

Intermediate Macroeconomics

Chapter 4

Introduction to the Equilibrium Model

Introduction to the Equilibrium Model

1. The Parsimonious Model
2. What is an Equilibrium Model?
3. Equilibrium Model Solution Method
4. Simple Equilibrium Model in Action

1. The Parsimonious Model

Make simplifying assumptions

Parsimonious – stingy, miserly

Occam's Razor - eliminate complicating details that don't significantly contribute to the model

- Don't include unimportant variables
- *Ceteris Paribus* (other things being equal) - Hold constant variables that are not the focus of your interest

1.The Parsimonious Model

Simplifying assumptions for our models

Aggregate output \equiv National income

National income \equiv Personal income

2. What is an Equilibrium Model?

Assumed equilibrium condition

- GDP Accounting (Chapter 2):

National Income \approx Aggregate Supply

- Macroeconomic Models:

Aggregate Supply (AS) = Aggregate Demand (AD)

or

National Income (Y) = Aggregate Demand (AD)

2. What is an Equilibrium Model?

Disequilibrium

- **Disequilibrium**: aggregate output (or national income) is not equal to aggregate demand
- **Undesired Inventory Accumulation**: a symptom of disequilibrium where aggregate output $>$ aggregate demand
- **Undesired Inventory Draw**: a symptom of disequilibrium where aggregate output $<$ aggregate demand

3. Equilibrium Model Solution Method

1. **Substitute** the given equations into the equation for aggregate demand AD.
2. **Apply the assumed equilibrium condition:**
 $Y = AD$
3. **Substitute** the derived equation for AD from step 1 into the right-hand side of the equilibrium condition in step 2.
4. **Simplify** the equation. This often means solving for income (Y), since Y should appear on both the left- and right-hand sides of the equation in step 3.

4. Simple Equilibrium Model in Action

Describing the economy

$$AD = C + I + G + NX$$

AD = aggregate demand

C = consumption

I = investment

D = government spending

NX = net exports (exports – imports)

$$YD = C + S$$

YD = disposable income

S = savings

$$YD = Y + TR - TA$$

Y = national income

TR = government transfer payments

TA = government taxes

4. Simple Equilibrium Model in Action

Solving the model

1. Substitute given equations into equation for AD:

$$YD = YD$$

$$C + S = Y + TR - TA$$

$$C = Y + TR - TA - S$$

$$AD = C + I + G + NX$$

$$= (Y + TR - TA - S) + I + G + NX$$

2. Apply equilibrium condition:

$$Y = AD$$

3. Substitute solution for AD from Step 1:

$$Y = Y + TR - TA - S + I + G + NX$$

4. Simplify equation:

$$G + TR - TA = S - I - NX$$

4. Simple Equilibrium Model in Action

Implications of the model

In equilibrium:

$$G + TR - TA = S - I - NX$$

- Crowding Out
- Ricardian Equivalence
- Twin Deficits

4. Simple Equilibrium Model in Action

Crowding Out

In equilibrium: $G + TR - TA = S - I - NX$

Assume:

- Increase in government deficit ($G + TR - TA$)
- Savings (S) and net exports (NX) constant

Result:

- Decrease in investment (I)

4. Simple Equilibrium Model in Action

Ricardian Equivalence

In equilibrium: $G + TR - TA = S - I - NX$

Assume:

- Increase in government deficit ($G + TR - TA$)
- Investment (I) and net exports (NX) constant

Result:

- Increase in savings (S)

4. Simple Equilibrium Model in Action

Twin Deficits

In equilibrium: $G + TR - TA = S - I - NX$

Assume:

- Increase in government deficit ($G + TR - TA$)
- Savings (S) and investment (I) constant

Result:

- Decrease in net exports (NX)

4. Simple Equilibrium Model in Action

Implications of the model

$$G + TR - TA = S - I - NX$$

Implications of an increase in the Government Budget Deficit, $G + TR - TA$:

	Savings	Investment	Net Exports
Ricardian Equivalence	Increase	Assume Constant	Assume Constant
Crowding Out	Assume Constant	Decrease	Assume Constant
Twin Deficits	Assume Constant	Assume Constant	Decrease