HMG 6738 Tourism Industry Analysis

### **Project 2: Policy Analysis with Social Accounting Matrix Simulations**

Assume that your country has limited fiscal and administrative resources and you are required to implement one policy out of several possible choices. The National Economic Council would like to know how each policy will cause changes in personal income levels for people within different income groups. You have acquired Social Accounting Matrix data with 20 x 20 industrial sectors, with additional data on household divided into nine annual incomes levels as follows:

[Income Groups/annual basis] Households < 5K Households 5 -10K Households 10 -15K Households 15 -20K Households 20 -30K Households 30 -40K Households 40 -50K Households 50 -70K

Here are the 5 stimulation policy choices, consisting of 3 export promotions, and 2 domestic stimulation policies. To make the comparison valid, each policy will have the same initial impact (direct effect =  $\Delta$ Final Demand) amounts as follows:

### <National Policy Options>

### (1) Boosting Agriculture Export For \$100 Billion

Though your county does not have the relatively cheaper labor cost on a global basis, domestic pressure group asserts that efficient production methods will surely stimulate other industrial sectors which will create "lots of jobs". Your country has diplomatic skills to maneuver the international protectionism against exports of your agricultural products.

### (2) Boosting Machinery Industry Exports For \$100 Billion

Your country surely has lots of manufacturing activities, and some products surely have good international competitiveness in terms of quality, price and durability. Both the management and trade unions are begging you to promote industrial policies to boost your manufacturing exports.

### (3) Boosting Tourism Exports For \$100 Billion

Your country has strong international charm to attract foreign visitors. Streamlining entry visa procedure will surely contribute to receive massive surge in international tourists. The tourism allocation is assumed to be:

*Tourism Allocation can be as follows:				
Transportation	28,000			
Produc.Serv	63,000			
Trade	9,000			

## (4) Boosting National Defense Budget For \$100 Billion

The Defense Minister perceives external threats and wishes to boost the national budget to cope with the threat. An increase in the defense budget has been believed to have positive impacts over some income groups, but you are not too sure if the benefits will be equally distributed over the different income groups. Though this is not an export option, you may assume that funding for **\$100 billion** is available from the budget surplus of the previous Prime Minister's cabinet.

# (5) Boosting State level budget for Education For \$100 Billion

The Prime Minister agrees with the Education Minister that your people need overhauling of the prime educational system, even though quality of higher education perceived among the top league in the world. You may choose to let the local governments spend money for educating young people by funding them the total sum of **\$100 billion**. You also believe in the value of education, but you are not too sure how the economic impact of such a policy will affect the income distribution of your people, due to your perception of relative lack of inter-industry linkages of educational sector with other sectors.

# [The Mission: Quantitative Policy Analysis]

Because the National Economic Council is mostly concerned with the estimated effects of changes in income on households to be caused by five policies, your mission is to find out the percent of change in the income for each policy over each income group.

This is how you proceed. All the tasks can be done in the Excel sheet given separately.

(1) You are given a SAM-based transaction table, together with the second SAM-based transaction table. <u>Units are in US\$ million</u>. You start working only from the 3<sup>rd</sup> matrix to calculate the standardized A-matrix. I-matrix will be given as a relief for tedious jobs. Complete all the procedures to generate **an inverse of (I - A) matrix**.

- **Z-matrix 1 and 2** ← *Given (shaded by yellow and blue)*
- A-matrix → please complete (shaded by light green)
- I-matrix ← Given (shaded by cobalt blue)
- (I A) matrix → please complete (shaded by cobalt green)
- $(I A)^{-1}$  matrix  $\rightarrow$  please complete (shaded by dark pink)

(2) Now that you have calculated the Leontief Inverse Matrix (40 x 40), you are now required to conduct a series of Impact Analysis to simulate the five policies above.

Hint (1): Remember, the final demand column vector (FD:  $\Delta Y$ ) would look like all zero elements except the sector you wish to give impact on. Thus giving a shock for \$100 billion to an agriculture sector would look like;

$$FD(\Delta Y) = f - vector = \begin{bmatrix} 100,000 \\ 0 \\ 0 \\ 0 \\ 0 \\ \vdots \\ 0 \end{bmatrix} \quad (\rightarrow This will be [40 \times 1] column vector)$$

Hint (2): All policy simulation would require the single sector to be shocked by 100,000 except the Tourism policy options, <u>because the tourism industry is not represented by a single sector</u>. Thus you are given more explicit hints in the Excel sheet on how to model the tourism impacts to the economy.

Then as you simulate the impact analysis, you will notice that a summary table together with the relative change in income (to be displayed in percentage) have been constructed with formula (column cells: AX253~AX262). You will find the summary table in the Excel Sheet which looks like this, immediately on the right of cells (cell: AY253~BC262).

Agriculture	Machineary	TOURISM*	FedGov Defense	SL Education	
					Households < 5K
					Households 5 -10K
					Households 10 -15K
					Households 15 -20K
					Households 20 -30K
					Households 30 -40K
					Households 40 -50K
					Households 50 -70K
					Households > 70K

**Relative Change in Personal Income: Policy Simulation Table** 

After conducting each quantitative simulation,

- Copy the cells (cell: AX253~AX262)
- Choose "Paste Special" under "Edit", then paste by choosing "Value" into the appropriate column cells in the summary table (one of the columns situated among AY253~BC262).

Complete the table in the Excel Sheet (30 points)

(3) At the end of the Excel table under "Comments for the National Economic Council", please briefly answer the following question of the Prime Minister based on your quantitative analyses of the five policy options (20 points)

- **1.** Which policy generates the highest positive change in income? Over which income group?
- 2. Which is the best policy for improving the income of the poorest household (income < 5K/year)?
- 3. What are the impacts of Defense Spending boosting policy toward the income of middle class (respectively, income 20-30K, 30-40K and 40-50K/year households)?
- 4. How effective is the tourism export policy compared with the Agriculture and Machinery Export polices regarding the relative change in income for all citizens?
- 5. Why does the tourism policy seem to be most effective among all the tested policies in dealing with poverty problems? (Make good educated arguments based on what you see in this case and what you have learned so far. This part is graded in accordance with the depth of analysis. 100~200 words)