Intermediate consumption and the Leontief function

- We will now introduce intermediate consumption.
- Firms will have to purchase goods at goods markets and use them in production
- Since there is hardly any substitution, we will assume that technology is Leontief

How to implement?

- Usually people introduce a nested production function:
- The final product is produced using (Leontief top form)
  - Intermediate consumption
  - Value added which is produced using CES from:
    - Labour
    - Capital

Conditional factor demands and costs functions

This is easy. Since we always have fixed factor proportions, the demand for factor i in sector j will be:

$$v_i = \theta_{i,j} XD_j$$

What about the price index of goods production:

- First we need to determine the price index $PVA(SEC)$ of value added and it will be the same as $P(SEC)$ in the previous setting.
- The price index of production will be:

$$P(SEC) = P_j = PVA_j * (1 - \sum_{i \in FAC} \theta_{ij}) + \sum_{i \in FAC} \theta_{i,j} P_i$$

- How to calibrate theta?

$$\theta_{i,j} = \frac{IC_{SAM,i,j}}{XD_{SAM,j}},$$

where IC is the value of intermediate consumption read from SAM and XD is the output value.

- So we have to modify the:
  - zero profit equation
  - market clearing equations
  - govt income equations