**EXERCISES – MODULE 1**

**Question 1:** Name the most important parts of an input-output table, including the variable that is given to them in the common IO nomenclature. Please also explain the data they contain in the context of the IO structure.

**Question 2:** Explain why the IO tables provide two different output vector and briefly explain their difference?

**Question 3:** Referring to the Brazilian IO Table from 2010 from the WIOD Database, please retrieve the following data. Please give your answers in $.

3.1 What is the sectoral demand of *Machinery, nec* for *Basic Metals and Fabricated Metals?*

3.2 What is the intra-industrial trade of the *Chemicals and Chemical products* sector?

3.3 Name the sector with the highest total intermediate demand.

3.4 Which three sectors account for the largest share of government consumption expenditure?

3.5 What are the largest capital investing sectors?

3.6 Name the five most important exporting sectors in Brazil in 2010.

3.7 What is Brazilian’s total final demand? Please also add the differentiation between the domestic and the foreign part of final demand.

3.8 Name the three most important sectors in terms of output both from a demand and from a supply perspective.

3.9 Name the top 3 sectors with highest value added at basic prices.

**Question 4:** Using the following fictional Input Output Table, please answer the questions below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Industry A** | **Industry B** | **Final Demand** | **Total Output** |
| **Industry A** | 300 | 150 | 200 | 650 |
| **Industry B** | 250 | 200 | 10 | 460 |
| **Value Added** | 100 | 110 |  |  |

4.1 Compute the technical coefficient matrix and explain the meaning of the cell highlighted below.

|  |  |  |
| --- | --- | --- |
|  | **Industry A** | **Industry B** |
| **Industry A** |  |  |
| **Industry B** |  |  |

4.2 Compute the output coefficient matrix and explain the meaning of the cell highlighted below.

|  |  |  |
| --- | --- | --- |
|  | **Industry A** | **Industry B** |
| **Industry A** |  |  |
| **Industry B** |  |  |

4.3 Compute the Leontief matrix and explain the meaning of the cells highlighted below.

|  |  |  |
| --- | --- | --- |
|  | **Industry A** | **Industry B** |
| **Industry A** |  |  |
| **Industry B** |  |  |

4.4 Compute the Ghosh matrix and explain the meaning of the cell highlighted below.

|  |  |  |
| --- | --- | --- |
|  | **Industry A** | **Industry B** |
| **Industry A** |  |  |
| **Industry B** |  |  |

4.5 Provide a table with the A, B, L, and G Multipliers and explain the meaning of the cells highlighted below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **A** | **L** | **B** | **G** |
| **Industry A** |  |  |  |  |
| **Industry B** |  |  |  |  |

**Question 5:** Following the approach presented in the videos, please compute the technical coefficient matrix, the output coefficient matrix, the Leontief inverse, the Ghosh matrix, and the respective Multipliers for Brazil in 2011. Using either R or excel, please answer the following questions:

5.1 What are the direct input requirements of sector *Food, Beverages and Tobacco* from the sector *Agriculture, Hunting, Forestry and Fishing* per unit of total output of *Food, Beverages and Tobacco?*

5.2 Considering the distribution of the output of sector i across sectors j that purchase interindustry inputs from sector i, if we assume that sector i = *Water Transport*, what are the top 3 sectors *j* with the largest share?

5.3 Assuming i = *Chemicals and Chemical Products* and *j = Rubber and Plastics,* please indicate the share of sector *i*’s output that is directly purchased by *j*. Please also indicate relative to which sectors output (i or j) the value is measured.

5.4 In order to produce one unit of *Construction,* what are the total direct and indirect requirements of the *Other non-metallic mineral* sector?

5.5 What is the total value of production that comes about in the *Transport Equipment* sector per unit of primary input in the *Rubber and Plastic* sector? Please also indicate which sector would be considered i and which sector would be considered j, if we were to follow the common nomenclature of IO analysis.

5.6 Provide the three sectors with the highest direct and indirect forward multipliers:

5.7 Provide the three sectors with the highest direct and indirect backward multipliers:

5.8 Plot the scatterplot of averaged forward and backward linkages. What are the sectors with higher linkages (forward and backward)?