
Business Strategies Part II – Chapter 3

Economics and Mathematics of Strategy

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- Global Governance -
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Business Strategies – Economics and Mathematics of Strategy

3.1. Why Economics of Strategy?

There are many ways to study strategy ...

It is **not enough** to

“be close to the customer”
“stick to the knitting”
“have a bias for action”

Peters &
Waterman 1982

or

“to put the right people at the right place”
“search for levels’ 5 Leaders”
“stick to a culture of discipline”

Collins 2001

or

a great CEO (example Jack Welch)

Discuss other principles

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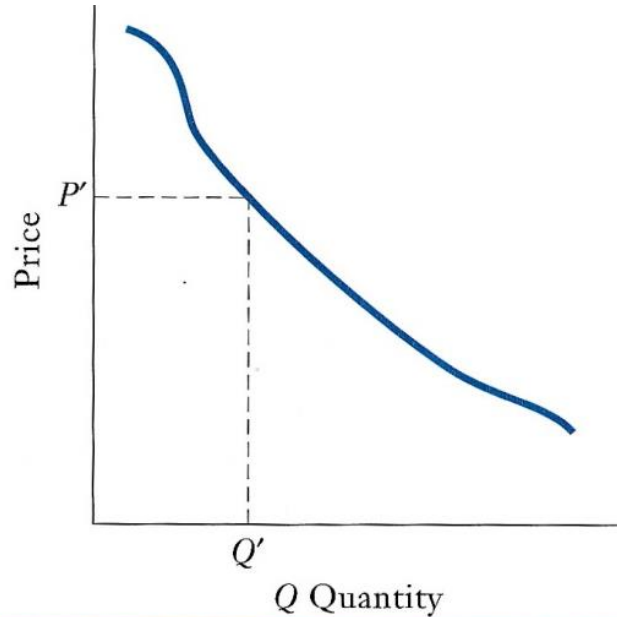
Discuss other principles

Economic modelling abstracts from the situational complexity that individuals and firms face.

Besanko et al. (2013, p. 5): “**Success is often no accident.** [...] We can better understand why firms succeed or fail when we analyze decision making in terms of **consistent principles of market economics.**”

3.2. Demand- and Revenue-Functions I

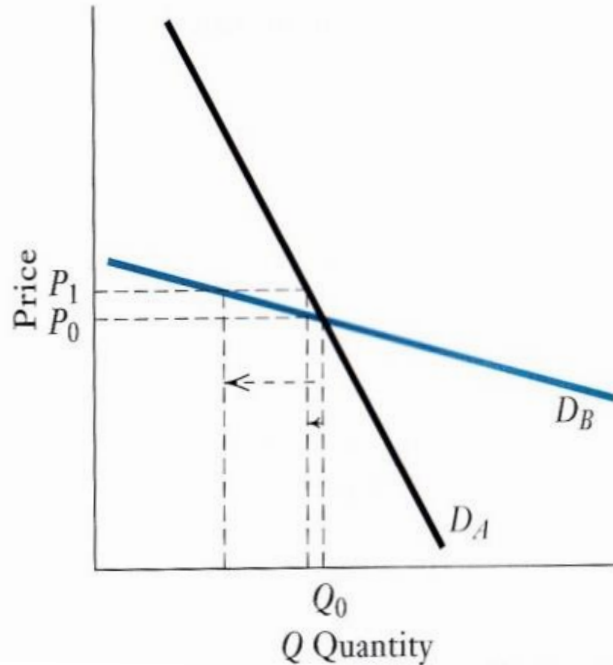
Demand curve



- **Downward slope:** The higher the price, the smaller the quantity of demand (exception: prestige products)

3.2. Demand- and Revenue-Functions II

Price sensitivity and the shape of the demand curve



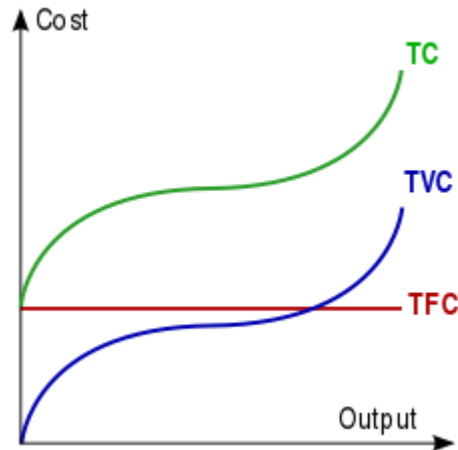
$$\text{Price Elasticity(EP)} = \frac{\Delta \text{ quantity change}}{\Delta \text{ price change}}$$

- **EP > 1:** Price change brought higher proportionate change in quantity sold („price elastic“ demand)
- **EP < 1:** Quantity change is proportionally smaller than price change („price inelastic“ demand)

3.3. Cost Functions I

For output decisions (Q), it is necessary to know the cost curves!

Total Cost



- Total cost function shows an efficiency relationship, given cost levels at that moment.
- Improving efficiency lowers the total cost curve.

Definition of Total Cost



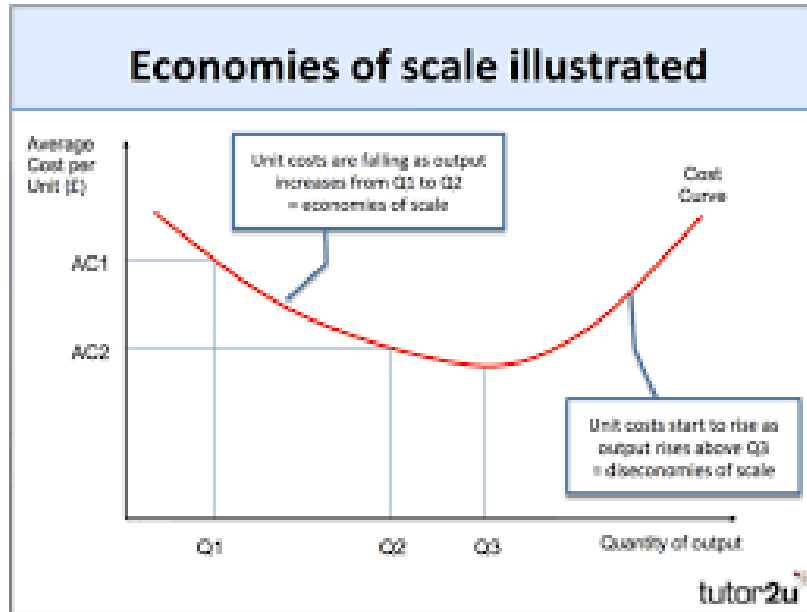
- | | |
|----------------|--|
| Fixed cost: | Invariant to the output
(e.g., administration,
depreciation, tax, R&D) |
| Variable cost: | Directly related to the
output (e.g., direct
labour, energy, material) |

Please define

- Fixed or not fixed depends on **the time horizon**.

3.3. Cost Functions II

Average costs and economies of scale

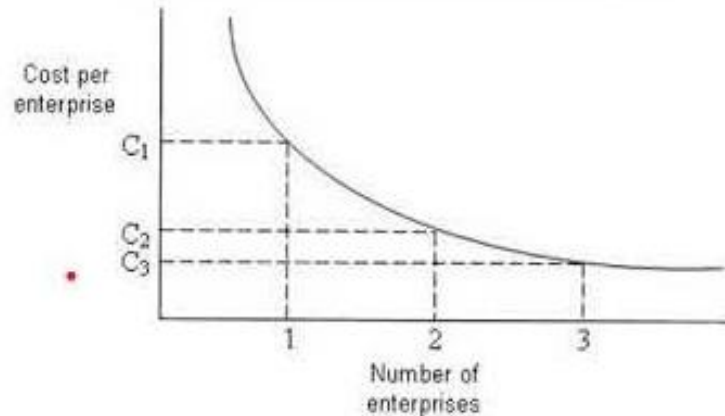


- Economies of scale are benefits gained when increasing volume results in lower unit cost.
- here: average cost function shows economies of scale, constant returns ($Q1 - Q2$) and diseconomies ($> Q3$)

3.3. Cost Functions III

Economies of scope (“Verbundvorteile”)

Occurs when a firm can gain efficiencies from producing a wider variety of products. It make it cheaper to produce a range of products together than to produce each one of them on its own. Often this is the case, when the business owns a lot of enterprises.



“Efficiencies formed by **variety**, not **volume**”

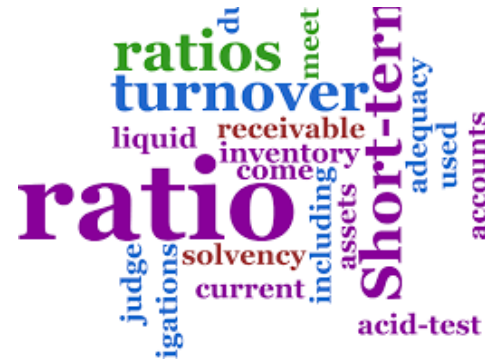
- ❖ Justifies diversification
- ❖ Advantages: flexibility in product mix/ design; repeatability of processes; better control; transferable knowledge; less risk

Discuss the different concepts with examples!
What is a learning curve? Value chain integration?
Discuss pros & cons of diversification!

3.4. Financial Analysis I

Three areas of analysis:

- ❖ Conjunctural analysis (compare data for more years)
- ❖ Cross sectional analysis (compare against competitors or other industries)
- ❖ Ratio analysis
 - performance ratios (a)
 - efficiency ratios (b)
 - liquidity ratios (c)
 - investors ratios (d)



3.4. Financial Analysis II

(a) Performance ratios: How well turn inputs into profit?

➤ Return (PBIT) on capital employed (%) =
$$\frac{\text{Profit before interest and tax (PBIT)}}{\text{Total capital employed}} \times 100$$

➤ Return (PBIT) on sales (%) =
$$\frac{(PBIT)}{\text{total sales (turnover)}} \times 100$$

➤ Gross margin (%) =
$$\frac{\text{Gross profit (profit after direct costs)}}{\text{total sales (turnover)}} \times 100$$



3.4. Financial Analysis III

(b) Efficiency ratios: How efficiently assets are used to generate sales?

- Sales per employee (€) = $\frac{\text{total sales (turnover)}}{\text{number of employees}}$
- Profit per employee

(c) Liquidity ratios: How well the company can meet the short term debts?

- Current ratio (%) = $\frac{\text{total liabilities}}{\text{total assets}} \times 100$

(d) Investors ratios: How good is the investment for the investor?

- Earnings per share (€) = $\frac{\text{profit after interest and tax}}{\text{number of shares}}$
- Price/ Earnings ratio (P/E) = $\frac{\text{market price of shares}}{\text{EPS (earning per shares)}}$
- $\frac{\text{dividend per share}}{\text{share price}}$

Bkup: VW 2017 analysis of performance ratios