




Course «Investment project management»

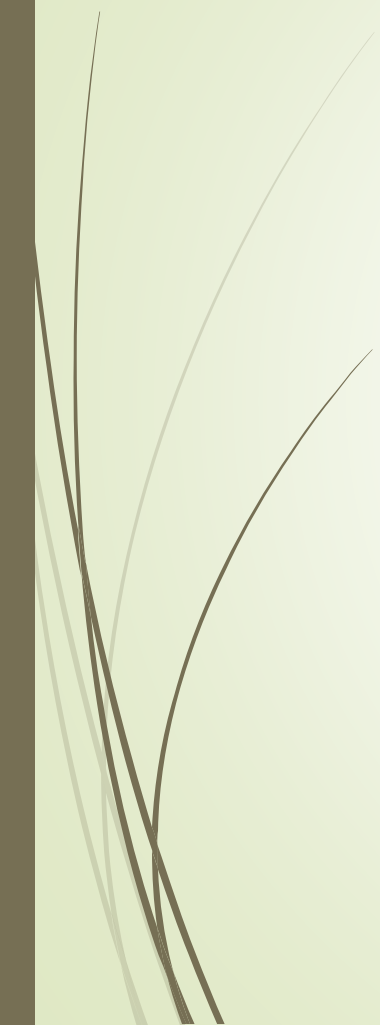
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Lesson 1: Introduction



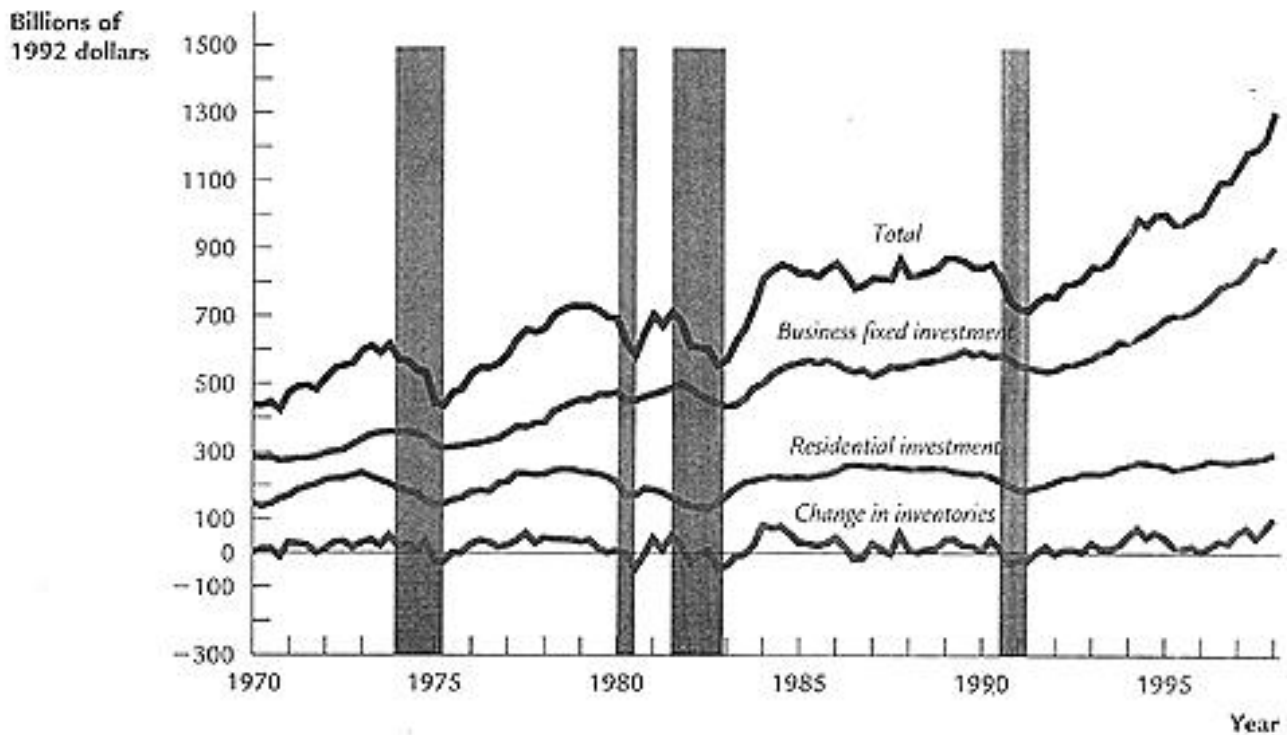


Types of Capital



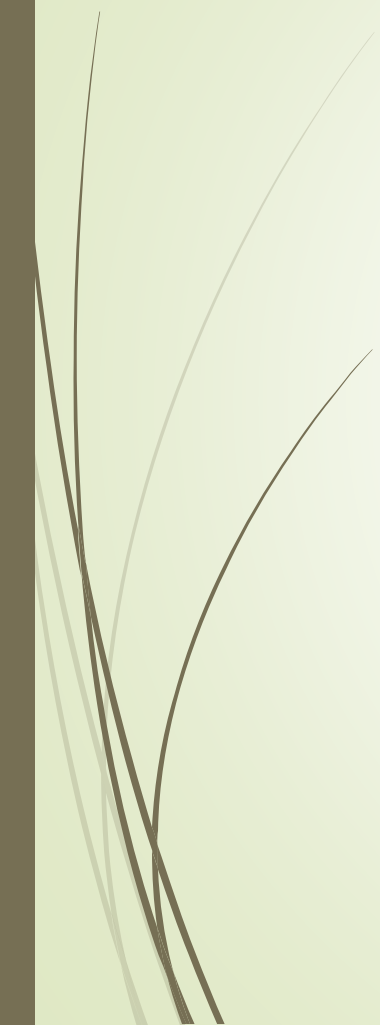
- ▶ Business fixed investment: equipment and structures businesses use to produce
- ▶ Residential investment: new housing units
- ▶ Inventory investment: goods businesses put aside in shortage to regulate the demand

Three Components of Investment





Questions to be Answered

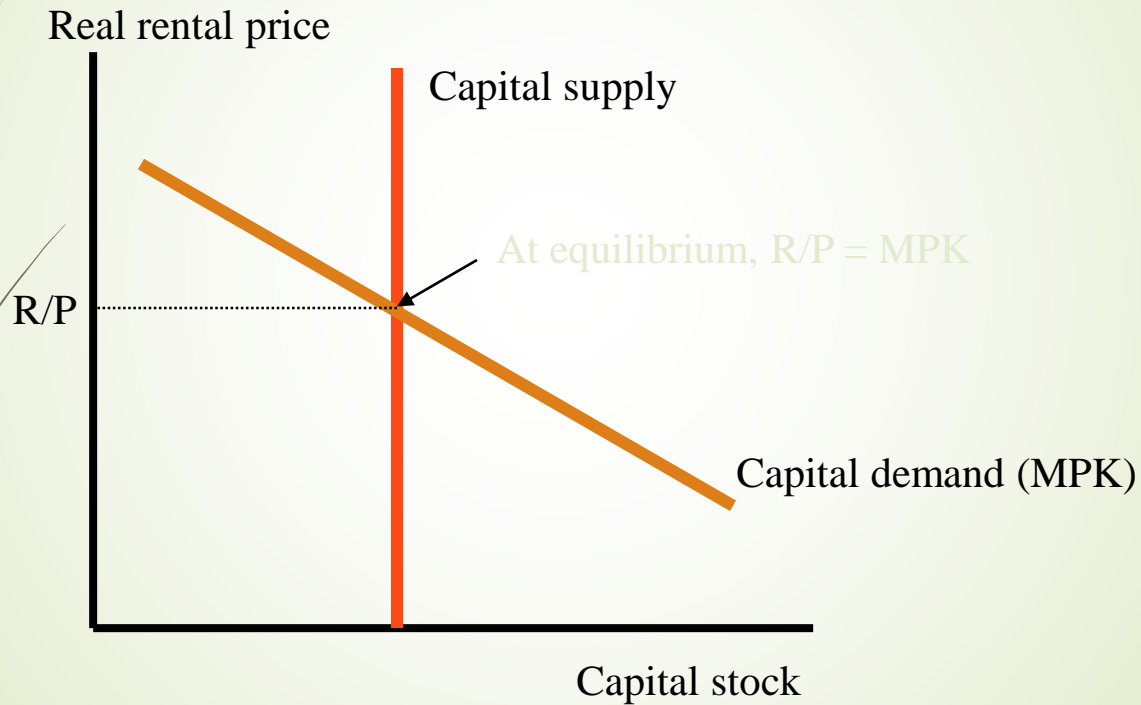
- ▶ Why is investment negatively related to the interest rate?
 - ▶ What causes the investment function to shift?
 - ▶ Why does investment rise during booms and fall in recessions?
- 



Rental Price of Capital

- ▶ Supply of capital is fixed in the production process
- ▶ Demand for capital is indicated by the Marginal Product of Capital
- ▶ Demand = Supply determines the price of capital

Competitive Capital Market





Cost of Capital

Cost of capital = $P_k(r + \delta)$ where

Real cost of capital = $(P_k/P)(r + \delta)$

P_k = price of capital

P = general price level

r = real interest rate

δ = depreciation rate

Determinants of Investment

$$\text{Profit Rate} = \text{Revenue} - \text{Cost} = R/P - (P_k/P) (r + \delta)$$

At equilibrium $R/P = MPK$,

$$\text{Profit Rate} = MPK - (P_k/P) (r + \delta)$$

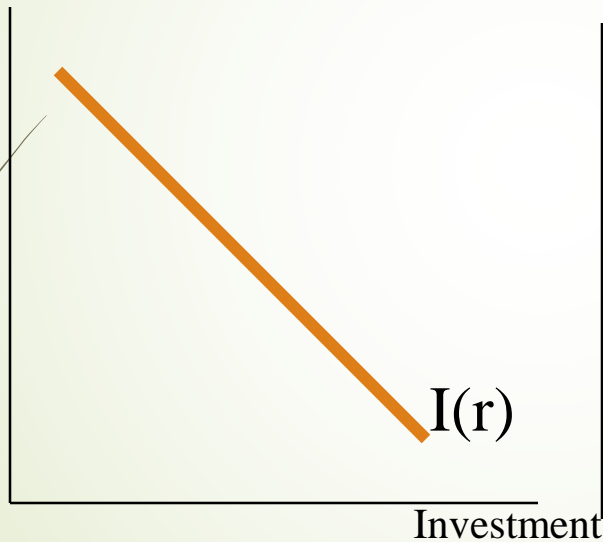
Replacement capital is: $\Delta K = f[MPK - (P_k/P) (r + \delta)]$, which is

business fixed capital.

Thus, investment negatively relates to the real interest rate.

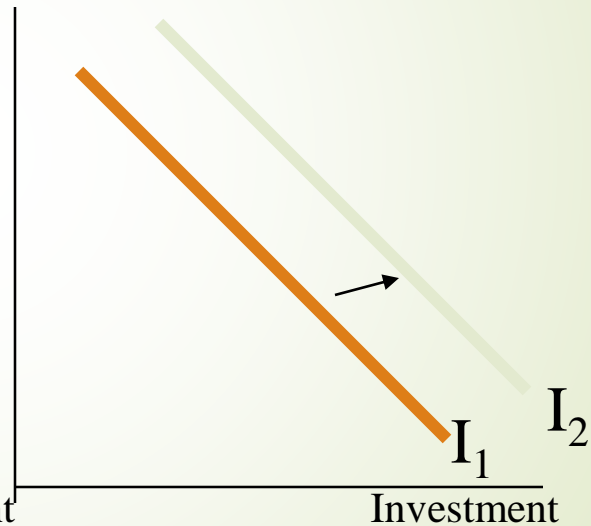
Investment Function

Real interest rate



Investment is a negative function of real interest rate.

Real interest rate



Investment increases by technological advancement.



Effect of Taxes on Investment

- ▶ Corporate income tax is a tax on corporate profit. An increase in the tax would discourage business investment.
- ▶ Investment tax credit is an incentive for businesses to invest. An increase in the tax **credit** would encourage business investment.

Stock Market and Tobin's q

- ▶ Firms base their investment decisions on a ratio:
- ▶ **Numerator: Market value of installed capital, which is value of capital as determined by Stock Market**
- ▶ **Denominator = Replacement cost of installed capital, which is price of capital if it were purchased today**

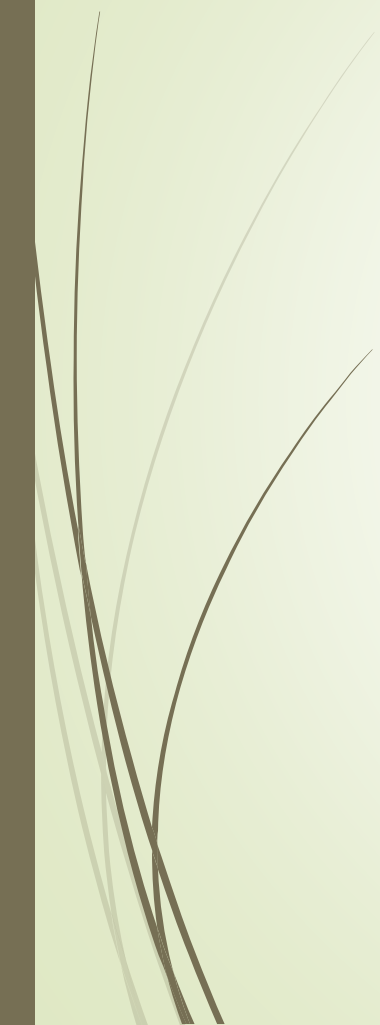
$q = 1$: firm needs no investment

$q > 1$: firm must investment more on fixed capital

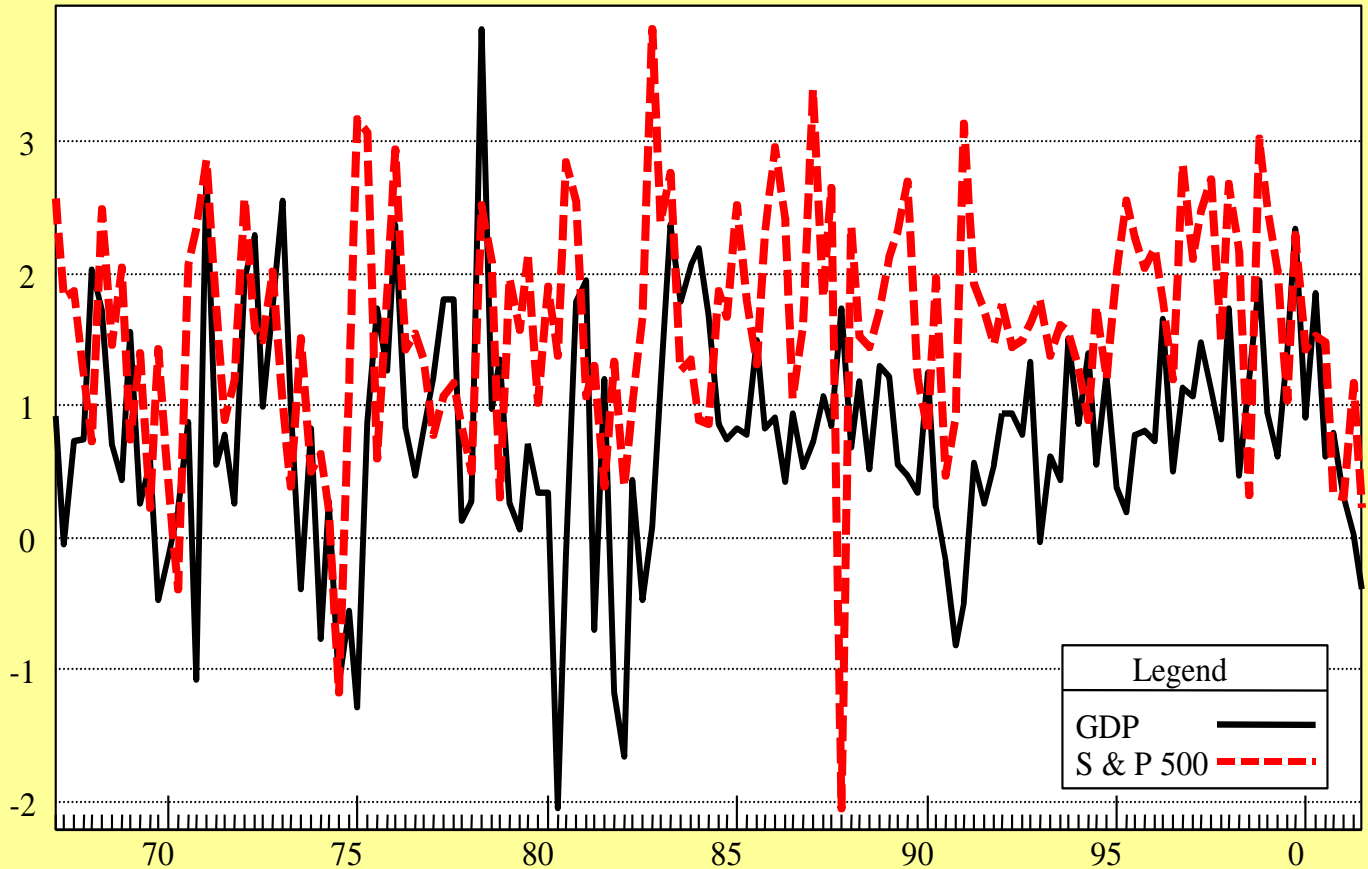
$q < 1$: firm must not replace the depreciated fixed capital



Stock Market as an Economic Indicator

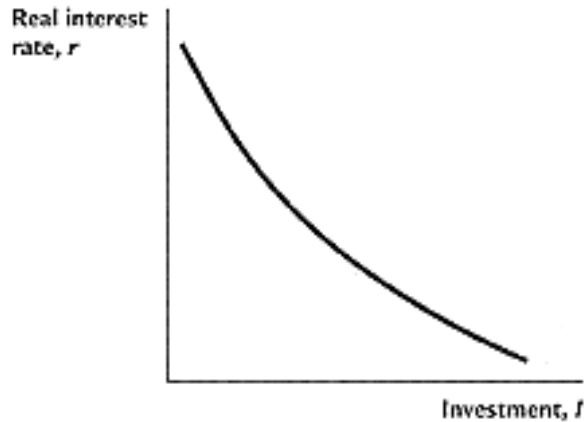
- ▶ Fluctuations of stock market price index (e.g., S&P 500) and the growth rate of the real GDP move together with a one year lag.
 - ▶ So, performance of the market indicates future economic conditions. The Federal Reserve System closely watches stock price variations to formulate monetary policy.
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Stock Market as an Economic Indicator

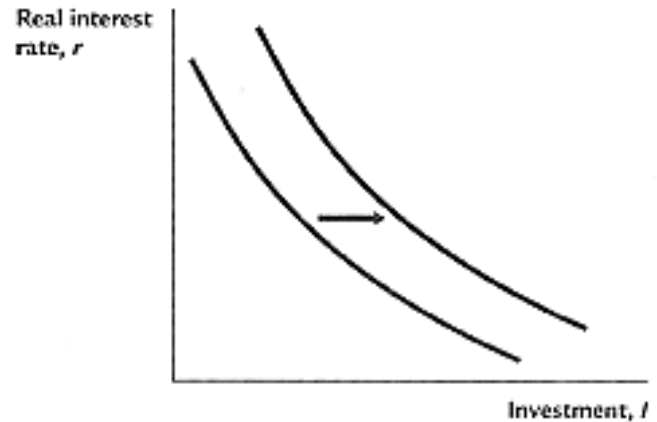


Stock Market as an Economic Indicator

(a) The Downward-Sloping Investment Function



(b) A Shift in the Investment Function





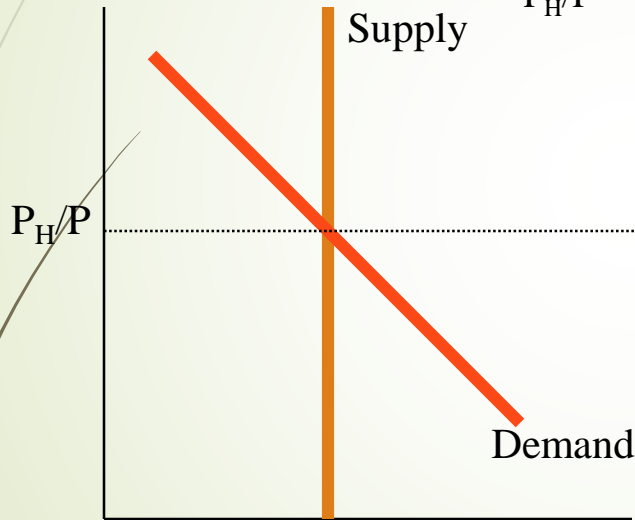
Residential Investment



- ▶ The market for housing consists of a
 - ▶ Stock of existing homes
 - ▶ Flow of new homes under construction
- ▶ An increase in the demand for existing homes
 - ▶ increases the price of both existing and new homes
 - ▶ the supply of new homes

Determination of Residential Investment

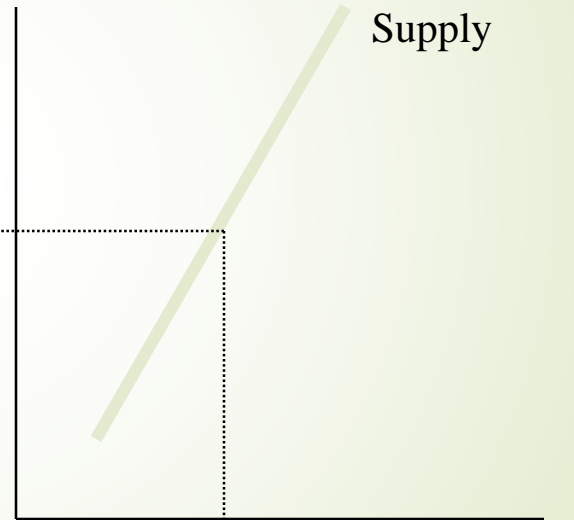
Relative price of housing,
 P_H/P



Stock of housing capital, K_H

Market for existing homes

Relative price of housing,
 P_H/P

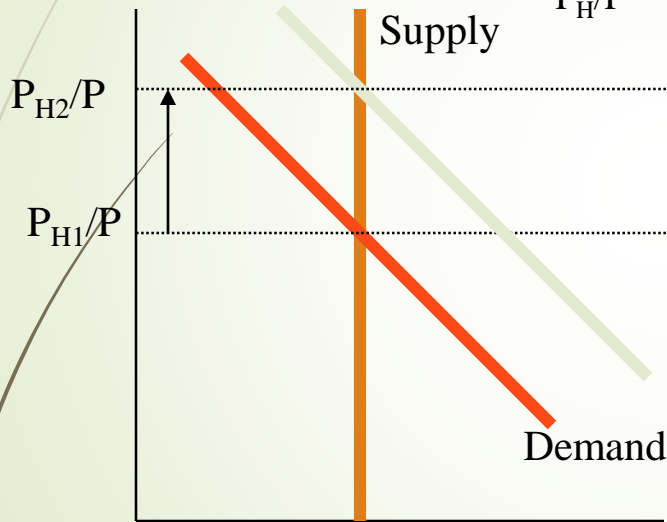


Flow of residential investment, I_H

Market for new homes

Increase in Housing Demand

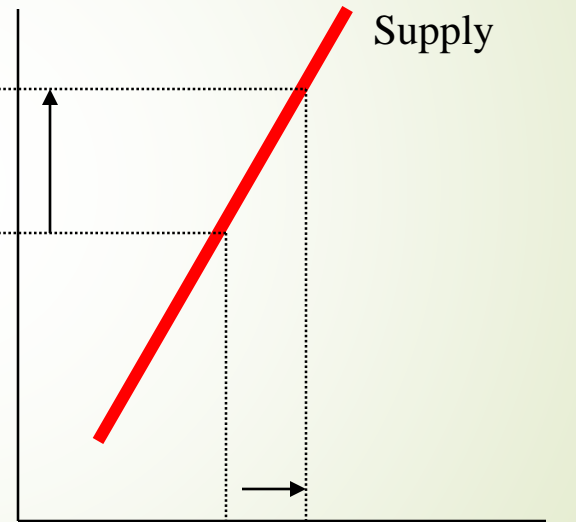
Relative price of housing, P_H/P



Stock of housing capital, K_H

Market for existing homes

Relative price of housing, P_H/P

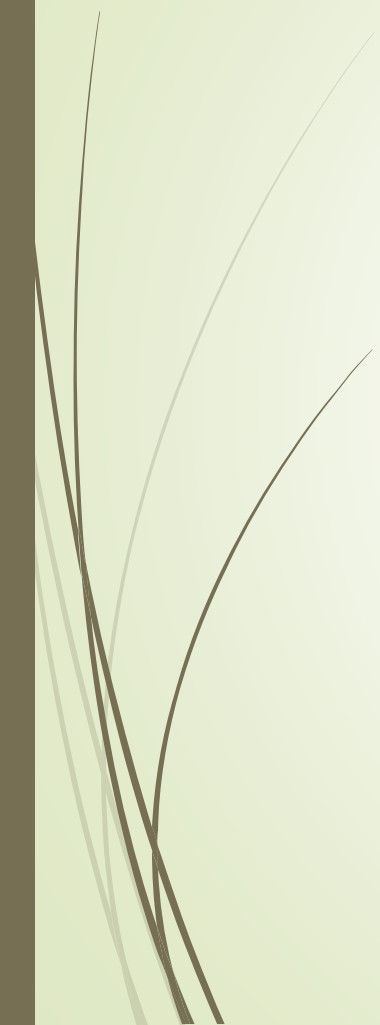


Flow of residential investment, I_H

Market for new homes



Tax Treatment of Housing

- ▶ The deductibility of mortgage interest payments from personal income tax liabilities is
 - ▶ Government subsidy to homeowners
 - ▶ Encouragement for homeownership
 - ▶ The size of government subsidy depends on inflation rate because “nominal” interest payments are deductible from the income tax bill
- 



Inventory Investment



- ▶ Firms maintain a product inventory to “smooth” production of goods whenever consumer demand changes
- ▶ Firms maintain inventories of parts and materials, like a production factor, to increase output quickly
- ▶ Firms maintain inventories to avoid running out of stocks
- ▶ Firms maintain inventories of parts and materials when the product requires a number of steps in production

Accelerator Model of Inventories

- Inventory investment is proportional to the level of output:

$$I = \Delta N = \beta \Delta Y$$

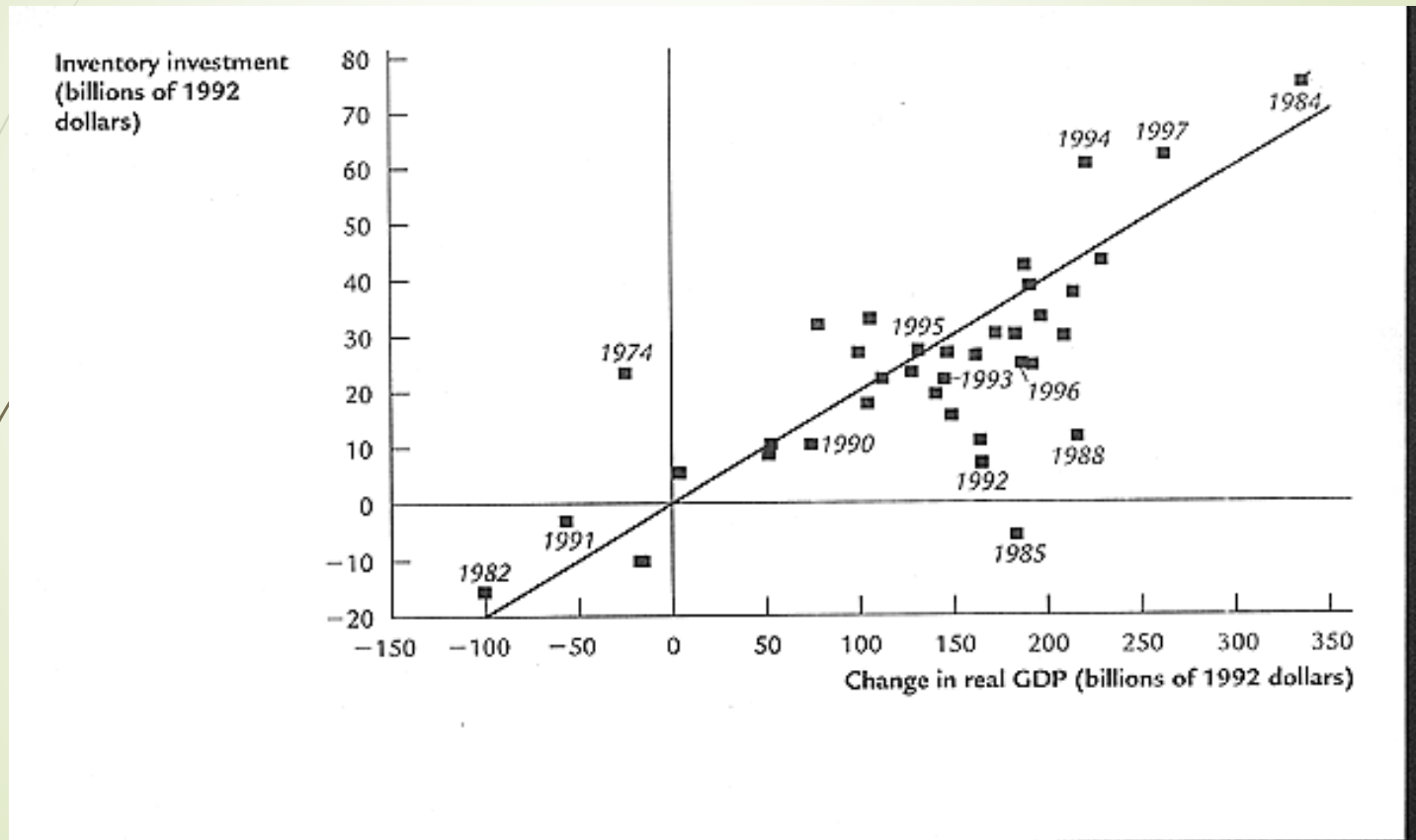
ΔN = change in inventories

ΔY = change in output

β = factor of proportionality; $\beta > 0$

- Inventory investment depends on whether the economy is speeding up or slowing down

Evidence for the Accelerator Model





Thanks for attention!!!