

From supply/use tables to input-output tables

Presentation for Statistics Jordan
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Matrix of data required for Jordan input-output table

| | Products (250) | Industries (60) | Final use | Total |
|-------------------|----------------|-----------------|----------------|-------|
| Products (250) | | U | F | q+b |
| Industries (60) | V | | | g |
| Imports (1) | b' | | | i*b' |
| Primary input (5) | | V | Y _f | y |
| Total | q'+b' | g' | f' | |



2

Jordan IO table, suggested layout

| | | |
|---|---------------------------------------|------------------------|
| Input in production 60*60 industries | Final demand 60*33 | Total output (60*1) |
| | 60*12 household cons | |
| | 60*1 NPISH | |
| | 60*1 individual gov. cons | |
| | 60*10 collective gov. cons | |
| | 60*7 invest categories | |
| | 60*1 inventories | |
| | 60*1 exports | |
| | Taxes less subsidies on products 1*93 | |
| | VAT 1*93 | |
| | Tourist correction 1*93 | |
| Gross Value Added 3*60 | | Total output (1*60) |



3



Calculations for SIOT, 1

- Total domestic production by product

$$q_j = \sum_{i=1}^{60} V_{i,j}$$

- Market share matrix

$$D = V(\hat{q})^{-1}$$

- How large a share of each product does each of the 60 industries produce.



Calculations for SIOT, 1

- Vector of import shares

$$m_j = \frac{b_j}{(b_j + q_j)}$$

- How large a share of each of the 250 products is imported.

$$U_D = (I - \hat{m}) \cdot U, \quad F_D = (I - \hat{m}) \cdot F$$

$$U_M = \hat{m} \cdot U, \quad F_M = \hat{m} \cdot F$$



Calculations for SIOT, 2

- Compilation of domestic produced and imported intermediate consumption

$$DZU = D(I - \hat{m})U \quad DMU = D(\hat{m})U$$

- Compilation of domestic produced and imported final demand

$$DZE = D(I - \hat{m})F \quad DME = D(\hat{m})F$$



>> From SUT to IOT - additional challenges, 1

- For imported goods that are not produced in Jordan the column in the Market share matrix is not defined. There are two solutions to this
 - To compile a list of "characteristic industries" so that it is assumed in which industry every single product would be produced if it had been produced in Jordan
 - To accept just one single row of imports
- Private consumption by tourists in Jordan should be removed from the sum of household consumption and moved to the exports column.

>> From SUT to IOT - additional challenges, 2

- The column sums of the matrices of product taxes and product subsidies should be added as a row in the table
- The column sums of the matrix of VAT should be added as a row in the table
- Some calculations are needed to collect the retail and wholesale margins and place them in the trade industries producing those margins
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>> From SUT to IOT - additional challenges, 3

- A block of Gross Value Added must be compiled and added to the table
 - Other production taxes less other production subsidies
 - Compensation of employees in every industry
 - Gross operating surplus and mixed income

>> Use of software for the compilation of IOT's

- It is **highly** recommended to start from the beginning to do most of the calculations in a software that can handle matrices and do matrix algebra in **R**.
- First install **R** itself, and the **Rstudio** on top of that
- <http://cran.r-project.org/>
- <http://www.rstudio.com/>
- Online tutorials on the internet

>> Suggestions for next mission

1. Presentation af Jordanian input-output table 2010
2. Introduction to R
3. Review of the R-programme for making the IO-table, how can another year be compiled?
4. Introduction to input-output analysis with an IO-model
5. Textbook suggestion; [Miller and Blair \(2009\)](#)
6. Analyses with IO-model for 2010
 1. Employment multipliers
 2. CO2 multipliers?
 3. Others



Thank you!
See you next time.
(Beginning of March)



What is an input-output table?

| | Intermediate consumption | | | | | | | | | | Final demand | | | | Total |
|--|---|------------------|--|-----------------|----------------------------------|---|------------------------------------|---------------------------------|---------------|----------------|-------------------------------|------------------|--------|------|-------|
| | 1. Agriculture, hunting and aquaculture | 2. Manufacturing | 3. Electricity, heat, gas and water supply | 4. Construction | 5. Trade, hotels and restaurants | 6. Transport, post and telecommunications | 7. Financial and business services | 8. Public and personal services | 9. Households | 10. Government | Gross fixed capital formation | Change in stocks | Export | | |
| DKK billions, current prices | | | | | | | | | | | | | | | |
| 1. Agriculture, fishing and quarrying | 8 | 50 | 9 | 2 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 0 | 1 | 121 | |
| 2. Manufacturing | 13 | 96 | 1 | 37 | 17 | 7 | 14 | 10 | 49 | 1 | 29 | 7 | 292 | 573 | |
| 3. Electricity, heat, gas and water supply | 1 | 7 | 3 | 0 | 4 | 1 | 2 | 4 | 21 | 0 | 0 | 0 | 9 | 51 | |
| 4. Construction | 1 | 3 | 3 | 2 | 2 | 6 | 26 | 7 | 4 | 7 | 125 | 0 | 1 | 187 | |
| 5. Trade, hotels and restaurants | 5 | 30 | 0 | 21 | 15 | 8 | 6 | 10 | 148 | 3 | 22 | 1 | 75 | 343 | |
| 6. Transport, post and telecommunications | 1 | 14 | 0 | 2 | 33 | 35 | 17 | 18 | 36 | 1 | 2 | 0 | 163 | 223 | |
| 7. Financial intermediation, business act. | 8 | 35 | 3 | 27 | 50 | 18 | 96 | 42 | 193 | 5 | 29 | 0 | 30 | 535 | |
| 8. Public and personal services | 1 | 5 | 1 | 1 | 5 | 3 | 12 | 29 | 81 | 379 | 4 | 0 | 2 | 526 | |
| Import incl. custom duties | 11 | 144 | 4 | 23 | 37 | 127 | 29 | 26 | 77 | 4 | 53 | 8 | 141 | 684 | |
| Taxes on products, net | 3 | 3 | 0 | 2 | 5 | 6 | 17 | 24 | 132 | 2 | 40 | 0 | -3 | 223 | |
| Use at market prices | 52 | 388 | 25 | 116 | 168 | 211 | 220 | 171 | 745 | 403 | 304 | 18 | 757 | 3576 | |
| Other taxes on production, net | -5 | -1 | 0 | 0 | 0 | 0 | 7 | 4 | | | | | | | |
| Compensation of employees | 10 | 131 | 5 | 54 | 130 | 56 | 138 | 301 | | | | | | | |
| Gross operating surplus and mixed income | 65 | 56 | 22 | 17 | 46 | 57 | 170 | 95 | | | | | | | |
| Gross output at basic prices | 121 | 573 | 51 | 187 | 343 | 323 | 535 | 526 | | | | | | | |