Chapter 7 Consumption, Saving and Investment

Preview
- Extend our model to look at the household’s decision to consume and save.
- Why do households save?
  - Allows for higher consumption tomorrow or in the future.
- So household’s decision is really one of when to consume.

Consumption Over Two Years
\[
C_1 + C_2/(1+i_1) = (1 + i_0) \cdot (B_0/P + K_0) + (w/P)_1 \cdot L + (w/P)_2 \cdot L/(1+i_1) - (B_2/P + K_2)/(1+i_1)
\]

Present Value
- Need to discount dollars spent in year 2 to make them comparable to year 1.
- \((1 + i)\) is the discount factor.
- Present value (PV) of $X one year in the future = $X/(1+i).
- \((w/P)_1 \cdot L + (w/P)_2 \cdot L/(1+i_1)\)
  - PV of income earned in year 1 and year 2
- \(C_1 + C_2/(1+i_1)\)
  - PV of consumption in year 1 and year 2

Income Effects and Substitution Effect
- Goal of household is to maximize utility.
- Choose \(C_1\) and \(C_2\) subject to the two period budget constraint.
- Assume that more \(C\) is preferred to less in any period.
- Assume that households wish to smooth consumption.
- \(C_1 + C_2/(1+i_1) = (1 + i_0) \cdot (B_0/P + K_0) + (w/P)_1 \cdot L + (w/P)_2 \cdot L/(1+i_1) - (B_2/P + K_2)/(1+i_1)\)
- Let \(V = (1 + i_0) \cdot (B_0/P + K_0) + (w/P)_1 \cdot L + (w/P)_2 \cdot L/(1+i_1)\)
- \(V\) is the present value of the sources of funds: value of a household’s initial assets plus the PV of two period income.
  - \(C_1 + C_2/(1+i_1) = V - (B_2/P + K_2)/(1+i_1)\)

- Substitution Effect
  - as \(i_1\) increases, \(C_1\) falls and \(S_1\) rises
  - higher interest rates lead households to defer consumption until tomorrow

- Income effect
  - as \(i_1\) increases, \(C_1\) rises and \(S_1\) falls
  - higher interest rates increase the value of capital assets so households are able to consume more today and tomorrow
Chapter 8 An Equilibrium Business Cycle Model

\[ Y = A \cdot F(K, L) \]

- Suppose there is an increase in “technology”. What happens to __________? How will it change with real GDP?
  - The real wage: \( w/P \)
    - an \( \uparrow \) in \( A \), \( \uparrow \) \( w/P \). During a boom (recession) \( w/P \) relatively high (low).
  - The rental price of capital, \( R/P \), and interest rate, \( i \)
    - an \( \uparrow \) in \( A \), \( \uparrow \) \( R/P \). During a boom (recession) \( R/P \) relatively high (low).
    - since \( i = MPK - \delta \), \( i \) behaves the same

- Our models predicts:
  - \( (w/P), (R/P), i, C, S, \) and \( I \) are all **procyclical**
  - **countercyclical** and **acyclical**
  - \( C \) fluctuates proportionately less than income
  - \( I \) fluctuates proportionately more than income

**Exercise (Short Answer Questions):**

1. What are the effects of an increase in the interest rate on the choice of consumption over time?

2. Does an increase in permanent income affect household consumption differently than an increase in temporary income?

3. What is the relationship between real GDP and the cyclical part of GDP?

4. If there is a positive technological change, what happens in the labor market?