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| ***General Instructions:***  This hands-on exercise is comprised of five problems on evaluating the impact of government policies and on estimating the effects of economic shocks using input-output models. Demonstration on how to answer similar questions are presented in Day 5 sessions “*Applications and Hands-on Exercises*”. Please review all of the items and select ***at least two problems*** to answer.  Kindly download the following files for your reference:   * *Day 05\_Session 01\_Applications and Hands-on Exercise\_Worksheet.xlsx* * *Day 05\_Session 02\_Applications and Hands-on Exercise\_Worksheet.xlsx* * *Day 05\_Session 03\_Applications and Hands-on Exercise\_Worksheet.xlsx*   Please send your answers to the following resource speakers:   |  |  | | --- | --- | | * *Julian Thomas B. Alvarez* | *jalvarez.consultant@adb.org* | | * *Jessica Ann C. Jola* | *jjola.consultant@adb.org* | | * *Dale Maverenz U. Lim* | *dmlim.consultant@adb.org* | | * *Rai Sengupta* | *rsengupta1.consultant@adb.org* |   You may also contact them if you have any questions or clarifications pertinent to this exercise.  ***Note:***   * *Certificates of participation will be given to attendees who accomplished the exercises within two weeks since posting of the questions.* * *Exercises should be submitted to the resource speakers on or before* ***22-April-2022****. These will be reverted to the participants no later than 29-April-2022.* |

**Problem 1**

Open *Day 05\_Session 01\_Applications and Hands-on Exercise\_Worksheet.xlsx*. Refer to '1 Country-level' tab in answering the succeeding questions.

Suppose the government plans to build a massive infrastructure project that translates to an exogenous increase in final demand in the construction sector by $100 million. The government needs to justify its investment, and therefore, the Planning Department asked your assistance in estimating the economic impact of this mega-infrastructure project.

***Questions 1 & 2 were already answered in the video recording.***

***Question 3.*** Suppose that the government considers boosting international tourism demand instead. This project is expected to exogenously increase the final demand in Air Transport sector also by $100 million. Compare the economic impact of the program that boosts demand in Air Transport sector against the economic impact of the mega-infrastructure project in ***Question 2***.

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| **Answer:**  impact of $100 million increase in the final demand in the Air Transport sector  impact to output (millions $)  impact to value-added (millions $) |

***Question 4.*** Compare and interpret the value-added multiplier for construction and air transport sectors for Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, and the People's Republic of China.

Hint: In '1 Country-level' tab, change the three-letter country code in cell C2.

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| **Answer:**  Comparison of value-added multiplier:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | ***Kazakhstan (KAZ)*** | ***Kyrgyz Republic  (KGZ)*** | ***Mongolia (MON)*** | ***Pakistan (PAK)*** | ***People's Republic of China (PRC)*** | | *Construction* |  |  |  |  |  | | *Air Transport* |  |  |  |  |  |   Which economy has the largest value-added multiplier for construction sector? air transport sector? |

**Problem 2**

Open *Day 05\_Session 01\_Applications and Hands-on Exercise\_Worksheet.xlsx*.

‘2 Regions’ tab shows a multi-regional input output table with two economies: Mongolia and an aggregate for the Rest of the World. The IO table is aggregated into 5 sectors, according to technology. Suppose the demand for Business Services in Mongolia increased by $100 million.

***Questions 1 & 2 were already answered in the video recording.***

***Questions 3.*** Suppose, instead, that the demand for Medium-to-High Tech manufacturing sectors increased by the same amount. How will your answer in Question 2 change?

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| **Answer:** |

**Problem 3**

Open *Day 05\_Session 01\_Applications and Hands-on Exercise\_Worksheet.xlsx*.

‘3 Regions’ tab shows a three-region input-output table for countries A, B, and C. The IO table is aggregated into 5 sectors. Refer to this tab to answer succeeding questions.

***Questions 1, 2, 3, and 5 were already answered in the video recording.***

***Questions 4.*** Calculate the GDP of country A by production approach, and by expenditure approach.

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| **Answer:** |

***Questions 6***. Suppose Country A stops trade with Country C only. Estimate the GDP loss to Country A. Do we also observe GDP loss in Countries B and C?

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| **Answer:** |

**Problem 4**

Refer to Day 05\_Session 02\_Applications and Hands-on Exercise\_Worksheet.xlsx. In this exercise, you will be asked to estimate the effect of an increase in global oil prices on inflation in Pakistan using the supply-driven IO price model.

***Instructions***

1. Populate the supply-driven supplied in the Ghosh\_App sheet, by inputting the country code in cell C2.
2. To simulate the increase in global oil prices, introduce a 20% percent increase in import prices in the Coke, refined petroleum, and nuclear fuel (c8), and electricity, gas and water supply sectors (c17).
3. Answer the following questions:
   1. By how much would prices in the sectors increase after a 20% increase in price of imported oil?
   2. In terms of price changes (%), what are the top 5 industries affected by the price increase of imported oil?
   3. What is the overall inflation in the economy resulting from the price increase of imported oil?

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| **Answer:** |

**Problem 5**

Refer to Day 05\_Session 02\_Applications and Hands-on Exercise\_Worksheet.xlsx. In this exercise, you will be asked to estimate the effect of the COVID-19 pandemic on Country A using the Basic demand-driven IO model.

***Instructions***

1. Create the basic demand-driven model using Country A’s 5x5 NIOT.
2. Provide an interpretation of the Leontief multipliers.
3. Suppose the COVID-19 pandemic decreased the demand for products produced by the manufacturing sector. Introduce a 20 percent reduction in demand for the low-, medium-, and high-tech manufacturing sector.
4. Investigate the percentage effect on the total output of each sector, and then for the entire economy.

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| **Answer:** |