ECONOMICS 3020: Accelerated Macroeconomics

Baker Laboratories 119

MWF 10:10 AM - 11:00 AM
The Optimal Consumption Combination
An Increase in Income or Wealth
An Increase in Real Interest Rate on Budget Line

- $BL^2$ (slope = -1.76)
  - Real interest rate increases from 10% to 76%

- $BL^1$ (slope = -1.10)
  - No-borrowing, no-lending point

Future consumption, $c_f$

Current consumption, $c$
The Substitution Effect
The Substitution and Income Effect

Real interest rate increases from 10% to 76%
Savings - Foundations: Summary

The savings of the individual agents can be understood by looking at his income and (empirically confirmed) consumption choice patterns.
The theory proposed here implies (and rightly so) that increases in wealth or income lead to increases in consumption.

Also, they explain why it is plausible that the response of savings to increase in the interest rate is weak and positive.
Simple Model Helps Understand Three Major Facts

Permanent Income Hypothesis

Life-Cycle Pattern of Saving and Consumption

Ricardian Equivalence Proposition
Permanent Income Hypothesis

In order to understand consumption-saving decision of the households need the inter-temporal approach developed here.

One important implication of this approach is that current consumption does not respond to transient changes in income by nearly as much as it responds to permanent changes in income.
Life Cycle Saving, Consumption and Spending
Another important feature of the inter-temporal approach is that agents in the economy pretty much do not care about the TIMING of the taxes.
Example: If the government needs to finance a deficit of 10 dollars, and raises taxes today by 10 dollars, it has the same effect on households if the government borrows these 10 dollars at the rate $R=1+r$, and pays off its debt tomorrow by raising taxes in the amount of $(1+r) \cdot 10$. 
First and foremost, from the firms point of view the interest rate represents the cost of investment.

Therefore, one needs to anticipate that higher interest rate will imply lower demand for investment.
Investment and the Tax Rate

So, how exactly do firms decide how much to invest?

The relevant comparison is between future return on capital (that is the marginal product of capital) and the interest rate.
Why so? Because the investment takes time: typically investment made today pays off only in the next period (next year for our purposes).
Investment and the Tax Rate

A firm will invest only if the return on this investment in the next period (i.e. marginal product of capital) is no lower than the interest rate at which the firm can borrow to finance this investment. You tell me why...
Determination of the Desired Capital Stock

The desired capital stock, 5000 cubic feet, sets $MPK^f$ equal to $uc$. The graph shows the expected future $MPK$, $MPK^f$, and user cost, $uc$, (dollars per cubic foot) plotted against the capital stock, $K$ (thousands of cubic feet of oven capacity). The point $A$ indicates the desired capital stock.
Decline in Real Interest Rate Raises Desired Stock

1. A fall in the real interest rate lowers the user cost of capital
2. Desired capital stock rises
Increase in Exp. Future MPK Raises Desired Stock

1. A technological advance increases the $MPK_f$

2. Desired capital stock rises
Case of closed economy.

The two sides of the market:
Firms demanding goods to invest;
Households supplying goods by saving.

The price in this market is ... that’s right, the interest rate. Why?
Saving - Investment Diagrams
Decrease in Desired Savings
Increase in Desired Investment

The diagram illustrates the relationship between the real interest rate, \( r \), and desired national saving, \( S^d \), and desired investment, \( I^d \). The graph shows the shift from an initial equilibrium at point \( E \) with a real interest rate of 6% and desired national saving and investment at 1000, to a new equilibrium at point \( G \) with a real interest rate of 8%, and desired national saving and investment at 1100.
Alternative Look on Goods Market Equilibrium

Now, remember the national accounting identity:

\[ Y = C + I + G + NX. \]

- We are in the closed economy setting, so \( NX = 0 \).
- Therefore, the equation above reduces to

\[ Y = C + I + G \]

\[ Y - C - G = I \]
As we said earlier, Consumption is rising in income and declining in interest rate. Investment in this setting depends only on interest rate.

\[ Y = C(Y - T, r) + I(r) + G \]

or

\[ Y - G - C(Y-T, r) = I(r) \]

that is

\[ S(Y-T, r) = I(r) \]