# MACROECONOMIC MODELLING OF LABOR MARKETS

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# WHY MACROECONOMIC MODELING?

- Increasing Demand for Quantitative Analysis
  - Domestic Policies
  - Global Policies (i.e. WTO negotiations)
  - Regional Policies
- Different Methods
  - Simple Statistical Analysis
  - Ex Post Analysis: Econometric Studies
  - Ex Ante Analysis: Partial Equilibrium models and General Equilibrium Models
- Why do we need models?
  - Complex interactions among economic agents

# THE IMPORTANCE OF ECONOMIC MODELING AND SIMULATIONS

- Numerous historical examples show that any implementation of improper economic or social policy on a large scale would lead to economic disaster and social chaos, requiring years to readjustment at a very high cost.
- Unlike most physical scientists, who can test their ideas on controlled experiments in laboratories, economists have to rely primarily on natural experiments for their data.

# HOW DO WE TREAT LABOR MARKET IN ECONOMIC MODELS?

- Econometric models:
  - Estimation of labor demand function
  - Estimation of labor supply function
- A variety of factors can be identified which affect labor demand or labor supply functions
- Policy implications can be drawn from the estimated parameters. These models are very useful.
- However, such models can't help understand the labor market effects of economy wide policies, for example, trade, tariff, tax, investment, productivity, subsidy, minimum wage, etc,

# WHY CGE MODEL?

- CGE models have been most widely used to analyze the impact of hypothetical policy changes that are large in scope and have a broad impact on the structure of the economy
- It takes into account complicated sectoral inter-linkages
- It can quantify the benefits and costs of proposed initiatives
- It can identify who benefits and who losses and by how much
- It can shed light on the supporting policy adjustments required as part of a broader economic policy framework
- CGE models are flexible and with appropriate modification in the characteristics of the model and the data set can handle a variety of issues.

# DEVELOPMENTS IN CGE MODELS

- Imperfect competition models
- Unemployment
- Structural rigidities
- Gender: labour market (wage differential), choice between market work, domestic work and leisure
- Micro-simulation models / nano-simulation models
- Static model and dynamic model

# EMPLOYMENT EFFECTS IN THE SAM MULTIPLIER MODEL

- SAM multiplier model
- Employment satellite matrix
- Link output changes with employment change
- Use of elasticity values

# SAM FRAMEWORK

Y =f (X)

| | | | Current Accounts of Institutions | | | | Capital Accounts | |
|---|---|---|---|---|---|---|---|---|
| | Production | Factor | Household | Government | Enterprise | RoW | | Total |
| Production (PA) | Input-output | | Private Consumption | Public Consumption | | Exports | Investment | Total Domestic Demand |
| Factor (FP) | Distribution of value added | Endogenous (Y) | | | Exogenous (X) | | | Total Factor Income |
| Household (HH) | | Redistribution of value added (labour, capital and land) | Inter-Household Transfers | Government Transfers (SP) | Enterprise Transfers | Remittances | | Total Household Income |
| Government (GoV) | Indirect Tax (Production and Import) | Redistribution of capital value added | Income Tax | | Corporation Tax | Unrelated | | |
| Enterprise (ENT) | | Redistribution of capital value added | | | | | | Total Enterprise Income |
| Rest of the World (RoW) | Intermediate Imports | | Imports of Consumption Goods | | | | Imports of Capital Goods | |
| Capital (CAP) | | | Household Savings | Government Savings | Enterprise Savings | Foreign Savings | | Total Savings |
| Total Supply (TSS) | Sectoral Supply / Output | Payments of Factors of Production | Outlays by Household | Outlays by Government | Outlays by Enterprises | | Investment | |

Leakage

# CGE MODELING SYSTEM

Like all other models in economics

# COMPONENTS IN CGE MODELS

- A set of economic agents such as firms, households and government whose behavior is to be analyzed.
- Behavioral rules for these agents that reflect their assumed motivation such as profit maximization for firms and utility maximization for consumers.
- A set of signals observed by these agents on which they make their economic decisions, such as market prices or government rationing quotas.

# COMPONENTS IN CGE MODELS…

- Institutional structure of the model economy, which are the rules of the game by which various agents interact. For example, perfect competition implies that each agent is a price taker and prices are flexible.
- A set of explicit definitions of equilibrium conditions which are "system constraints" that must be satisfied for the whole economy but which are not taken into account by each individual agent in making his decisions.

# EQUILIBRIUM IN CGE MODELS

- An equilibrium: can be defined as a set of signals such that the resulting decisions of all agents jointly satisfy the system constraints.
- The signals represent the equilibrating variables of the model. For example, in a perfectly competitive CGE model the assumption that excess demand equals zero in all markets is a system constraint that defines the nature of equilibrium.

# LABOR MARKET AND EMPLOYMENT CGE MODEL

- Disaggregation of labor categories by skill, sex.
- Sectoral allocation of labor
- Use of labor demand function
- Labor supply can be fixed or variable. Short run vs. long run.
- Labor market equilibrium. Unemployment.
- Results of CGE model:
  - Macro
  - Sectoral
  - Household
- Employment effect:
  - Change in value added by labor. Reallocation of labor. Unemployment.
  - Employment satellite matrix