Switzerland

Renger van Nieuwkoop[1] and Carsten Nathani[2]

1. Introduction to the Swiss Input-Output Tables

Switzerland does not have a long history in estimating input-output tables. In the past input- output tables have been estimated approximately every 5 - 10 years (Antille 2000). The estimation of these tables is based on various domestic statistics and information from foreign input-output tables. Some of the input-output tables were updated from prior tables by using RAS techniques and were compiled either by universities or private companies. The lack of official input-output tables based on primary data is twofold:

- Missing data: Important data sources usually available for compiling input-output tables, such as commodity statistics or statistics describing the cost structure of enterprises or the use of intermediate goods are missing in Switzerland.
- Missing political pressure: The European Union has made the regular compilation of input-output tables mandatory for its member countries. Although Switzerland is not a member of the EU, it has close relations with the European Union on the political, eco- nomic and cultural levels. The Agreement with the EU on cooperation in the field of statistics provides the basis for harmonizing the compilation of data and making Switzer- land's statistics comparable with those of its partners from the European Economic Area. However, Switzerland is exempted from providing input-output tables to the EU (European Commission 2006b; European Commission 2006a).

In 2004 a small consortium of people from the Technical University of Zurich and the consultancy firm Ecoplan decided not to update the existing 1995 table, but to estimate a new one for the year 2001 (Nathani, Wickart, et al. 2006). An update was seriously hampered by a change of the statistical industry classification and the change from a sales tax to a value added tax system in 1995. Furthermore, the data underlying the 1995 table reflected the state of the mid-1980s. The project was partially funded by the Swiss Federal Statistics Office. In the following years, the Federal Office of Statistics commissioned updates of the IOT to the same consortium resulting in official IOTs for the years 2001, 2005, and 200 (Nathani, van Nieuwkoop, and Wickart 2008; Nathani, Schmid, et al. 2011) The Federal Office of Statistics used the techniques developed in these projects to release an IOT for the year 2011 and 2014, and plans to release a new IOT every three years.

[1] Center of Energy Policy and Economics, Department of Management, Technology and Economics, ETH Zurich, and Modelworks, Switzerland, rengerv@ethz.ch

[2] rütter soceco, Rüschlikon, Switzerland

2. *Swiss Data source and Sector Concordances*

The Swiss IOT in the GTAP 10 Data Base is based on the symmetric energy- and transport specific IOT for the year 2014, which was developed by a consortium of consulting firms (Nathani, Zandonella, et al. 2019). This table is based on the IOT 2014 published by the Swiss Federal Office of Statistics (Bundesamt für Statistik 2018). The original table contains 76 sectors as well as tax matrices for the value added tax, other taxes, subsidies, and tariffs. The units are in million Swiss francs (CHF).

Because data definitions and classifications of the Swiss IOT do not match precisely with the requirements of GTAP, a concordance between the two classifications was constructed. Table 1 gives the mapping of the 40 sectors of the contributed IOT to the GTAP GSC2 sectors. For the 40 sectors, we use the same acronyms as the GTAP GSC2 sectors if a sector of the contributed table exactly mapped to the GSC2 sector. Table 2 gives the mapping from the 76 sectors in the Swiss IOT 2014[3] to the 40 sectors in the contributed table.

Table 1: Mapping from the GTAP sectors (column "GTAP") to the 40 sectors of the contributed IOT (column "Agg")

Nr	Agg	GTAP	Nr	Agg	GTAP
1	agr	pdr, wht, gro, v f, osd, c b, pfb, ocr, ctl, oap, rmk, wol	21	omf	omf
2	frs	frs	22	ely	ely
3	fsh	fsh	23	gdt	gdt
4	oxt	col, oil, gas, oxt	24	wtr	wtr
5	fbt	cmt, omt, vol, mil, pcr, sgr, ofd, b_t	25	cns	cns
6	twl	tex, wap, lea	26	trd	trd
7	lum	lum	27	otp	otp
8	ppp	ppp	28	wtp	wtp
9	p_c	p_c	29	atp	atp
10	chm	chm	30	whs	whs
11	bph	bph	31	cmn	cmn
12	rpp	rpp	32	afs	afs
13	nmm	nmm	33	ofi	ofi
14	i_s	i s, nfm	34	ins	ins
15	fmp	fmp	35	dwe	dwe_rsa
16	ele	ele	36	obs	obs
17	eeq	eeq	37	osg	osg
18	ome	ome	38	edu	edu
19	mvh	mvh	39	hht	hht
20	otn	otn	40	ros	ros

[3] The Swiss IOT sectors are classified according to the national NACE Rev2, called NOGA (Nomenclature Générale des Activités économiques. This classification was updated in 2008).

3. *Processing of the Swiss Source Data*

The main source for the Swiss contribution to the GTAP database is the symmetric IOT for the year 2014 mentioned above. Adjustments of the data were necessary as the Swiss IOT does not make a distinction between use in imported and domestic goods. We followed the procedures described in where the imports are treated as an additional column in the symmetric IOT. Re-exports are not permitted in the GTAP Data Base. In the case of the Swiss sectors g24a and g32 the value of exports minus imports exceed total domestic demand for a commodity, and these re-exports have been removed from imports and exports following the procedure described in GTAP `https:`

`//www.gtap.agecon.purdue.edu/databases/contribute/reexports.asp`.

Table 2: Mapping from the sectors of the Swiss symmetric IOT to the contributed IOT sectors

NOGA	Description	Agg	NOGA	Description	Agg
g01	Agriculture	agr	g41b43	Construction	cns
g02	Forestry and logging	frs	g45	Trade a. rep. of motor vehicles a. moto.	trd
g03	Fishing and aquaculture	fsh	g46	Wholesale trade, exc. of motor vehicles	trd
g05b09	Mining, Extraction of crude petroleum and gas, metal ores, supporting activities	oxt	g47	Retail trade, exc. motor vehicles	trd
g10b12	Manufacture of food products, beverages and tobacco products	fbt	g49a	Passenger rail transport	otp
g13b15	Ma. of textiles, wearing apparel and leather products	twl -	g49b	Goods rail transport	otp
g16	Ma. of wood a. of prod. of wood a. cork	lum	g49c	Rail infrastructure	otp
g17	Ma. of paper and paper products	ppp	g49d	Other scheduled passenger land transport	otp
g18	Printing and reprod. of recorded media	ppp	g49e	Taxi operation, Other land passenger transport	otp
g19	Ma. of coke and refined petroleum prod.	p c	g49f	Freight transport by road	otp
g20	Ma. of chemicals and chemical prod.	chm	g49g	Transport via pipelines	otp
g21	Ma. of pharmaceutical prod. a. prep.	bph	g50	Water transport	wtp
g22	Ma. of rubber and plastic products	rpp	g51	Air transport	atp
g23	Ma. of o. non-metallic mineral prod.	nmm	g52a	Water transport infrastructure	whs
g24a	Manufacture of basic metals	i s	g52b	Air transport infrastructure	whs
g24b	Nuclear fuel	ome	g52c	Other supporting and auxiliary transport activities	whs
g25	Ma. of fab. metal prod., except mach.	fmp	g49b52R	Undefined transport	whs
g26	Ma. of computer and electronic prod.	ele	g53	Postal and courier activities	cmn
g27	Manufacture of electrical equipment	eeq	g55	Accommodation	afs
g28	Ma. of machinery and equipment n.e.c.	ome	g56	Food and beverage service activities	afs
g29	Ma. of motor vehicles	mvh	g58b60	Publishing, video, audio production etc.	cmn
g30	Ma. of o. transport equipment	otn	g61	Telecommunications	cmn
g31	Manufacture of furniture	omf	g62b63	IT-Services	cmn
g32	Other manufacturing	omf	g64	Financial service activities	ofi
g33	Rep. and install. of mach. and eq.	omf	g65	Insu., reinsurance and pension funding	ins
g35a	Running hydro power plants	ely	g68p98	Real estate (incl. 98)	dwe
g35b	Storage hydro power plants	ely	g69b71	lawyers, accounting, consuting, architects, etc.	obs

NOGA	Description	Agg	NOGA	Description	Agg
g35c	Nuclear power plants	ely	g72	Scientific research and development	obs
g35d	Fossil public power plants	ely	g73b75	freelance, scientific and technical activities	obs
g35e	Wood power plants (incl. CHP)	ely	g77b82	Various services	obs
g35f	Biogas power plants (incl. CHP)	ely	g84a	Road infrastructure	osg
g35g	Wind power plants	ely	g84b	Other public administration and defence	osg
g35h	Photovoltaic plants	ely	g85	Education	edu
g35i	Electricity distribution and trade	ely	g86	Human health activities	hht
g35j	Public heat supply	ely	g87b88	Health care	hht
g35k	Gas supply	gdt	g90b93	Recreational, cultural and sporting activities	ros
g38a	Electricity from waste incineration	wtr	g94b96	Other service activities	ros
g38b	Heat from waste incineration	wtr	g97	employes of private households	ros
g36b39R	Other water supply, sewerage and waste treatment	wtr			

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