

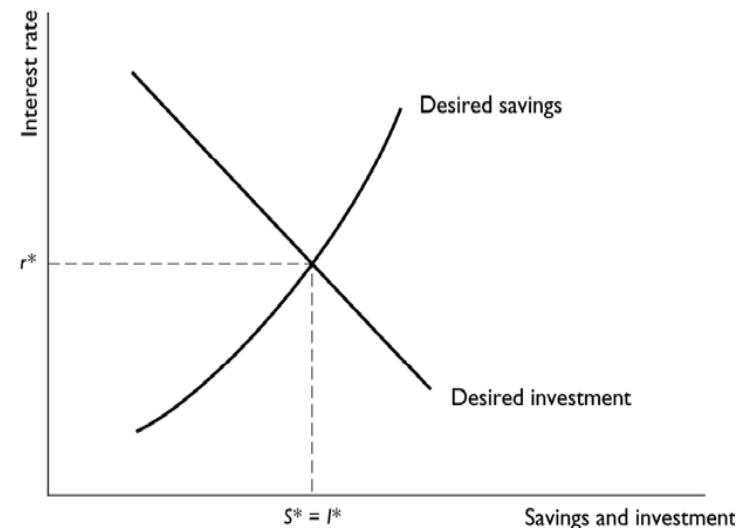


CHAPTER 4

THE LEVEL OF INTEREST RATES

Interest Rates?

- What are interest rates? Rental price for money.
 - Penalty to borrowers for consuming before earning.
 - Reward to savers for postponing consumption.
 - Usually expressed in terms of annual rates.
 - As with any price, interest rates serve to allocate resources.
- Borrower example: Producers seek financing for real assets. Expected ROI is
- Saver example: Savers require compensation for deferring consumption. Time



Loanable Funds Theory of Interest Rates

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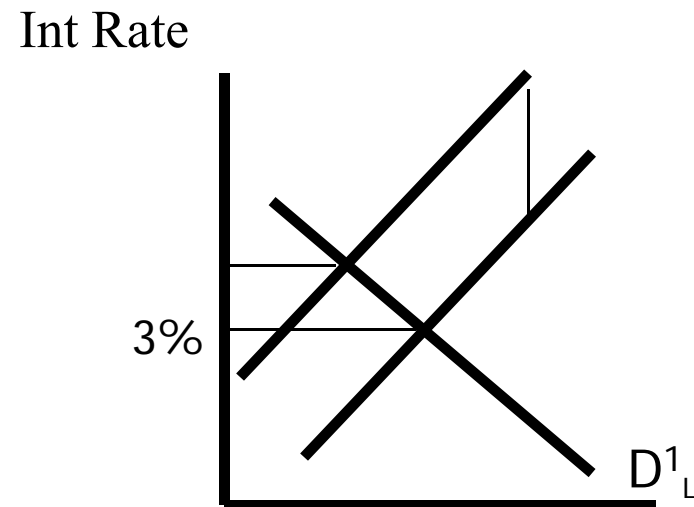
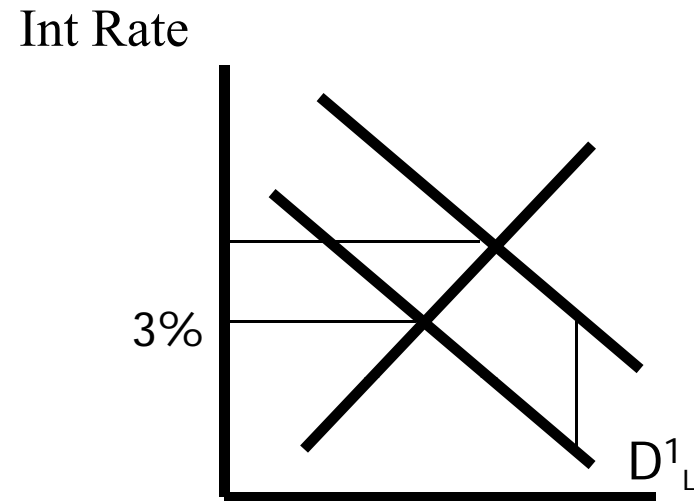
- Supply of loanable funds - sources of funds available to invest in financial claims
 - Consumer savings
 - Business savings

- Demand for loanable funds - uses of funds raised from issuing financial claims
 - Consumer credit purchases
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- Equilibrium interest rate
 - If competitive forces operate in financial sector, laws of supply and demand will bring rates into equilibrium.
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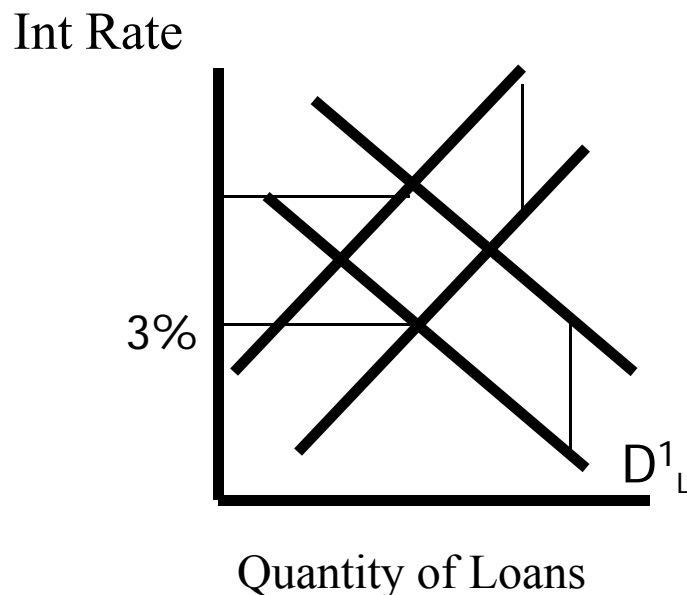
Loanable funds model

- Equilibrium –where quantity of funds demanded and supplied are equal.
- Q: What is the effect on interest rates if consumer attitudes toward risk shift, so they are more willing take out loans against their homes to buy big screen TVs?
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- Q: What is the effect on interest rates if banks attitudes toward risk shift, so that they are unwilling to lend to risky ventures?
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Inflation Expectations and Interest Rates

- Effects of high expected inflation
 - Borrowers increase demand of loanable funds
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 - Lenders decrease supply of loanable funds
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- Expected inflation is embodied in nominal interest rates (“Fisher” Effect).
- Suppose there is an increase in expected inflation of 2%.



Fisher Effect

- Expected inflation is embodied in nominal interest rates (“Fisher” Effect).

$$(1 + i) = (1 + r)(1 + \Delta P_e)$$

i = the observed nominal rate of interest,

r = the real rate of interest,

ΔP_e = the expected annual rate of inflation.

- Solving for the nominal rate, lender gets compensated for:
 - rental of purchasing power
 - anticipated loss of purchasing power
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$$i = r + \Delta P_e + (r * \Delta P_e)$$

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$$i = r + \Delta P_e$$

Fisher Effect: Example

- 1-year \$1000 loan
- Parties agree on 3% rental rate for money and
- 5% expected rate of inflation.

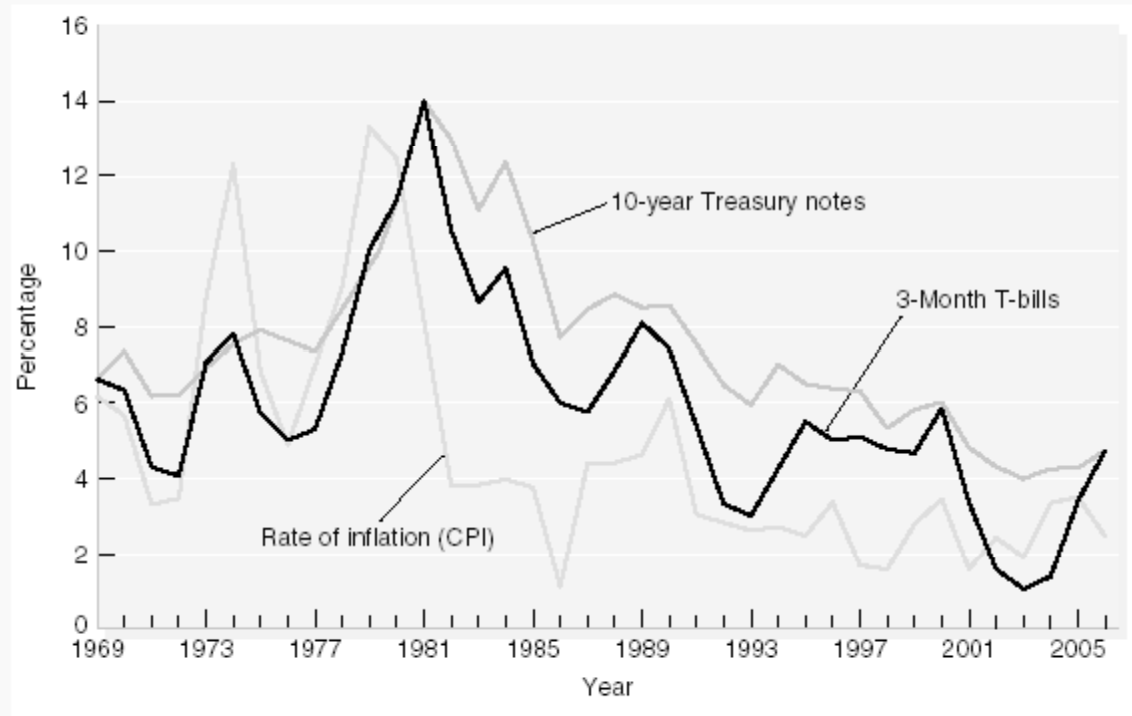
<u>Items to pay</u>	<u>Calculation</u>	<u>Amount</u>
– Principal		\$1,000.00
– Rent on money	$\$1,000 \times 3\%$	30.00
– PP loss on principal	$\$1,000 \times 5\%$	50.00
– PP loss on interest	$\$1,000 \times 3\% \times 5\%$	<u>1.50</u>
– Total Compensation		\$1,081.50

Expectations ex ante v. Experience ex post

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- Q: What if inflation is different than expected? What if markets expected zero inflation, interest rates were 6%, but actual inflation was, say, 10%?
- So, realized rates of return reflect impact of inflation on past investments.
 - Realized real return = $i - \Delta P_a$,
where ΔP_a actual annual rate of inflation.
 - Markets are must forecast future inflation when they buy financial assets.
 - As inflation increases, expected inflation premiums, P_e , may lag actual rates of inflation, P_a , yielding low or even negative actual returns.
- Historically, interest rates do tend to change with changes in the rate of inflation, but not perfectly.

EXHIBIT 4.5
Movements in Interest Rates and Inflation (1969–2006)

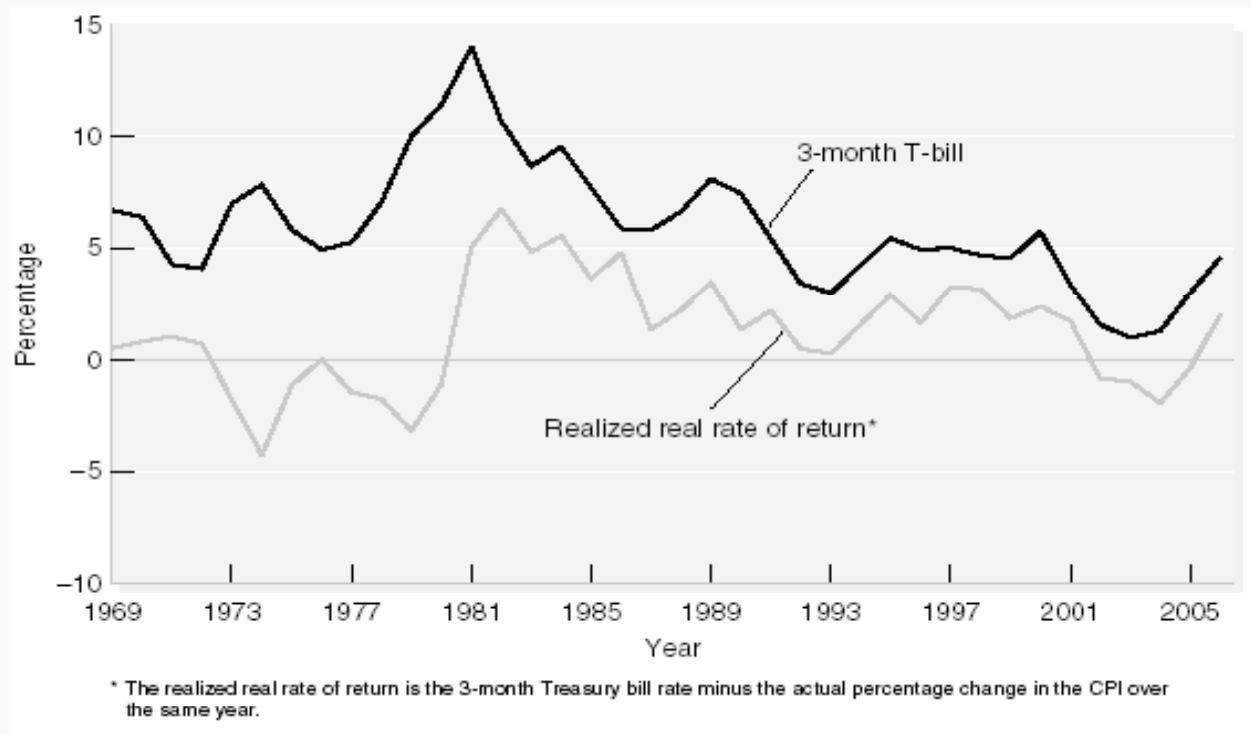


Interest rates change in response to changes in inflation, as predicted by the Fisher equation. Notice that short-term rates are more responsive to changes in inflation than long-term rates.

Source: U.S. Department of Labor, Bureau of Labor Statistics; Federal Reserve Board of Governors, H. 15 Statistical Release.

EXHIBIT 4.4

Realized Real Rates of Return (1969–2006)



The realized real rate of return can be positive or negative, depending on the extent to which the actual inflation rate exceeds the expected inflation rate. There is no evidence that lenders or borrowers are able to outpredict each other.

Source: U.S. Department of Labor, Bureau of Labor Statistics; Federal Reserve Board of Governors, H. 15 Statistical Release.

Impact of Inflation under Loanable Funds Theory

