

Short-Run Fluctuations

Chapter 7.2 and 7.3

Outline

- Aggregate demand and the spending decision
- The point of balance of income and spending

7.2 Aggregate Demand and the Spending Decision

Adding up the spending demand of various sectors in the economy– **aggregate spending** or **aggregate demand**

We assume that aggregate demand determines output, and for now that the economy has the resources to produce the output.

7.2 Aggregate Demand and the Spending Decision

How does AD determine output?

- Firms respond to increases in demand by producing more goods
- To operate equipment more intensively, some firms increase the number of working hours, or recall workers from layoff, or hire additional workers

There is **short run flexibility** for firms to meet an increase in demand (same for a decrease – firms produce less output)

The Unresponsiveness of Price Level

- Firms can adjust both output and prices
- An increase in demand leads to an increase in price and a decrease in demand leads to a decrease in price – by adjusting prices a firm can increase its profits in the short run
- Problem: **sticky prices in the short run** compared with production
- The adjustment of prices occurs gradually (therefore, in the long run prices are flexible), but production adjusts almost instantaneously

7.3 The Point of Balance of Income and Spending

- We study spending behavior by taking into account the effects of income on spending
- Spending balance occurs when the level of income equals spending

7.3 The Point of Balance of Income and Spending

Income identity:

$$Y = C + I + G + X$$

Two concepts:

- Income = GDP
- Aggregate demand determines GDP

7.3 The Point of Balance of Income and Spending

The consumption function describes the total consumption demand from all families in the economy; a simple approximation of actual consumption

- Depends on disposable income, wealth, expected future income, and the price of goods today compared with tomorrow

7.3 The Point of Balance of Income and Spending

- A simple consumption function (Keynes):

$$C = a + bY_d$$

a – intercept of consumption function

b - marginal propensity to consume = how much an additional dollar of disposable income is spent on consumption

Y_d - disposable income = income minus taxes

7.3 The Point of Balance of Income and Spending

Ex: $C = 220 + 0.9Y_d$

- If income < 220 , one needs to borrow
- If income > 220 , one can choose between consumption and saving
- $b = 0.9$, so 90 cents of each dollar of disposable income is spent on consumption and the other 10 cents is saved

7.3 The Point of Balance of Income and Spending

- We can also write the consumption function in terms of income rather than disposable income: $Y_d = (1 - t) Y$

(t = tax rate, tY = total tax)

$$C = a + b(1-t)Y$$

- Consumption depends positively on income
- C and Y – endogenous variables (determined inside the model)
- I , G , X - exogenous variables (determined outside the model)

7.3 The Point of Balance of Income and Spending

- The model:

$$Y = C + I + G + X$$

$$C = a + b(1-t)Y$$

- Spending balance occurs at levels of consumption C and income Y that obey the consumption function and the income identity

7.3 The Point of Balance of Income and Spending

- Substitute the consumption function into the income identity and solve for income to obtain

$$Y = a + b(1-t) Y + I + G + X$$

$$Y = 1 / 1 - b (1 - t) (a + I + G + X)$$

- To solve for consumption, substitute back into the consumption function the value of income when spending balance is achieved

The Multiplier

- What happens to income when there is a change in one of the exogenous variable; for instance, a decrease in investment?
- The spending line is shifted downward by the amount of the decline in investment
- The result: income is lower – the decline in income is larger than the shift in the spending line
- This mechanism is called the **multiplier**

The Multiplier

measures how much a change in an exogenous variable (investment, government spending, or net exports) changes income

Ex. If investment changes, the multiplier is:

$$\Delta Y = \frac{1}{1 - b(1 - t)} \Delta I$$

- $\frac{1}{1 - b(1 - t)}$ = the multiplier
- The change in GDP is greater than the change in investment
- The larger the marginal propensity to consume b , the larger the multiplier

The Multiplier

- Fluctuations in investment are associated with fluctuations in GDP – (Keynes) – essential source of business-cycle fluctuations
- Relatively small fluctuations in investment can cause large fluctuations in GDP
- Changes in other exogenous variables (such as government spending and net exports) also result in changes in income

Spending Balance When Net Exports Depend on Income

- Open-economy macroeconomics

$$Y = C + I + G + X$$

$C + I + G$ = domestic purchases

X (net exports) = Exports - Imports

- When income increases, consumption increases, but imports also increase (X decreases)

Spending Balance When Net Exports Depend on Income

The net export function:

$$X = g - mY$$

$g = \text{constant}$

$m = \text{marginal propensity to import; for each dollar that GDP rises, imports rise and net exports fall by the same amount (m dollars)}$

Spending Balance When Net Exports Depend on Income

- To find the value of income at the point of spending balance in an open economy where net exports are endogenous, substitute the net export function, as well as the consumption function, into the income identity:

$$Y = a + b(1-t)Y + I + G + g - mY$$

$$Y = 1 / 1 - b (1 - t) + m (a + I + G + g)$$

Spending Balance When Net Exports Depend on Income

- Open-economy multiplier:

$$\frac{1}{1 - b(1 - t) + m}$$

- The larger the marginal propensity to import, the smaller the multiplier

Spending Balance When Net Exports Depend on Income

- We can analyze the relationship between trade deficits and government budget or fiscal deficits
- Forces that raise GDP cause a trade deficit
- Example – an increase in G raises the trade deficit (but also the fiscal deficit)