

## Estimation of a Swiss Input-Output Table for 2001

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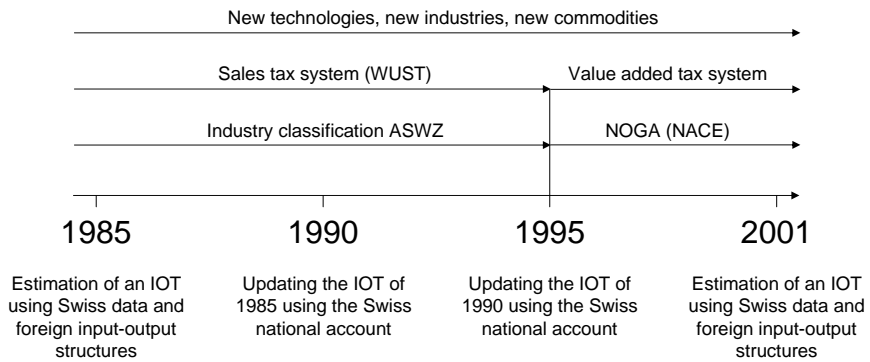
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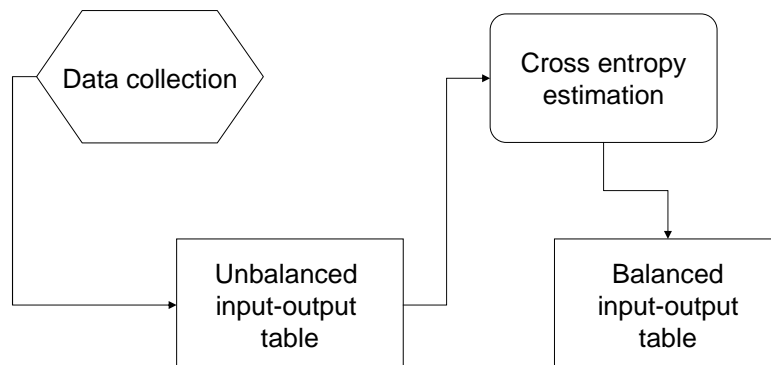
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## Input-output tables in Switzerland



## Estimation process



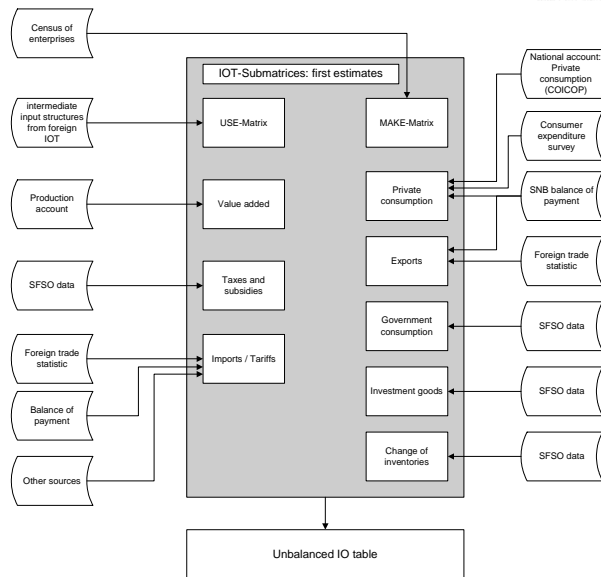
## Data collection and data sources

	(1) Products	(2) Industries	Final demand				Total
(1)		USE matrix	Consumption of private HH	Consumption of public HH	Gross capital formation	Exports	Total demand
(2)	MAKE matrix						Gross production value
	Net taxes on products						
	Import tariffs						
		Value added by industries					
	Imports						
Total	Total supply	Gross production value					

No data available

Data derived from statistical sources

Data given by base statistics



## Initial values for the USE matrix

- Hypothesis: If an industrial sector in an other European country has a similar product mix as the Swiss industrial sector, then both sectors have a similar technology
- Compare the product mix as given in the producer price index

Sektor / Teilsektoren	CH	AT	SE	NO
2900 Machinery and equipment, nec				
<b>2910 General purpose machinery</b>	<b>37.7%</b>	<b>39.4%</b>	<b>35.4%</b>	<b>64.9%</b>
<b>2920 Special purpose machinery</b>	<b>57.6%</b>	<b>54.9%</b>	<b>51.6%</b>	<b>30.7%</b>
2921 Agriculture and forestry machinery	2.4%	9.5%	3.8%	6.0%
2922 Machine-tools	20.1%	7.9%	9.2%	1.9%
2923 Machinery for metallurgy	0.0%	0.8%	0.8%	0.1%
2924 Machinery for mining, quarrying & construction	2.0%	6.3%	10.7%	3.8%
2925 Machinery for food, beverage & tobacco	6.4%	2.0%	3.0%	2.7%
2926 Machinery for textile, apparel & leather	9.9%	1.4%	5.6%	0.2%
2927 Weapons and ammunition	0.0%	1.7%	5.1%	8.4%
2929 Other special purpose machinery	16.8%	25.3%	13.3%	7.6%
<b>2930 Domestic appliances, nec</b>	<b>4.7%</b>	<b>5.7%</b>	<b>8.3%</b>	<b>4.5%</b>
Distanzmaße				
Euklid 3-Steller		3%	7%	38%
Euklid 4-Steller		20%	17%	37%
Euklid kombiniert		51%	55%	179%

## The maximum entropy principle

- Entropy as a measure of uncertainty of a random variable
- Some information about the random variable is known, the distribution of the random variable is unknown
- The “maximum entropy principle” provides a rule to determine a probability mass function  
*Choose the probability mass function which is consistent with given data and which replicates the data in the greatest number of ways if we take arbitrary many draws of the random variable*

## The cross entropy procedure

- *Step 1:* Determine lower and upper bounds for each cell in the input-output table  
→ support space
- *Step 2:* Determine a probability distribution for each cell which is consistent with the information gained during the data collection process  
→ initial input-output table (unbalanced), prior estimate
- *Step 3:* Estimate the input-output table by minimizing the cross-entropy measure and imposing global condition  
→ balanced input-output table, posterior estimate

## Estimation results

	Leontief matrix		Cross entropy measure
	Determinant	$\tau$	
<b>Dataset 1</b>	5.96E-05	0.2968	63.71
<b>Dataset 2</b>	1.10E-04	0.2996	50.46
<b>Dataset 3</b>	5.23E-05	0.2988	66.47
<b>Dataset 4</b>	9.98E-05	0.2995	49.77

