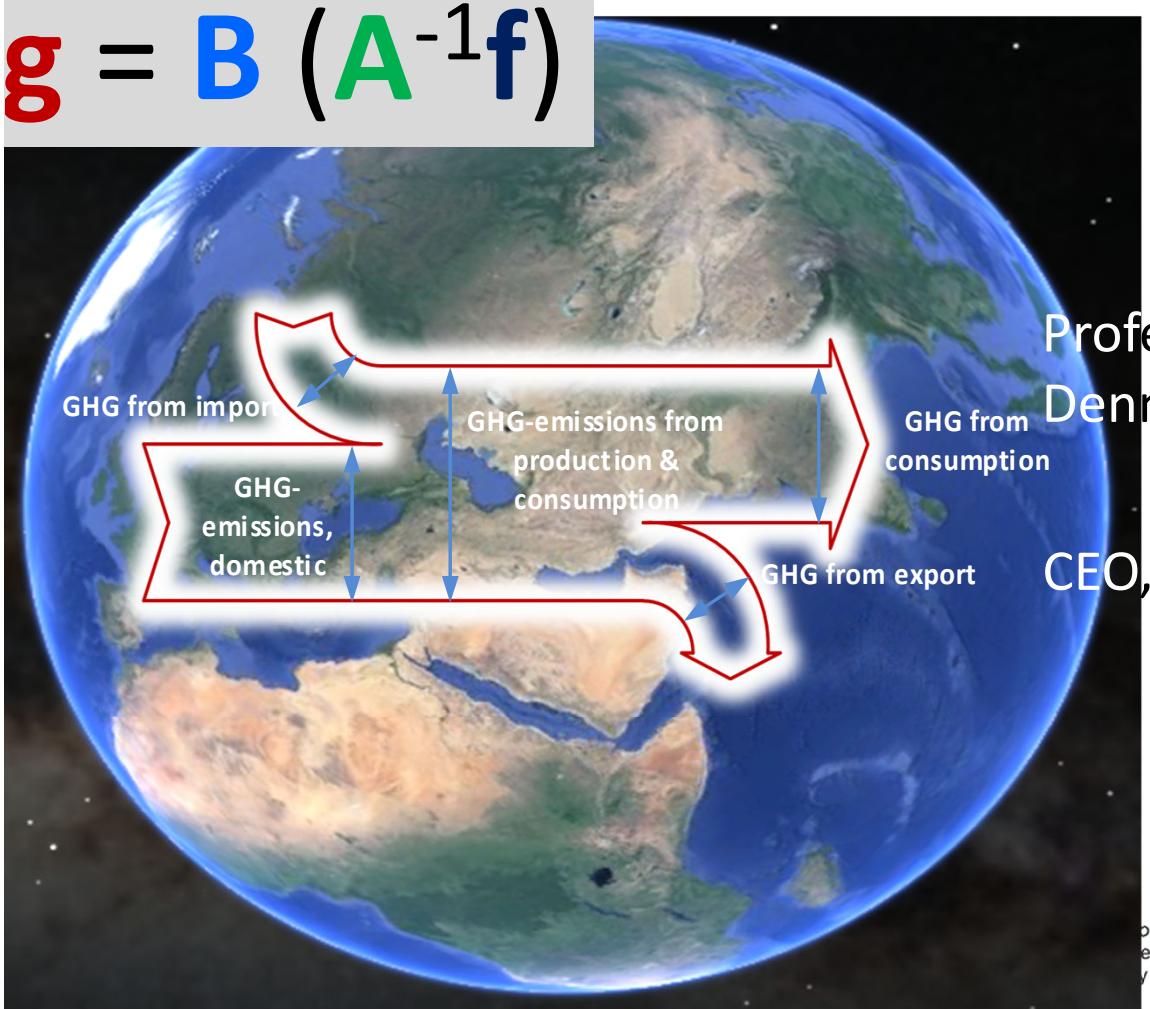
Input-output modelling

Online interactions and Q&A on video lectures 1-5

$$g = B\,(A^{-1}f)$$



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Online: 25th April 2023

AALBORG UNIVERSITY DENMARK

Agenda

- Interaction and QA on video lectures
- Introduction to homework

Lecture 1: What is an IO model

IO tables

What is the meaning of:

- a column in an IO table?
- the demand vector?
- a column in the leontief inverse? $(I-Z)^{-1} = A^{-1}$
- the scaling vector? $s = (I-Z)^{-1} f$

Supply use tables

- What is the meaning of a column in the supply table? (on diagonal and off-diagonal)
- What is the meaning of a column in the use table? (on diagonal and off-diagonal)
- There are three main ways to construct an IO model from supply-use tables – which?
- Which construct corresponds to CLCA?
- Which construct corresponds to ALCA?
- Which steps are involved in the by-product technology assumption?

Lecture 2: Basic and purchaser's prices

Basic and purchaser's prices

- What is basic price?
- What is purchaser's price?
- Why are supply tables in basic prices and use tables in purchaser's prices, when provided from statistical agencies?
- What is the valuation column? How is it constructed?
- Why are there negative numbers in some entries of the valuation column?

Lecture 3: Integrating fixed capital formation and final use into the SUTs

Fixed capital formation

- What is fixed capital formation?
- Why is it placed outside the use table, when supplied by statistical agencies?
- Why should fixed capital formation be integated in the use table?

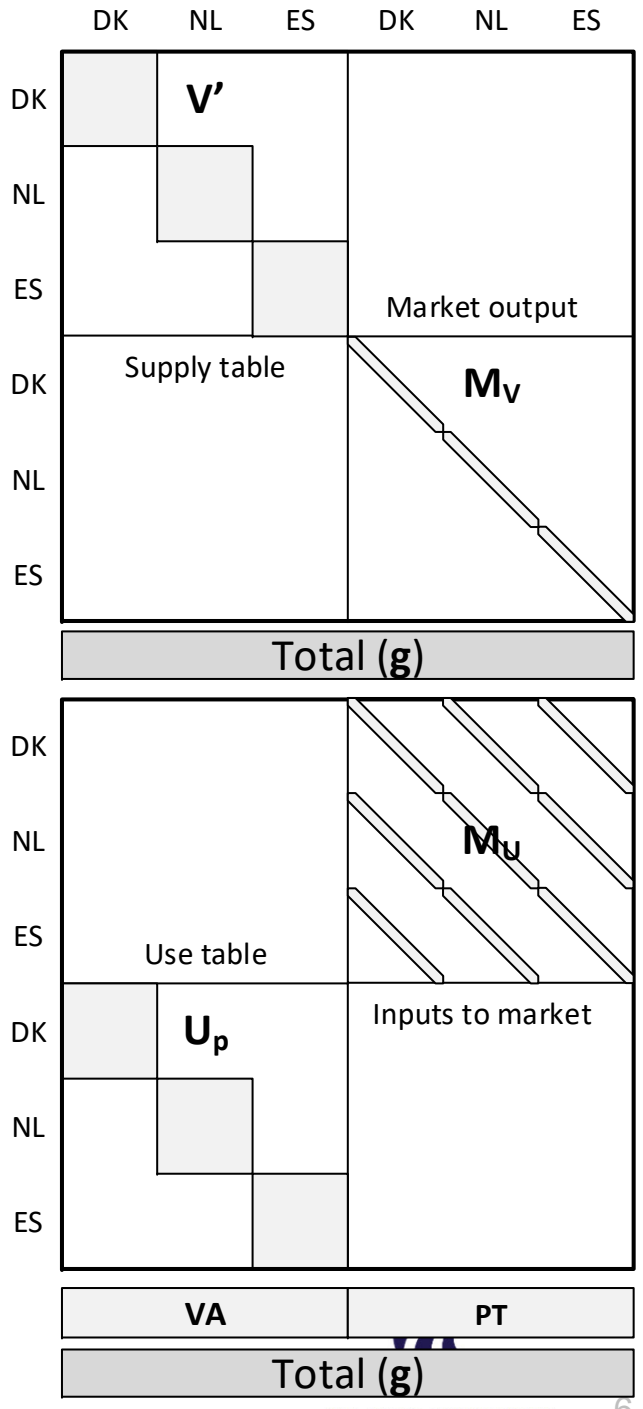
Final use

- What is the final use?
- What could the purpose of integrating in the use table be?
- Are there different approaches on how to shape new final use catagories?

Lecture 4: Dealing with imports and exports

Trade

- Conventional way of representing trade in SUTs
  - what is the meaning of a column?
  - What is the meaning of a row?
- What are the disadvantages of this approach?
- Market approach of representing trade in SUTs
  - what is the meaning of a column?
  - What is the meaning of a row?
- What are the advantages representing trade in SUTs using the market approach?



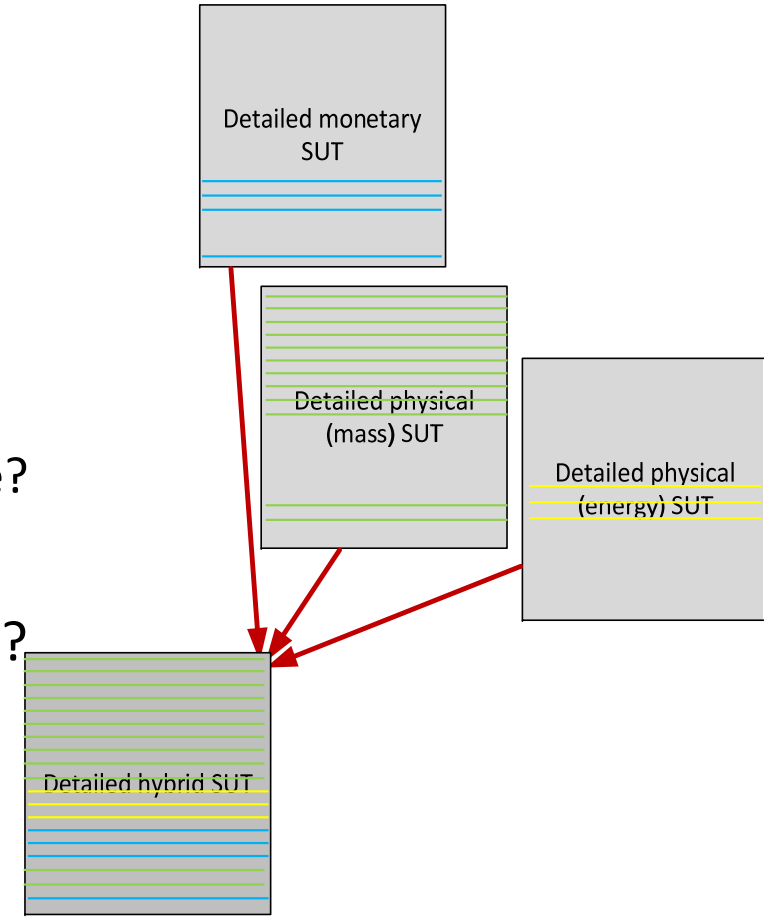
Lecture 5: Creating a physical mirror of economy - Physical supply-use tables

Physical supply-use tables

- Industry balance (column) in physical mass SUT:
  - What are the outputs (supply side)?
  - What are the inputs (use side)?
- When we have MSUT, PSUT, and ESUT
  - How to combine in HSUT?
  - How to select which rows are taken from which table?

Hybrid IO models

- What are the disadvantages of monetary IO models? and advantages of hybrid IO models?
  - Different prices over activities ⇨ natural unit
  - Enables for mass, energy and other balances
  - Tangible products/flows are better modelled in physical units
  - Waste flows are very hard to handle in monetary units
  - Target setting and policies are formulated in physical units



Agenda

- Interaction and QA on video lectures
- Introduction to homework

Introduction to homework
- Calculating footprints within SUT framework

- Use data in excel file on Moodle: 'Excel file for exercise.xlsx'

1. Calculate **Z** and **A**=**I**–**Z** and $\mathbf{A}^{-1}$
   a. Using the by-product technology assumption
   b. Optional: Using the industry technology assumption
2. Calculate the externalities (emissions and value added) for 1 EUR of each of the four product categories:
   a. Using the database based on the by-product technology assumption
   b. Optional: Using the database based on the industry technology assumption
3. Calculate the externalities (emissions and value added) for DK total final use (export + final use)
4. Why don't the calculated externalities add up to the same as the totals in the raw data?
5. Can you find a final use vector so that the externaties add up to the same as the ones in the raw data?