction is made between calves for breeding, which are used in sector 11 and calves for fattening (sector 9). Output of milk is used for final demand, sector 22 (dairy products) but it is also used in sector 9 for fattening and for own use in sector 11 (in the first months milk is needed for rearing calves). After average useful life, dairy cows are transferred to sector 19 to be slaughtered.

11.N.3 *Further Disaggregations*

The turnover of GTAP 5 sectors 19 to 25 (food industry) is based on two estimations generated by the Swiss Federal Statistics Office⁵ and the Swiss Federation of Food Industry⁶. The disaggregation of the inputs used in the food industries is based on several annual reports.

³ Schweizerischer Bauernverband, Die landwirtschaftliche Gesamtrechnung der Schweiz der Jahre 1990-1997, Brugg, 1998.

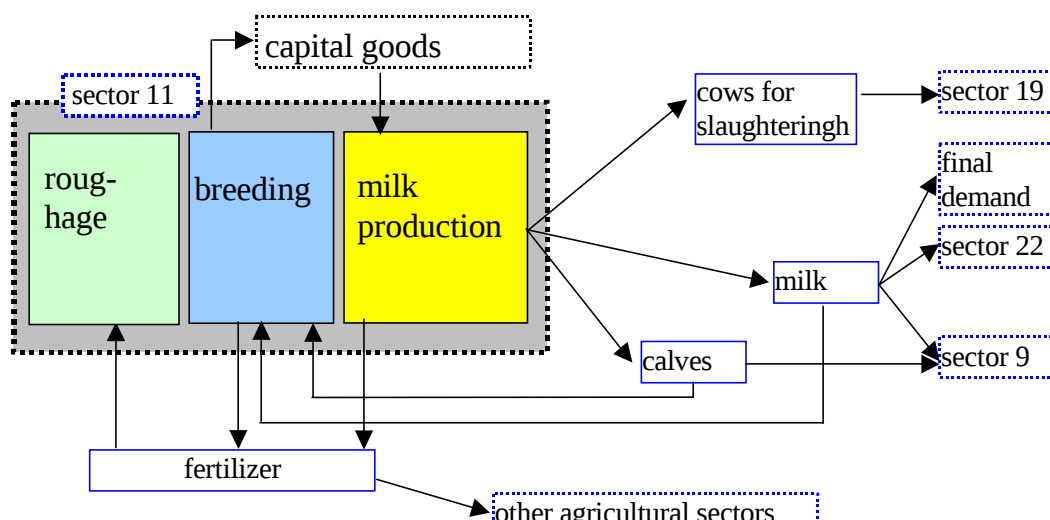
⁴ FAT, Bericht über ausgewählte Betriebsgruppen 1994/95, Ergebnisse der Zentralen Auswertung von Buchhaltungsdaten, Tänikon, 1997; FAT, Kostenstellenbericht 1995, Ergebnisse der Zentralen Auswertung von Buchhaltungsdaten, Tänikon, 1996; FAT, Hauptbericht 1995 über die Testbetriebe, Tänikon, 1997.

⁵ Bundesamt für Statistik, Produktions- und Wertschöpfungsstatistik, Buchhaltungsergebnisse schweizerischer Unternehmungen 1995/96, Bern, 1997. Bundesamt für Statistik, Betriebszählung 1995, Gesamtdarstellung der Schweiz, Bern, 1998.

⁶ FIAL, Fédération der Schweizerischen Nahrungsmittel-Industrien, Die Schweizer Nahrungsmittelindustrie Statistische, Angaben 1995, Bern, 1996.

A significant degree of the protection accorded to Swiss agriculture concerns the food industry, especially GTAP sector 22 (dairy products, for example subsidizing exports).

Figure 11.N.1. Description of Sector 11



The disaggregation of IOT95 sector 3 (electricity, gas and water supply) was conducted by ECOPLAN in close co-operation with the Swiss Federal Institute of Technology. It is based on a number of Swiss statistics relating to energy prices, sectoral use, final demand, exports and imports.

All further disaggregations (GTAP5 sectors 15-18, 34-39, 40-42, 48, 50, 54, 55) were carried out by GTAP.

11.N.4 Imports, Exports, Subsidies and VAT

The estimated imports and exports in the original Swiss I-O table were replaced by the original trade data supplied by the Swiss Federal Customs Administration⁷.

Sectoral subsidies, subsidies on intermediate demand and subsidies on final demand for agricultural and food industry sectors are based on a report prepared by the Swiss Federal Ministry of Finance⁸.

Switzerland has value added tax (VAT). The VAT on intermediate goods is reimbursed by the government. Therefore, the value added tax can be treated as a tax on final demand.

⁷ Oberzolldirektion, Schweizerische Aussenhandelsstatistik, Bern, 1996.

⁸ Eidgenössische Finanzverwaltung, Öffentliche Finanzen in der Schweiz 1995, Bern, 1997.

11-N-4

The tax base for calculating the VAT on imports is the sum of *c.i.f.*-value and duties, which means that value added tax is also paid on import duties.

Appendix

Table 11.N.A1 Concordance between GTAP5 and IOT95

GTAP Sectoral Classification		IOT95
1 pdr	Paddy rice	part of 1
2 wht	Wheat	part of 1
3 gro	Cereal grains nec	part of 1
4 v_f	Vegetables, fruit, nuts	part of 1
5 osd	Oil seeds	part of 1
6 c_b	Sugar cane, sugar beet	part of 1
7 pfb	Plant-based fibers	part of 1
8 ocr	Crops nec	part of 1
9 ctl	Bovine cattle, sheep and goats, horses	part of 1
10 oap	Animal products nec	part of 1
11 rmk	Raw milk	part of 1
12 wol	Wool, silk-worm cocoons	part of 1
13 for	Forestry	part of 1
14 fsh	Fishing	part of 1
15 col	Coal	part of 16
16 oil	Oil	part of 16
17 gas	Gas	part of 16
18 omn	Minerals nec	part of 16
19 cmt	Bovine cattle, sheep and goat, horse meat products	part of 3
20 omt	Meat products nec	part of 3
21 vol	Vegetable oils and fats	part of 3
22 mil	Dairy products	part of 3
23 pcr	Processed rice	part of 3
24 sgr	Sugar	part of 3
25 ofd	Food products nec	part of 3
26 b_t	Beverages and tobacco products	4 and 5
27 tex	Textiles	6
28 wap	Wearing apparel	7
29 lea	Leather products	12
30 lum	Wood products except furniture	9
31 ppp	Paper products, publishing	10 and 11
32 p_c	Petroleum, coal products	14
33 crp	Chemical, rubber, plastic products	13 and 15
34 nmm	Mineral products nec	part of 16
35 i_s	Ferrous metals	part of 17
36 nfm	Metals nec	part of 17

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Table 11.N.A1 Concordance between GTAP5 and IOT95 (continued)

GTAP Sectoral Classification		IOT95
37 fmp	Metal products	part of 19
38 mvh	Motor vehicles and parts	part of 18
39 otn	Transport equipment nec	part of 18
40 ele	Electronic	part of 19
41 ome	Machinery and equipment nec	part of 19
42 omf	Manufactures nec	8 and part of 19
43 ely	Electricity	part of 2
44 gdt	Gas manufacture, distribution	part of 2
45 wtr	Water	part of 2
46 cns	Construction	20 and 21
47 trd	Trade	22 to 24
48 otp	Transport nec	25 and part of 26
49 wtp	Water transport	27
50 atp	Air transport	part of 26
51 cmn	Communication	28
52 ofi	Financial services nec	29
53 isr	Insurance	30
54 obs	Business services nec	part of 32
55 ros	Recreational and other services	part of 32
56 osg	Public administration and defense, education, health	33 to 37
57 dwe	Dwellings	31

Table 11.N.A2 Concordance between IOT95 and GTAP5

IOT95	GSC2
1 Primary Production	1 to 14
2 Electricity, Gas, Water	43 to 45
3 Food products	19 to 25
4 Beverages	part of 26
5 Tobacco	part of 26
6 Textiles	27
7 Wearing apparel	28
8 Wood products furniture	part of 42
9 Wood products industry	30
10 Paper	part of 31
11 Publishing	part of 31
12 Leather products shoes	29
13 chemistry	part of 33
14 Petroleum	32
15 Rubber, plastic products	part of 33
16 not metallic minerals	15 to 18 and 34
17 Metals	35 and 36
18 Machines, Transport vehicles	38 and 39
19 Electronic watches	37 and 40 to 42
20 Construction	part of 46
21 Construction interior decoration	part of 46
22 Wholesale trade	part of 47
23 Retail trade	part of 47
24 Hotels and restaurants	part of 47
25 Railway	part of 48
26 Road and air transport	50 and part of 48
27 Water transport	49
28 Post and communication	51
29 Banks	52
30 Insurance	53
31 Dwellings	57
32 Leasing, consulting service	54 and 55
33 Education	part of 56
34 Health	part of 56
35 not market oriented services	part of 56
36 State	part of 56
37 Social Insurance	part of 56