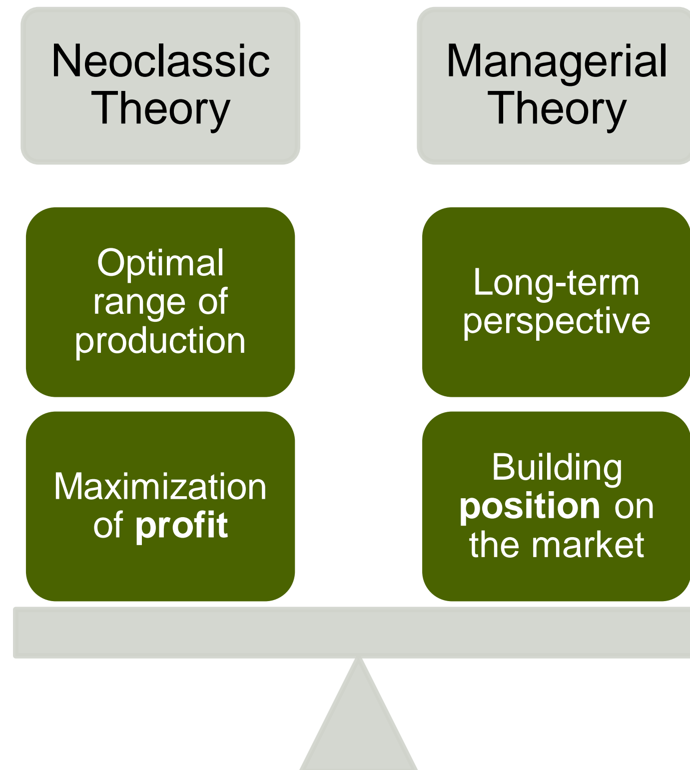
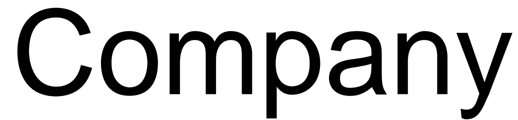
THEORY OF FIRM

Cost
Revenue
Profit
Firm and level of competetion
Break-even point

Theory of Firm





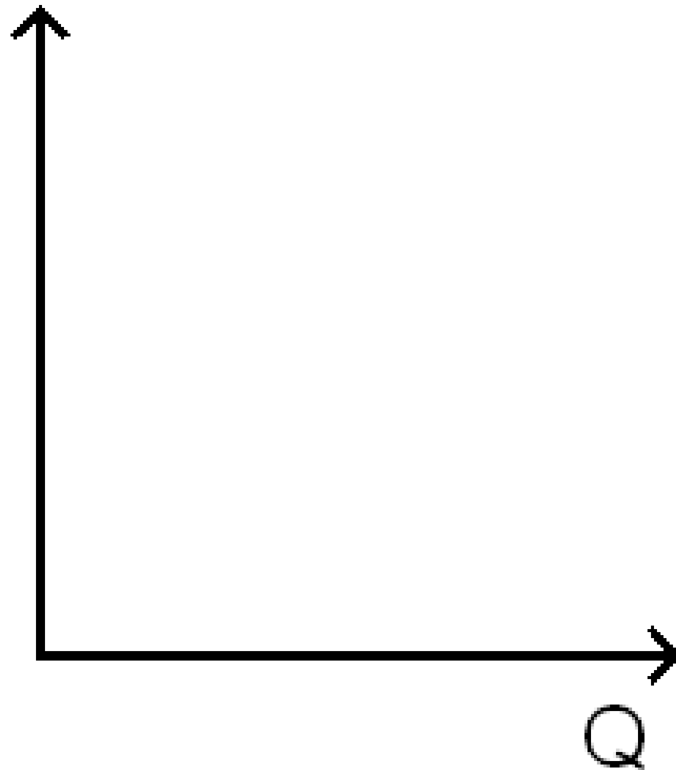
- In law, a company
  - refers to a legal entity which has a separate legal identity from its members, and is ordinarily incorporated to undertake commercial business.
  - is an „artificial person“

Costs

- In economics, business, and accounting, a **cost** is the value of inputs that have been used up to produce something, and hence are not available for use anymore.
  - Total costs *(TC)* are the sum of value of all inputs used to produce goods and services.
  - Fixed costs *(FC)* represent those expenditures whose does not depend on the volume of production. These can be expended even with zero level of production (e.g. rents).
  - Variable costs *(VC)* vary with changing number of units of output (e.g. used material).
  - Average costs *(AC)* are calculated as division of total costs by number of units of output (*Q*). They play an important role in firm's financial analyzing and decision-making.
  - Marginal costs *(MC)* are additional costs invoked by raising output for one unit.
  - Explicit costs are costs registered in accounting
  - Implicit costs are opportunity costs (e.g. wage earned if an entrepreneur works as an employee in some other company).

$$TC = FC + VC \qquad AC = \frac{TC}{Q} \qquad MC = \frac{\Delta TC}{\Delta Q}$$

Fixed and Variable Costs



Revenues

- *Total revenues* are all money earned by sellers of product. They can be calculated as a product with product quantity Q and unit price P.

  - Average revenue *(AR)* is the revenue per one unit of output.

$$TR = P * Q$$

  - Marginal revenue *(MR)* is an increment of total revenue as an effect of increase in output quantity per one unit.

$$MR = \frac{\Delta TR}{\Delta Q}$$

Profit

- Profit, from Latin meaning "to make progress", is defined as a positive return made on an investment by an individual or by business operations.
- The difference between costs and revenues, recorded in firm's accounting can be either positive, i.e. profit, or negative, i.e. loss. Accounting profit is defined as:

$$\textit{Accounting profit} = TR - \textit{explicit costs}$$

- The profit is subject to tax. The income tax stated according to relevant law cuts down the profit to so called net profit. Net profit is defined as:

$$\textit{Net profit} = \textit{accounting profit} - \textit{tax}$$

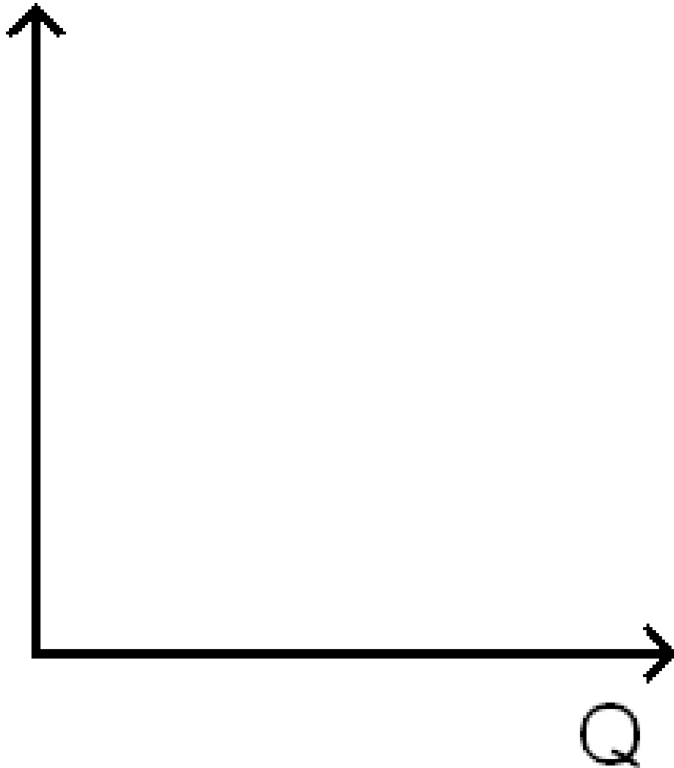
- Total costs comprise both explicit costs and implicit costs. Net economic profit is defined as a difference between total revenues and total costs.

$$\textit{Net economic profit} = \textit{net profit} - \textit{implicit costs}$$

Break-even Point Analysis

- Breakeven point analysis is important issue of operative management.
  - Firm cannot achieve profit immediately but after some time.
  - The period before breakeven point is reached is sometimes called the hungry phase.
  - In the situation of revenues exceeding the costs the firm achieves the profit.

Break-even Point Analysis



Shut-Down Rule

- If Q = 0, than Loss = FC
- If TR > VC, it's convenient to keep production as TR covers a part of FC
- If TR < VC, it is convenient to stop production

Elasticity of Supply

- Similarly as for the demand, the changes of supplied quantity as responses to factors causing the changes have various intensity. Price elasticity of supply (Es) expresses percentage change in quantity supplied caused by change in price of the good regarded:
- Price elasticity of supply = % change of supplied quantity / % change of price
  - Q1 … original supplied quantity
  - Q2 … changed supplied quantity
  - P1 … original price
  - P2 … changed price

$$E_s = \frac{\dfrac{(Q_2 - Q_1)}{(Q_2 + Q_1)/2}}{\dfrac{(P_2 - P_1)}{(P_2 + P_1)/2}}$$

  - If Es = 1 unit elasticity supply
  - If Es > 1 price elastic supply (change in price for 1% invokes change in supplied quantity more than 1%)
  - If Es < 1 price inelastic supply (change in price for 1% invokes change in supplied quantity less than 1%)

Firm under Imperfect Competition

- The government usually regulates monopolies to protect the interests of consumers.
  - Monopolies have the market power to set prices higher than in competitive markets.
- Why to prevent monopolies?
  - Prevent excess price
  - Ensuring the quality of service (company may have little incentive to offer a good quality service) – prescribed minimum standards
  - Prevent monopsony power (exploiting monopsony buying power, e.g. dominant market position of supermarkets may be used to squeeze profit margins of small farmers)

Actions to regulate monopolies

- Price capping by regulators (gas, electricity market, water industry)
- Quality of service regulation (e.g. rail regulator may observe the safety record of rail firms)
- Merger policy (investigate mergers which could create monopoly power).
  - If a new merger creates a firm with more than X% of market share, it is automatically referred to the Competition Commission.
  - The Competition commission can decide to allow or block the merger.
- Breaking up a monopoly (very rare – extreme step)
  - Government may decide a monopoly needs to be broken up (reason: the firm has become too powerful)
  - US looked into breaking up Microsoft as punishment for monopolistic business practices, the action was dropped.