

# Social Accounting Matrices for CGE

Short Course on CGE Modeling, United Nations ESCAP

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- A CGE model of any real economy will have to be based on actual data representing said economy.
- In this module we discuss, through the use of several simple examples, how we can conceptualize and organize the equilibrium data representing the economy of interest into a ‘social accounting matrix’ or SAM.
- We will also discuss sources of SAMs and show how we can use GAMS to help us in the process of constructing a consistent SAM.

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  - Intermediates, Government and Investment
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# SAM Concepts

- A social accounting matrix is a systematic method of representing the flows of goods/services and factors and the corresponding payments in an economic system.
- The SAM is a square matrix, with the same column and row headings. The rows represent flows of goods/factors, while the columns represent the flows of payments.
- Each heading represents the activities of an economic agent, some of which are artificial.
- Because every payment by an agent in the economic system represents a receipt to some other agent in the system, the row and column sums of the SAM must be equal at an equilibrium.
- Once we have a balanced SAM, we can calibrate a CGE model to it.

# Example: Closed Economy SAM

- The easiest way to understand how the SAM works is to construct some simple examples. We begin with a closed  $2 \times 2$  economy.
- In this case, the real agents are the firms (1 and 2) and the household (H), which is the only source of final demand.
- We also introduce a virtual agent for factors (K and L). We can think of this as an agent that buys factors from the household and sells them to firms.
- We will refer to cells by their row name first, column name second.

# Closed Economy SAM

		Activities		Factors		Final Demands	
		1	2	K	L	H	Total
Activities	1					100	100
	2					100	100
Factors	K	80	20				100
	L	20	80				100
Final Demands	H			100	100		200
Total		100	100	100	100	200	

# Example: Open Economy SAM

- To construct a SAM for an open economy, we add a new artificial agent to represent the transactions involving the rest of the world. We label this agent X.
- The X column tracks payments from the rest of the world, so entries in the activities rows represent exports.
- The X row tracks payments to the rest of the world, so entries in the activities columns represent imports.
- In Armington type models an activity may have both row and column X entries.
- Repatriated earnings of capital and labor appear in the X column and factor rows (inward) and X row factor columns (outward).
- A current account deficit/surplus would appear in the H-X/X-H entry.

# Open Economy SAM

		Activities		Factors		Final Demands		
		1	2	K	L	H	X	Total
Activities	1					50	50	100
	2					150		150
Factors	K	80	20					100
	L	20	80					100
Final Demands	H			100	100			200
	X		50					50
Total		100	150	100	100	200	50	

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