



Economic Planning in the Presence of Natural Disasters

by
Associate Professor Mehmet Ulubasoglu

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Scope of Presentation

- ❑ Problem Identification
- ❑ Economic Model as the Workhorse of Economic Planning
- ❑ Integrating Natural Disaster Shocks into the Economic Model
- ❑ Results and Policy Simulation Analysis
- ❑ Conclusion and Recommendations



One Model: Many Names

- ❑ Econometric Model;
- ❑ Macroeconometric Model;
- ❑ Structural Model;
- ❑ **Economic Model**



Feature of a Good Economic Model

- ❑ Be simple in construction but realistic in forecasting;
- ❑ Cover the whole economy which can be displayed with a simple diagram;
- ❑ be consistent with economic logic;
- ❑ able to utilize enough data (i.e., historical information)



Objectives of Constructing an Economic Model

- ❑ Covering the basic linkages in the economy
- ❑ Forecasting the impact of shocks
- ❑ Assessing scenario outcomes
- ❑ Policy-making



Generic Steps in working with an Economic Model

- ❑ Step 1: Locating a Suitable Model
- ❑ Step 2: Analyzing the Feasibility of the Model
- ❑ Step 3: Establishing a Baseline Forecast
- ❑ Step 4: Preparing the Policy Change to be Analyzed
- ❑ Step 5: Running the Policy Scenario
- ❑ Step 6: Assessing the Results

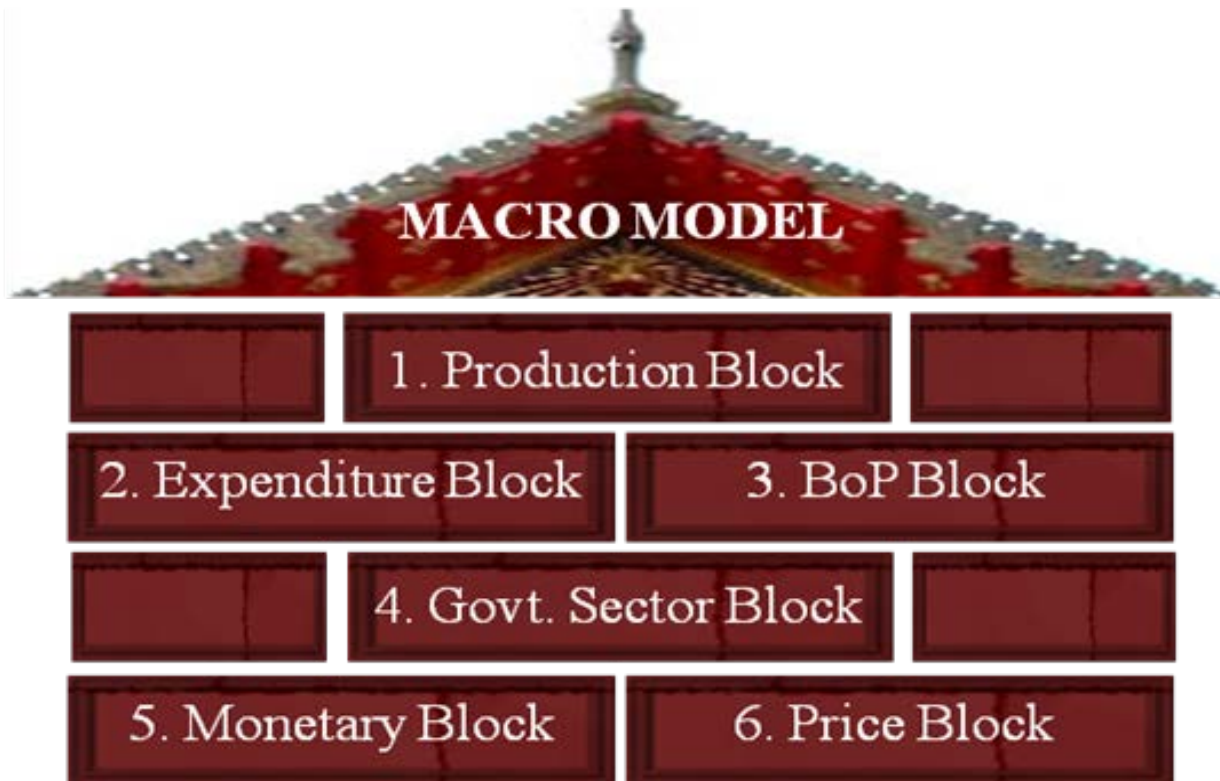


Economic Planning with Economic Model



An Economic Model

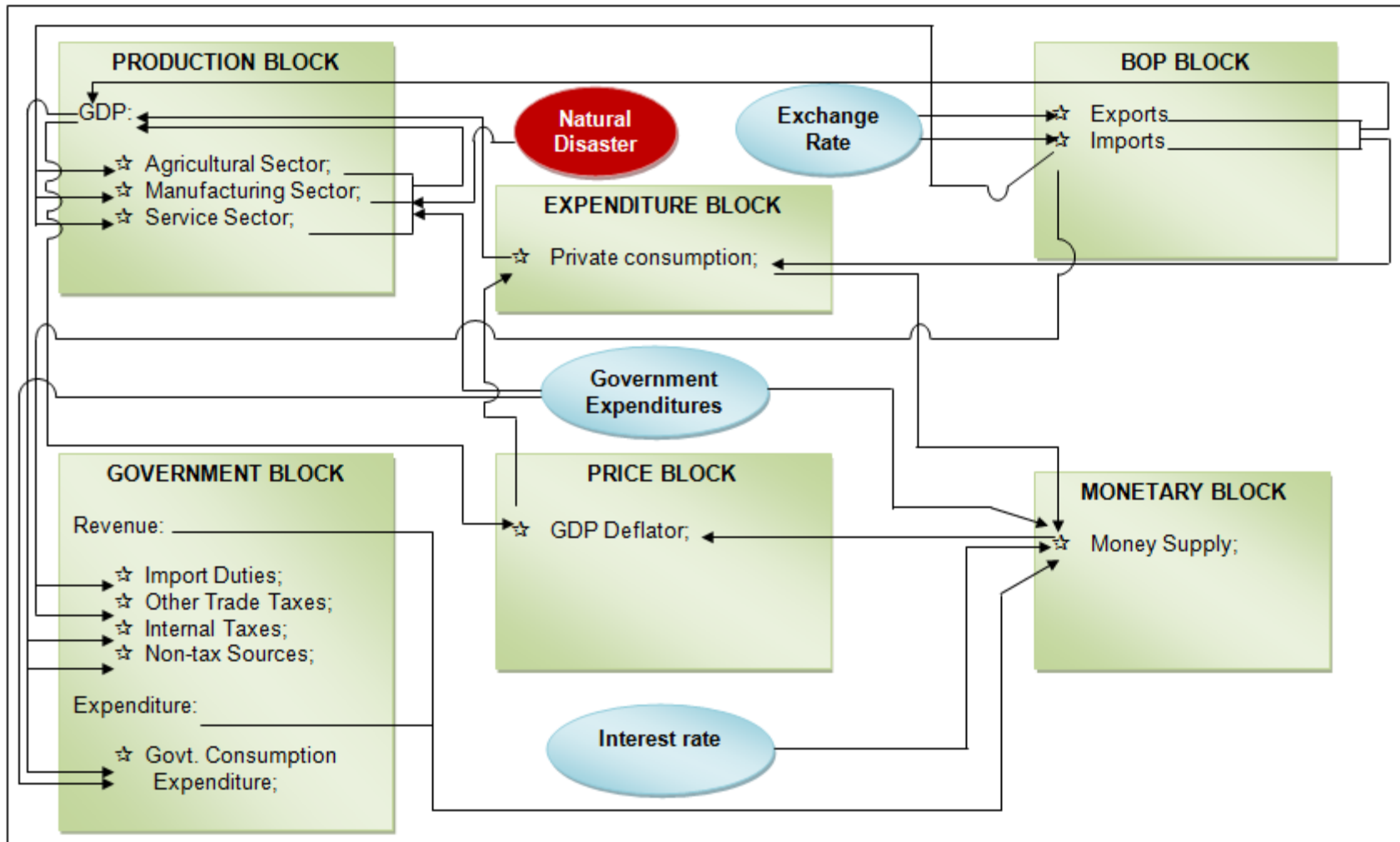
- 1. Selection of Key Elements





Economic Model

□ 2. Assumptions: How the Blocks are Linked





Economic Model

□ 3. Hypothesis ...

Some Examples of Hypothesis

“Monetary policy is more effective than fiscal policy.”

“Exchange rate policy is more effective than monetary policy.”

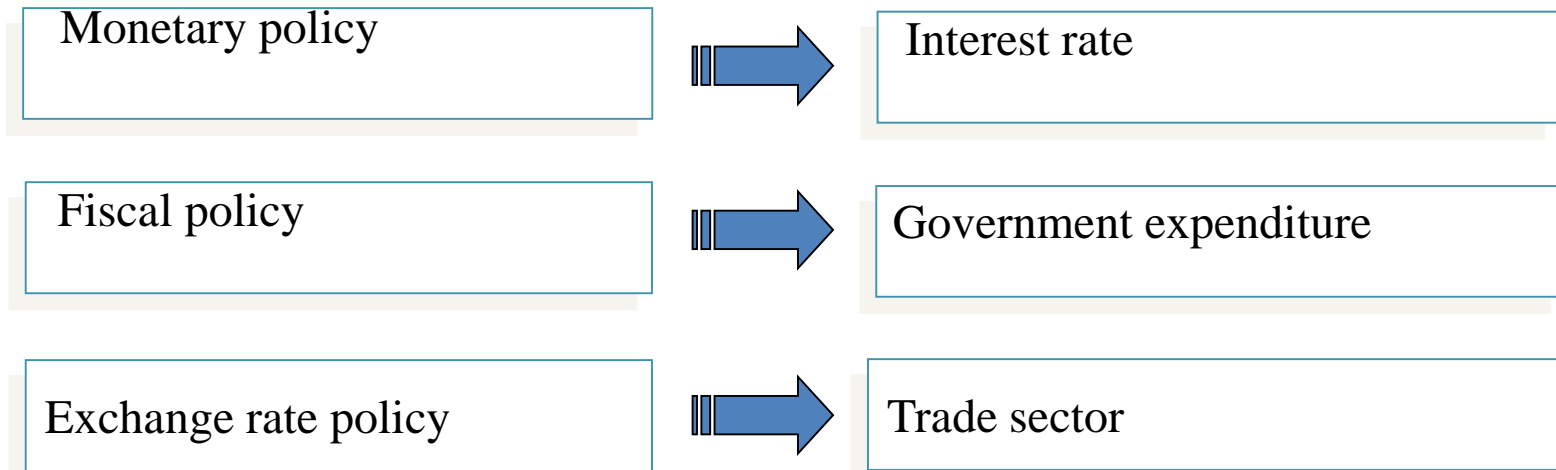
“Fiscal policy is more effective than monetary policy.”

“Monetary along with exchange rate policy is more effective than fiscal policy.”



Economic Model

□ 3. Hypothesis





Methodology: Integration of Natural Disasters into Economic Planning



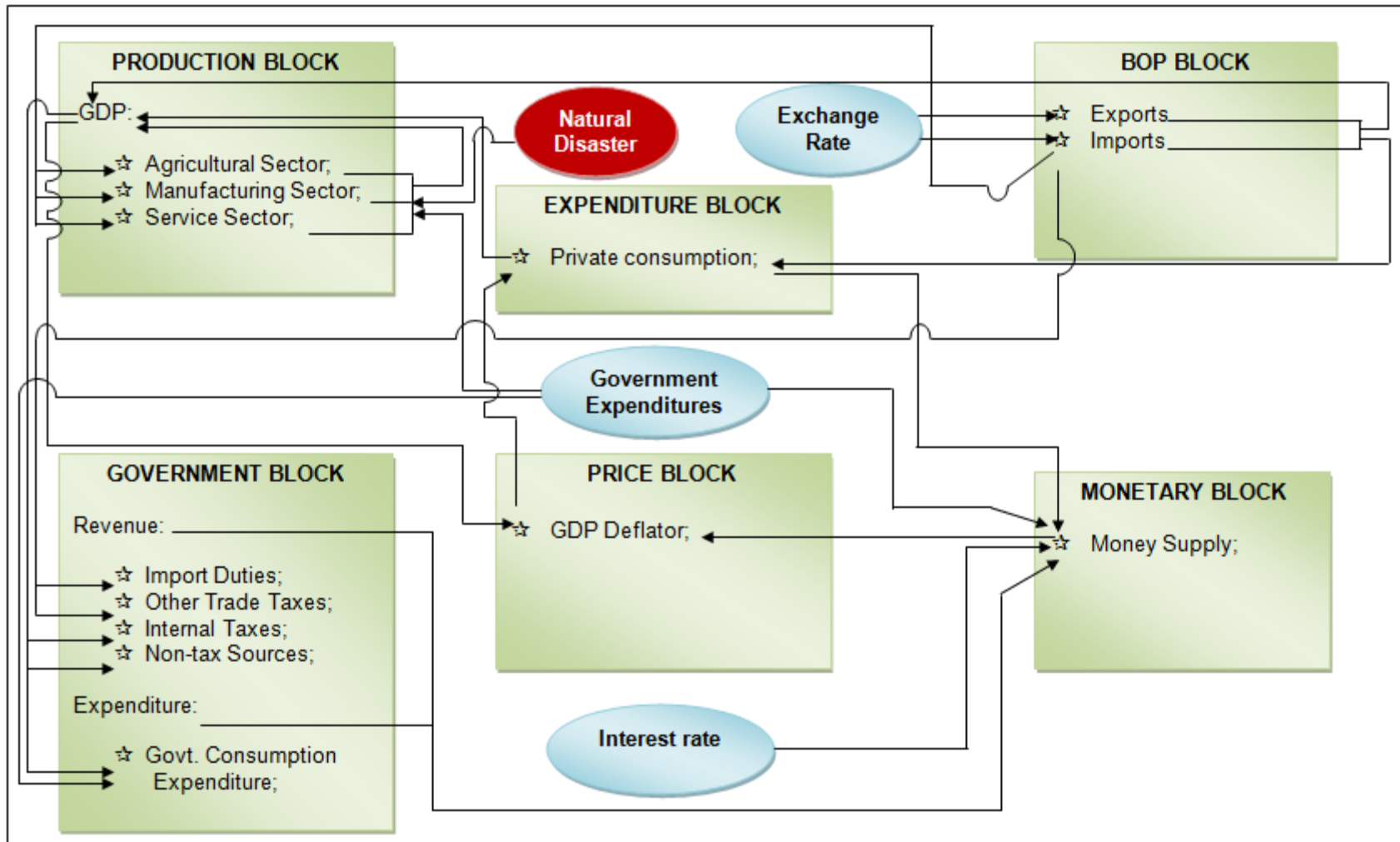
Natural Disasters and Economic Model

- 4. Inputs of the Model: Estimation of Damages due to Natural Disasters
 - ❖ From Risk Assessment to Pre-disaster Loss Estimation
 - ❖ From Damage Assessment to Post-disaster Loss Estimation



Natural Disasters and Economic Model

□ 2. Assumptions: How the Blocks are Linked





Natural Disasters and Economic Model

□ 5. Outputs of the Model: Policy Analysis

Natural Disaster Shocks:

Production Block; Bop Block; Govt. Sector Block; Monetary Block; Price Block; and Exchange Rate Block

Available Policy Options:

1. Fiscal Policy given no natural disasters;
2. Fiscal Policy given natural disaster shocks;
3. Monetary Policy given no natural disasters;
4. Monetary Policy given natural disaster shocks;
5. Fiscal and Monetary Policy given no natural disasters;
6. Fiscal and Monetary Policy given natural disaster shocks;



Natural Disasters and Economic Model

□ 3. Hypothesis Revised:

Some Examples of Hypothesis

“Monetary policy is more effective than fiscal/exchange rate policies for recovering total damages due to natural disasters.”

“Exchange rate policy is more effective than fiscal/monetary policies for recovering total damages due to natural disasters.”

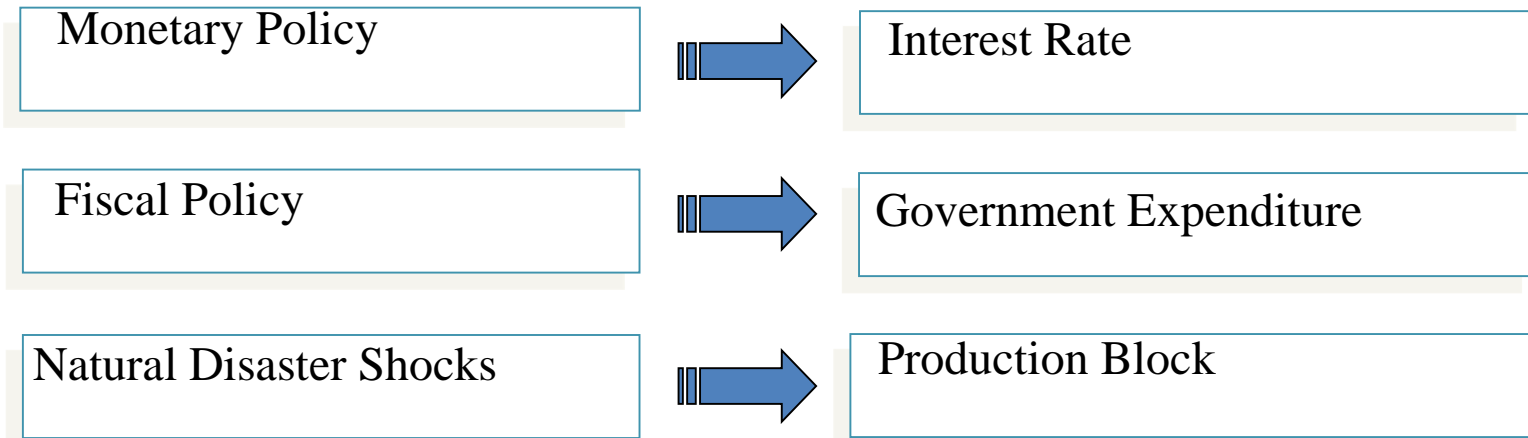
“Fiscal policy is more effective than monetary/exchange rate policies for recovering total damages due to natural disasters.”

“Monetary along with Exchange rate policy is more effective than fiscal policy for recovering total damages due to natural disasters.”



Natural Disasters and Economic Model

□ 3. Hypothesis





Policy Simulations

Expansionary Fiscal Policy Simulation: REDUCE THE TAXES

- All production sectors are worse off

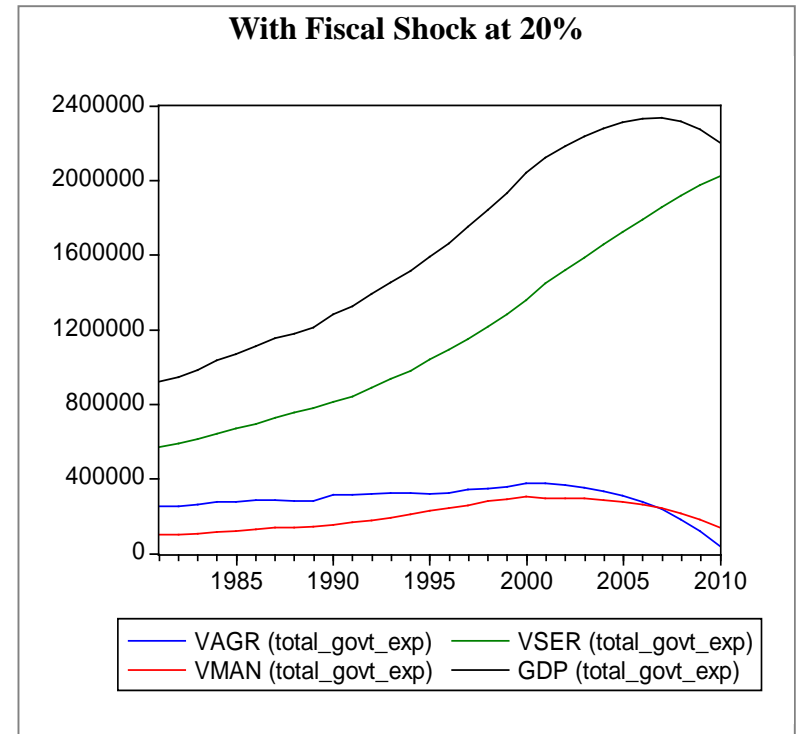
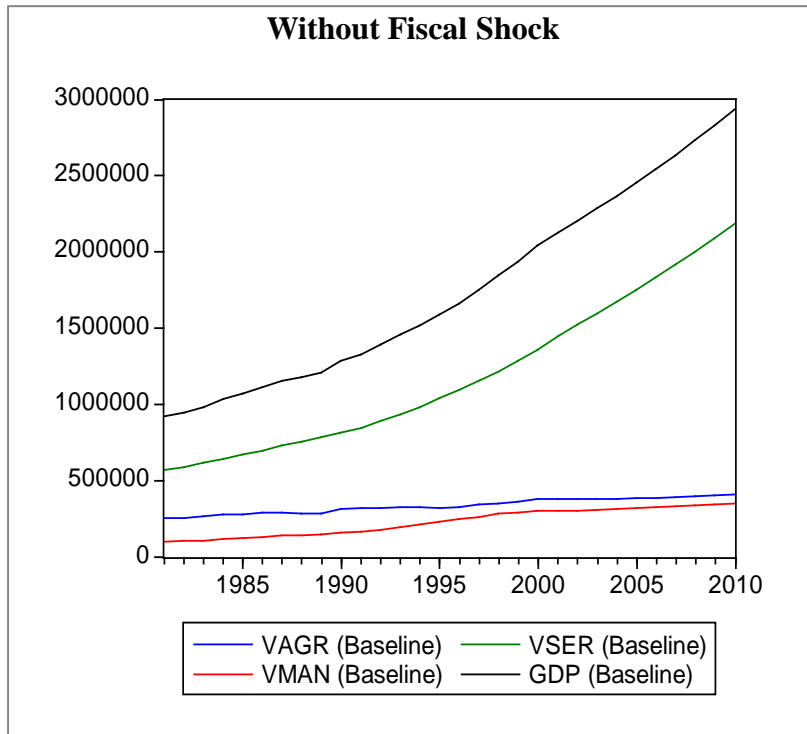
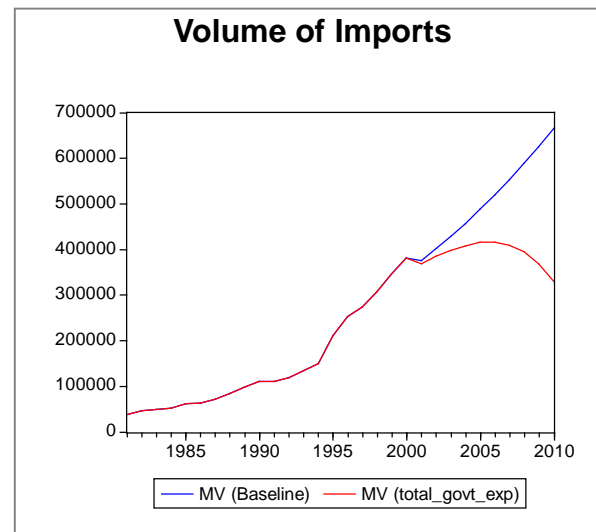
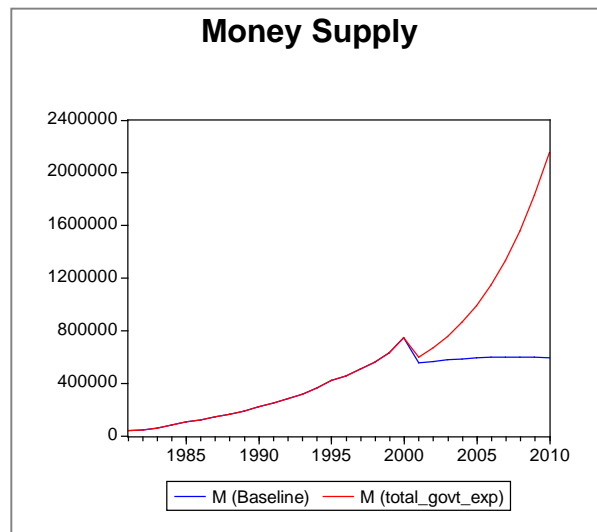
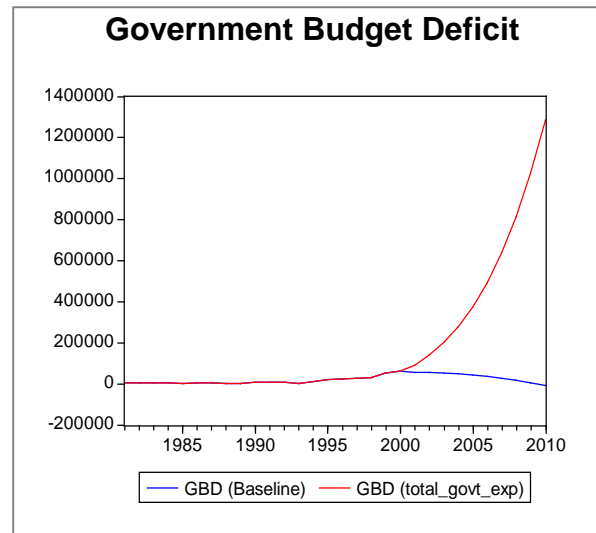
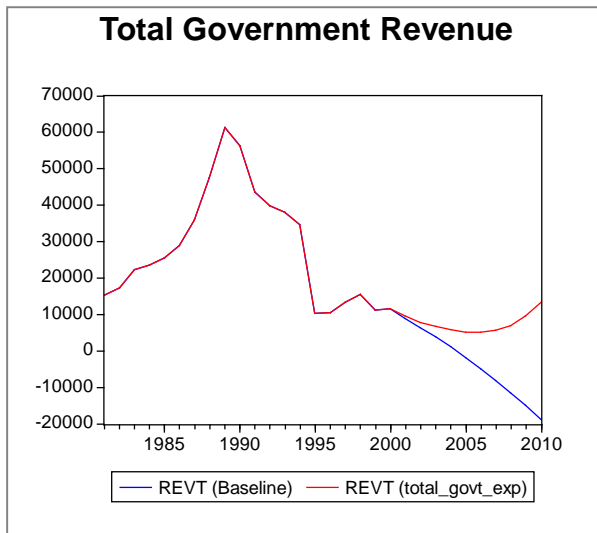


Figure: Hypothetical Effects of Fiscal Shock on Production Sectors of the Economy



Expansionary Fiscal Policy Simulation: WITH TAXES REDUCED



□ Government revenue and budget deficit have grown up;

□ Government budget deficit expands money supply followed by an increase in foreign price level that leads to a decrease in imports ;

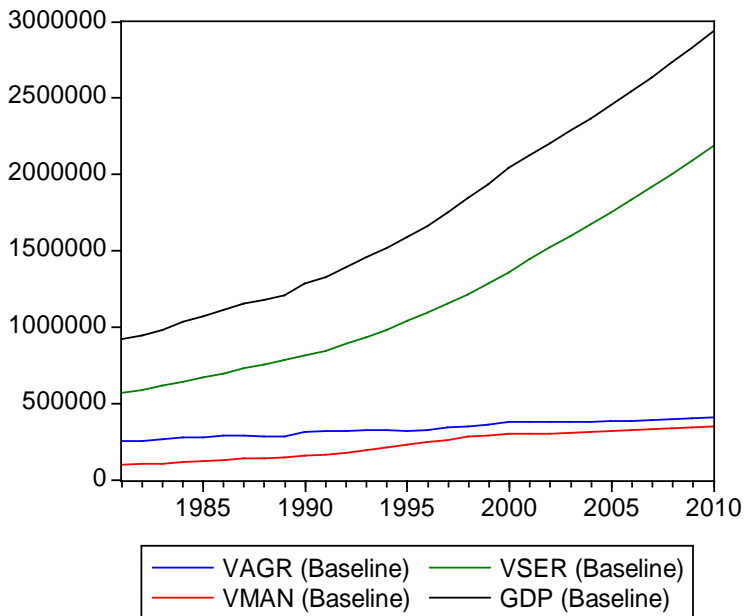


Dynamic Policy Simulations

2. Expansionary Monetary Policy Simulation: REDUCE THE INTEREST RATE

- All production sectors are worse off

Without Monetary Policy



With Interest Rate Reduced by 5%

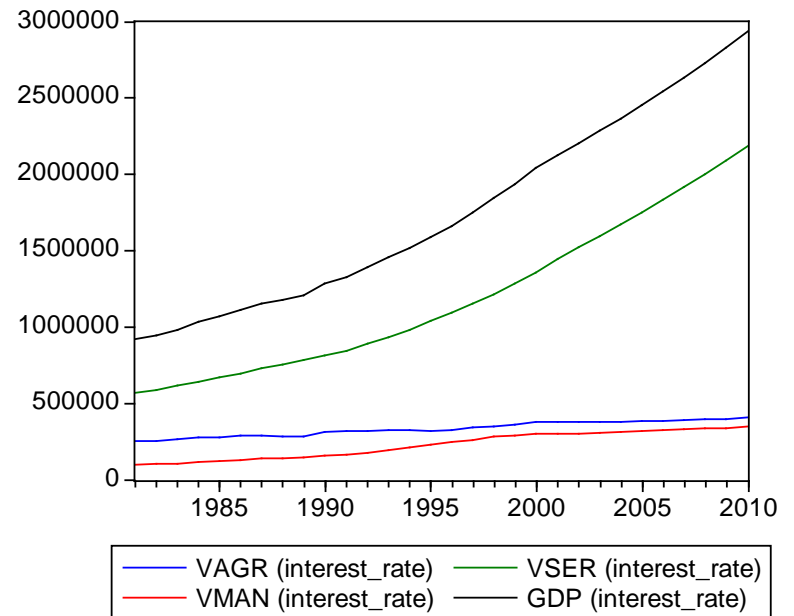


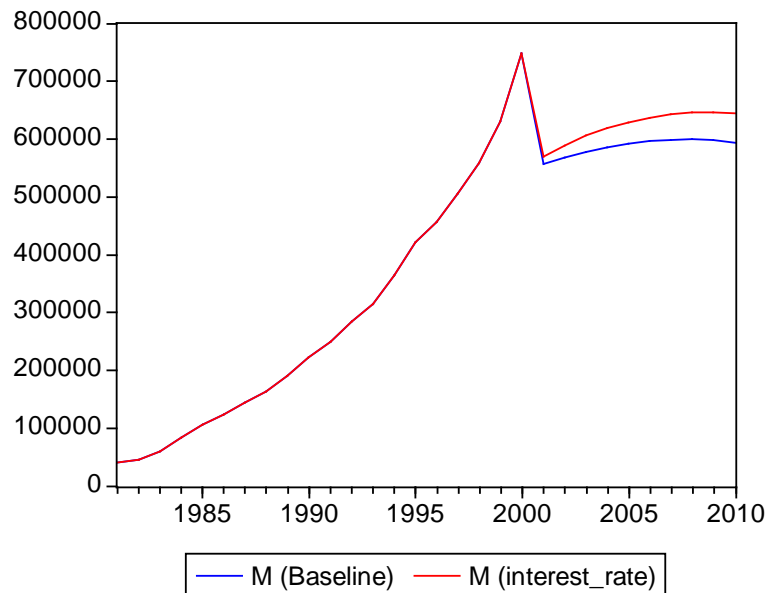
Figure 9.5: Effects of Monetary Policy on Production Sectors of the Economy



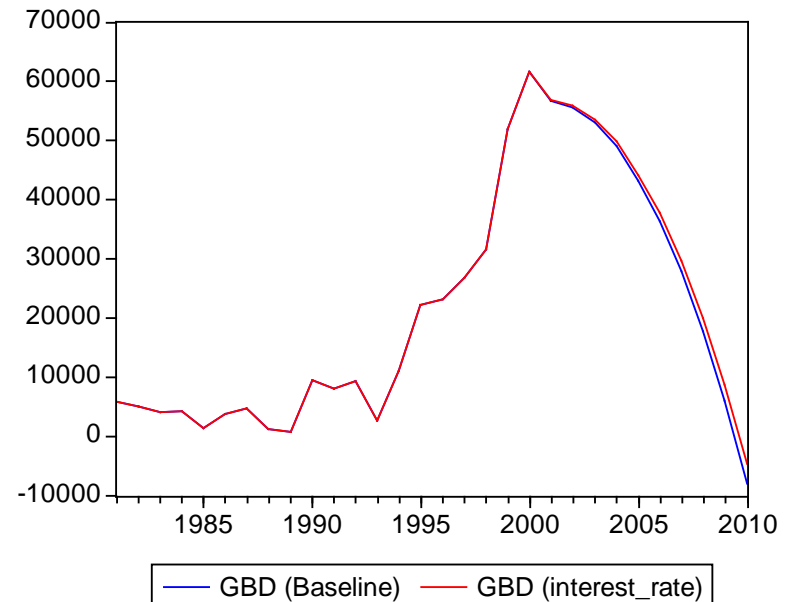
Expansionary Monetary Policy Simulation

- ❑ A decrease in interest rate has ended up with an increase in money supply
- ❑ An expansionary monetary policy has also speeded up the government budget deficit

Money Supply

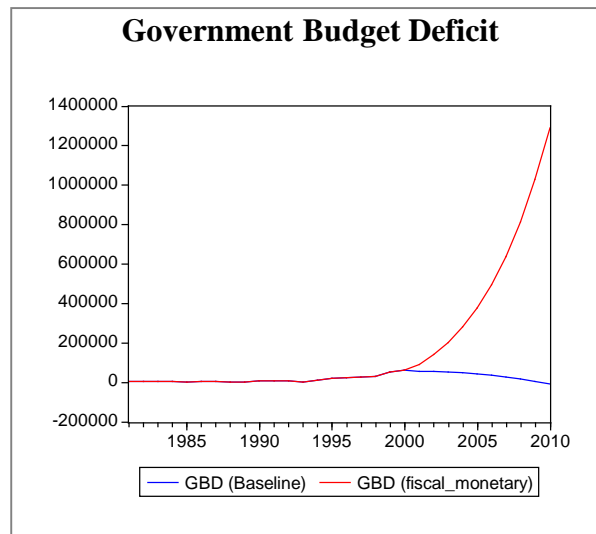
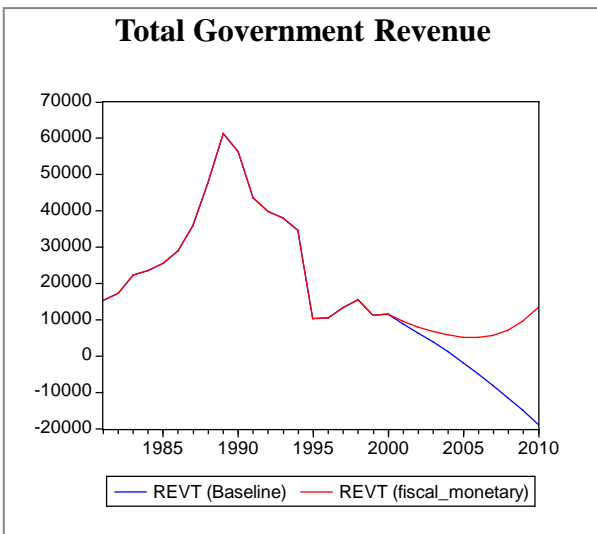
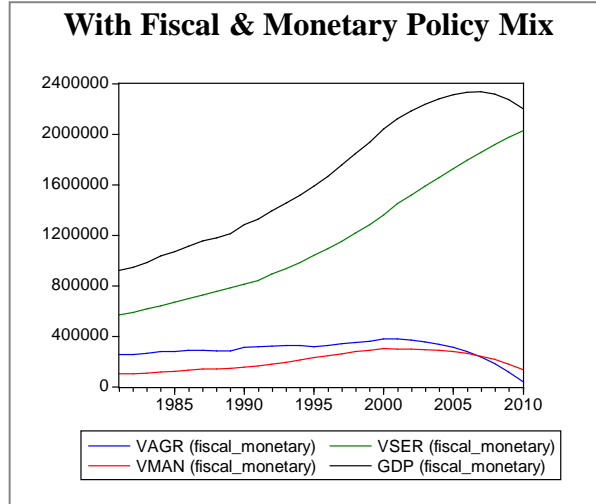
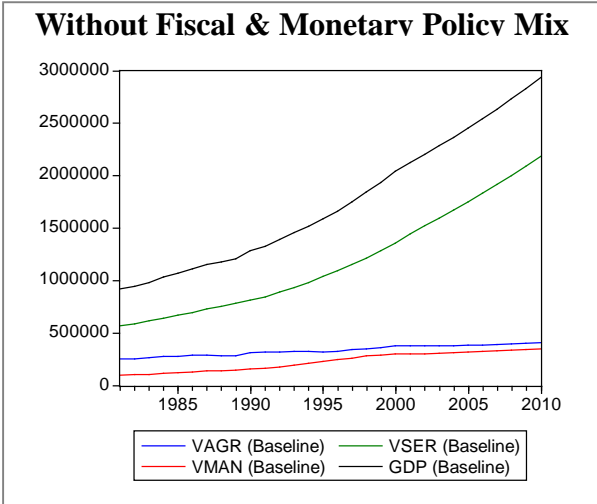


Government Budget Deficit





4. Fiscal & Monetary Policy Mix ...



- ❑ All production sectors are worse off;
- ❑ Agriculture is the most victim;

- ❑ Total government revenue has been stronger continuously;
- ❑ Government budget deficit widens;
- ❑ However, GBD increases due to an increase in govt. expenditures;

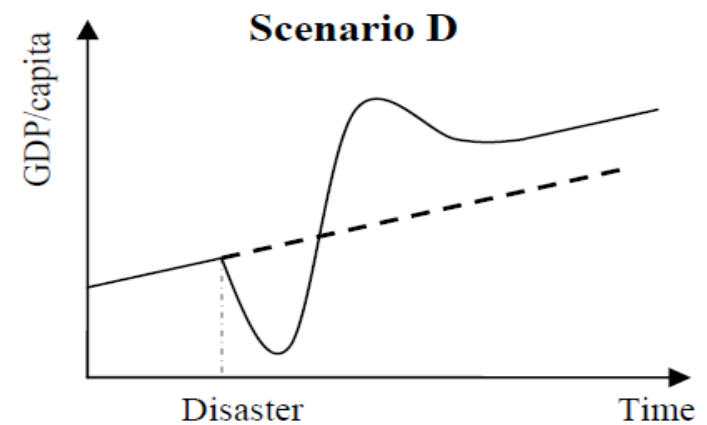
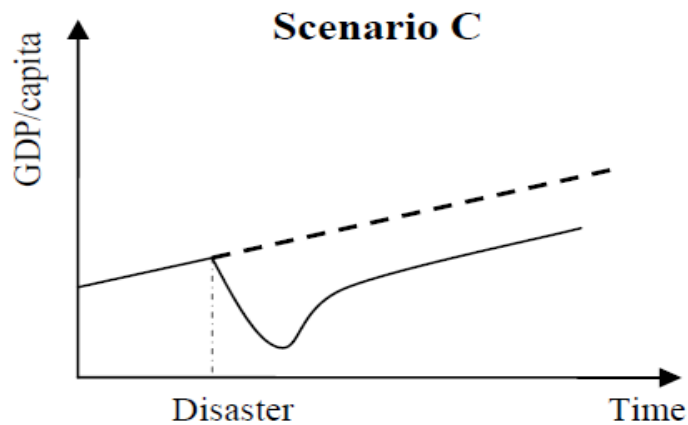
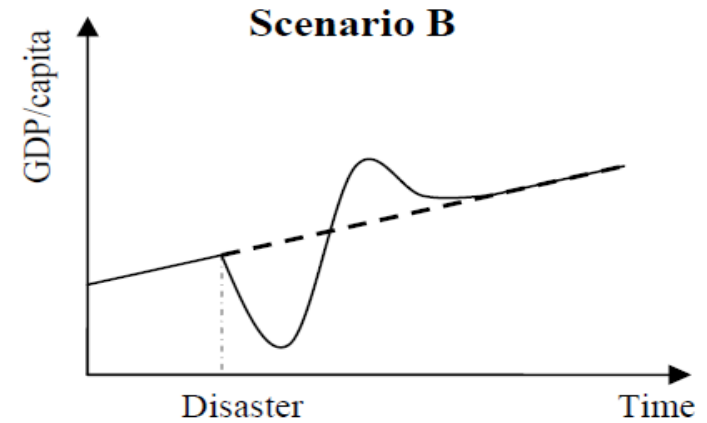
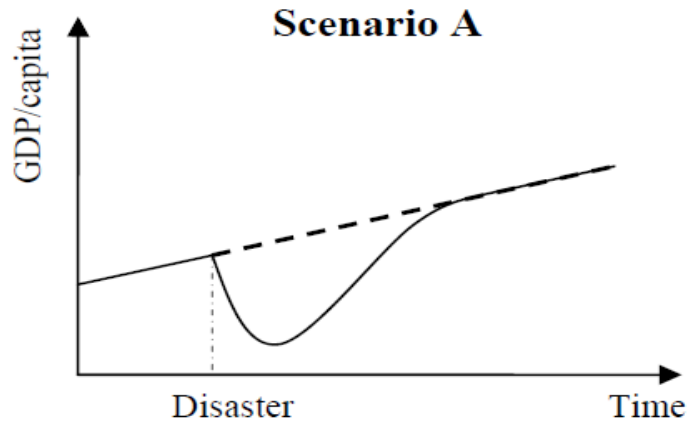


Natural Disaster Shock as Input into Economic Model

Sector	Total Effects <i>(in dollars)</i>	
	Damage	Fraction of Capital Damaged
<i>Primary Sectors:</i>		
Agriculture	**	10%
<i>Secondary Sectors:</i>		
Industry	**	20%
<i>Service Sectors:</i>		
Transport & Communications	**	8%
Commerce	**	22%
Housing	**	4%
Tourism	**	35%
Electricity	**	17%
Education	**	2%
Health	**	3%
Water and Sanitation	**	7%
Public Administration	**	6%
Cultural Heritage	**	14%
Total	***	***



Potential Impact of Natural Disasters on GDP



Source: Chhibber & Laajaj, 2007



Methodology: At a Glance

INPUTS	ECONOMIC MODEL	OUTPUTS
<p>Damage Data from Risk Assessment</p>		<p>Estimation of Loss</p> <p>Selection of Optimum Policy Option</p>
<p>Damage Data from ECLAC Methodology</p>		
<p>Damage Data: Hypothetical Case</p>		



Q & A Session



Thank You