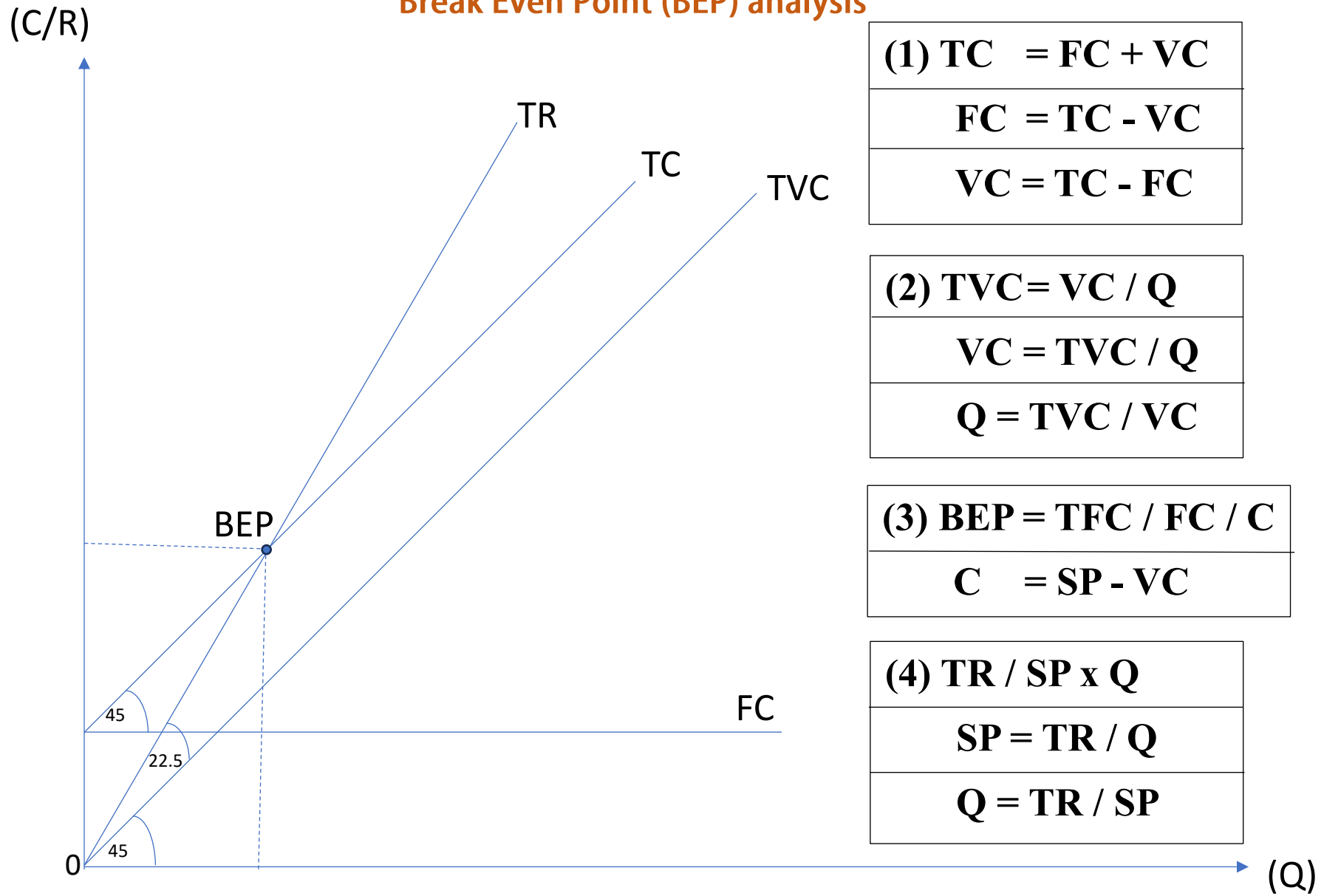
Cost – Volume – Profit (CVP) analysis

Break Even Point (BEP) analysis



(1) TC = FC + VC
FC = TC - VC
VC = TC - FC

(2) TVC = VC / Q
VC = TVC / Q
Q = TVC / VC

(3) BEP = TFC / FC / C
C = SP - VC

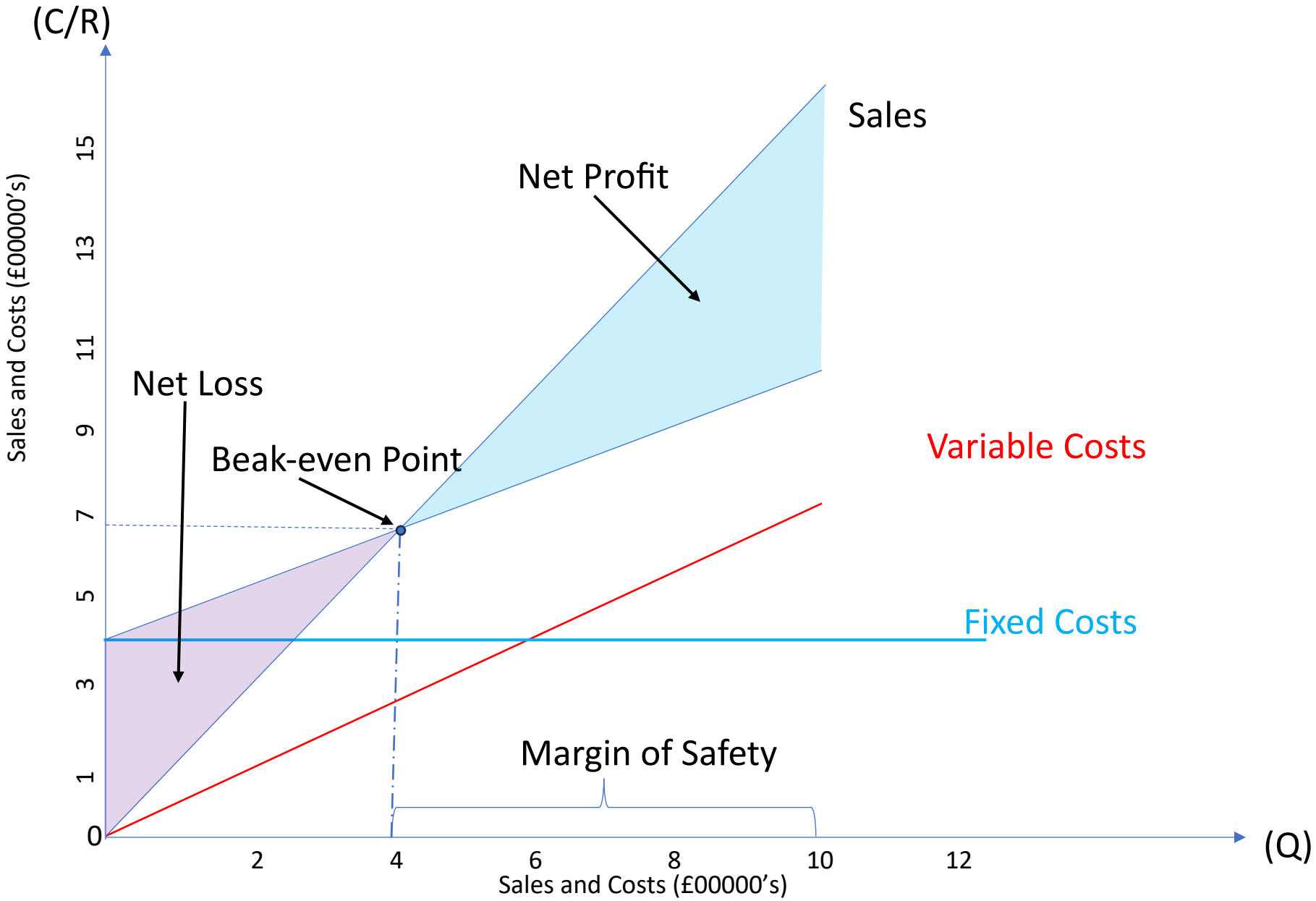
(4) TR / SP x Q
SP = TR / Q
Q = TR / SP

Assumptions used in CVP analysis

- Total cost cab be classified as fixed and variable
- Fixed cost does not vary with the activity level
- Variable cost varies with the activity level
- Cost and income behave as liner functions
- Volume relevant to the activity level is the only factor which affects to the income and cost
- Technology, production methods and efficiency are fixed

Break-even Point analysis

- Break-even analysis is a technique widely used by production management and management accountants. … Total variable and fixed costs are compared with sales revenue in order to determine the level of sales volume, sales value or production at which the business makes neither a profit nor a loss (the “break-even point”).


(C/R)
Sales and Costs (£00000's)
15
13
11
9
7
5
3
1
0
Sales
Net Profit
Net Loss
Beak-even Point
Variable Costs
Fixed Costs
Margin of Safety
2
4
6
8
10
12
(Q)
Sales and Costs (£00000's)

Break – Even Point (BEP)

$$\text{BEP (in quantities)} = \frac{\text{Total Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{BEP (in rupees)} = \frac{\text{Total Fixed Cost}}{\text{Contribution to Sales ratio (C / S ratio)}}$$

Or

BEP (in quantities) x Selling Price per unit

Contribution per unit = Selling Price per unit – Variable cost per unit

Contribution per unit

Example 01

- Selling Price per unit Rs.50
- Variable cost per unit Rs.30
- Total Fixed cost Rs.1 000
- Sales 80 units

Using above information,

i. Calculate contribution per unit
ii. CS ratio
iii. BEP in Units
iv. BEP in Rupee Value

Example 02

- Selling Price per unit Rs.100
- Variable cost per unit Rs.70
- Total Fixed cost Rs.3 000
- Sales 150 units

Using above information,

i. Calculate contribution per unit
ii. CS ratio
iii. BEP in Units
iv. BEP in Rupee Value

Computation of Net Profit

- Net Profit = Total Contribution – Total Fixed Cost

- Total Contribution = Unit Contribution x No of units

Example 03

- Selling Price per unit — Rs.1 500
- Variable cost per unit — Rs.500
- Total Fixed cost — Rs.1 000 000
- Sales — 1 500 units

Using above information,

i. Calculate contribution per unit
ii. Total Contribution
iii. Contribution to sales ratio
iv. Break – even point (in units)
v. Break – even point (in rupees)
vi. Profit

Example 04

- Selling Price per unit — Rs.500
- Variable cost per unit — Rs.300
- Total Fixed cost — Rs.40 000
- Sales — 300 units

Using above information,

i. Calculate contribution per unit
ii. Total Contribution
iii. Contribution to sales ratio
iv. Break – even point (in units)
v. Break – even point (in rupees)
vi. Profit

Margin of Safety

- The difference between budged (or actual) sales volume and break-even sales Volume is known as the margin of safety. This can be expressed as a ratio or number of units.

Margin of safety (in units)

= Sales (in units) – BEP sales (in units)

Margin of safety (in rupees)

= Sales (in Rupee) – BEP sales (in Rupee)

Or

Margin of safety (in units) x Selling Price

Example 05

- **ABC limited provides following details in respect of shirts**
  - Selling Price per shirt Rs.100
  - Variable cost per shirt Rs.80
  - Total Fixed cost related to shirt Rs.90 000
  - Number of shirts sold 4600

Required to calculate:

i. Contribution per unit
ii. Total Contribution
iii. Break – even point (units and value)
iv. Margin of Safety (units and value)
v. Net Profit

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