

## Quadrant II – Notes

**Course Code** : CEG 102

**Module Name** : Business Fixed Investment: Concept and Determinants; Effects of a Tax on Investment

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### **Investment and its Types**

Investment is an asset acquired with the goal of generating income

1. Business fixed investment includes the equipment and structures that businesses buy to use in production.
2. Residential investment includes the new housing that people buy to live in and that landlords buy to rent out.
3. Inventory investment includes those goods that businesses put aside in storage, including materials and supplies, work in process, and finished goods.

### **Concept of Business Fixed Investment**

The term “business” means that these investment goods are bought by firms for use in future production.

The term “fixed” means that this spending is for capital that will stay put for a while, as opposed to inventory investment, which will be used or sold shortly later.

Business fixed investment includes everything from fax machines to factories, computers to company cars.

The largest piece of investment spending, accounting for about three-quarters of the total, is business fixed investment.

### **Importance of Business Fixed Investment**

1. Business fixed investment is an important component of aggregate demand and therefore plays a significant role in the determination of national income and employment.
2. Business fixed investment is a volatile component of aggregate demand and, as Keynes emphasized, fluctuation in levels of fixed business investment is responsible for business cycles in a free market economy.

### **Determinants of Business Fixed Investment**

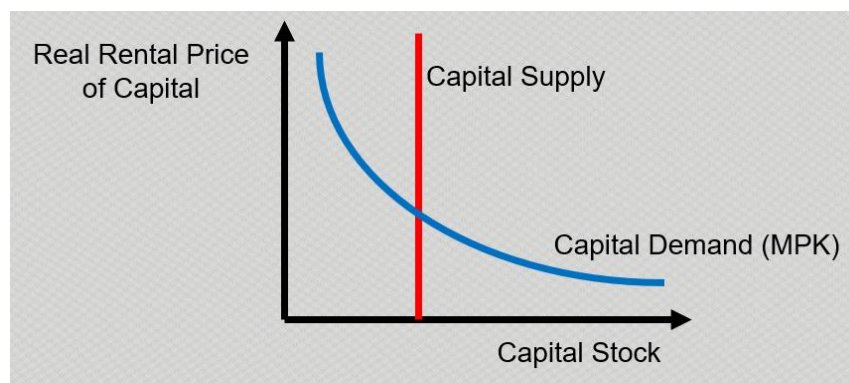
#### **1. The Rental Price of Capital**

- The production firm rents capital at a rental rate  $R$  and sells its output at a price  $P$ .
- The lower the stock of capital, the higher the real rental price of capital.
- The greater the amount of labour employed, the higher the real rental price of capital.
- The better the technology, the higher the real rental price of capital.

## 2. Marginal Product of Capital

- The real benefit of a unit of capital is the Marginal product of capital (MPK), i.e. the extra output produced with one more unit of capital.
- MPK declines as the amount of capital rises: the more capital the firm has, the less an additional unit of capital will add to its output.

### Diagrammatic Representation of Equilibrium in the Rental Market for Business Fixed Investment (Capital)



- Figure shows the Diagrammatic Representation of Equilibrium in the Rental Market for Business Fixed Investment (Capital)
- On the x axis we have the Capital stock and on the y axis we measure the real rental price of capital. The marginal product of capital determines the demand curve. The demand curve slopes downward because the marginal product of capital is low when the level of capital is high. At any point in time, the amount of capital in the economy is fixed, so the supply curve is vertical. The real rental price of capital adjusts to equilibrate supply and demand.

## 3. The Cost of Capital

When firms rent out capital, they bear three costs:

1. When a rental firm borrows to buy a unit of capital, which it intends to rent out, it must pay interest on the loan.
2. While the rental firm is renting out the capital, the price of capital can change. E.g. if the price of capital falls, the firm loses, because the firm's asset has fallen in value.
3. While the capital is rented out, it suffers wear and tear, called depreciation. It is the fraction of value lost per period because of wear and tear.

## 4. Expected Profitability

The firm's decision regarding its capital stock depends on whether owning and renting out capital is profitable.

Profit Rate = Revenue - Cost

The rental firm makes a profit if the marginal product of capital is greater than the cost of capital. It incurs a loss if the marginal product is less than the cost of capital.

## 5. Rate of interest.

Investment depends on the interest rate.

A decrease in the real interest rate lowers the cost of capital. It therefore raises the amount of profit from owning capital and increases the incentive to accumulate more capital. Similarly, an increase in the real interest rate raises the cost of capital and leads firms to reduce their investment.

For this reason, the investment schedule relating investment to the interest rate slopes downwards

## 6. The Stock Market and Tobin's q

James Tobin proposed that firms base their investment decisions on the following ratio, which is now called Tobin's q:

$$q = \frac{\text{Market Value of Installed Capital}}{\text{Replacement Cost of Installed Capital}}$$

**The numerator of Tobin's q is the value of the economy's capital as determined by the stock market. The denominator is the price of the capital if it were purchased today.**

- If q is greater than 1, then the stock market values installed capital at more than its replacement cost. In this case, managers can raise the market value of their firms' stock by buying more capital.
- Conversely, if q is less than 1, the stock market values capital at less than its replacement cost. In this case, managers will not replace capital as it wears out.

## 7. Financing Constraints

In order to invest in new capital, firms often raise funds either by obtaining loans from banks, selling bonds to the public, or selling shares in future profits on the stock market.

Financing constraints can prevent firms from undertaking profitable investments.

When a firm is unable to raise funds in financial markets the amount it can spend on new capital goods is limited to the amount it can spend on new current earning.

## Effects of a Tax on Investment

Policymakers change the tax laws in order to shift the investment function and influence aggregate demand.

The Corporate Income Tax is a tax on corporate profits. It sees a profit and levies a tax even when economic profit is zero, making owning capital less attractive, discouraging investment.

The Investment Tax Credit reduces a firm's taxes by a certain amount for each dollar spent on capital goods. It is a tax provision that encourages the accumulation of capital.