



MANAGEMENT ACCOUNTING FOR BUSINESS

FIFTH EDITION

COLIN DRURY



For use with *Management Accounting for
Business 5e*
By Colin Drury
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Part Two: **Information for decision-making**

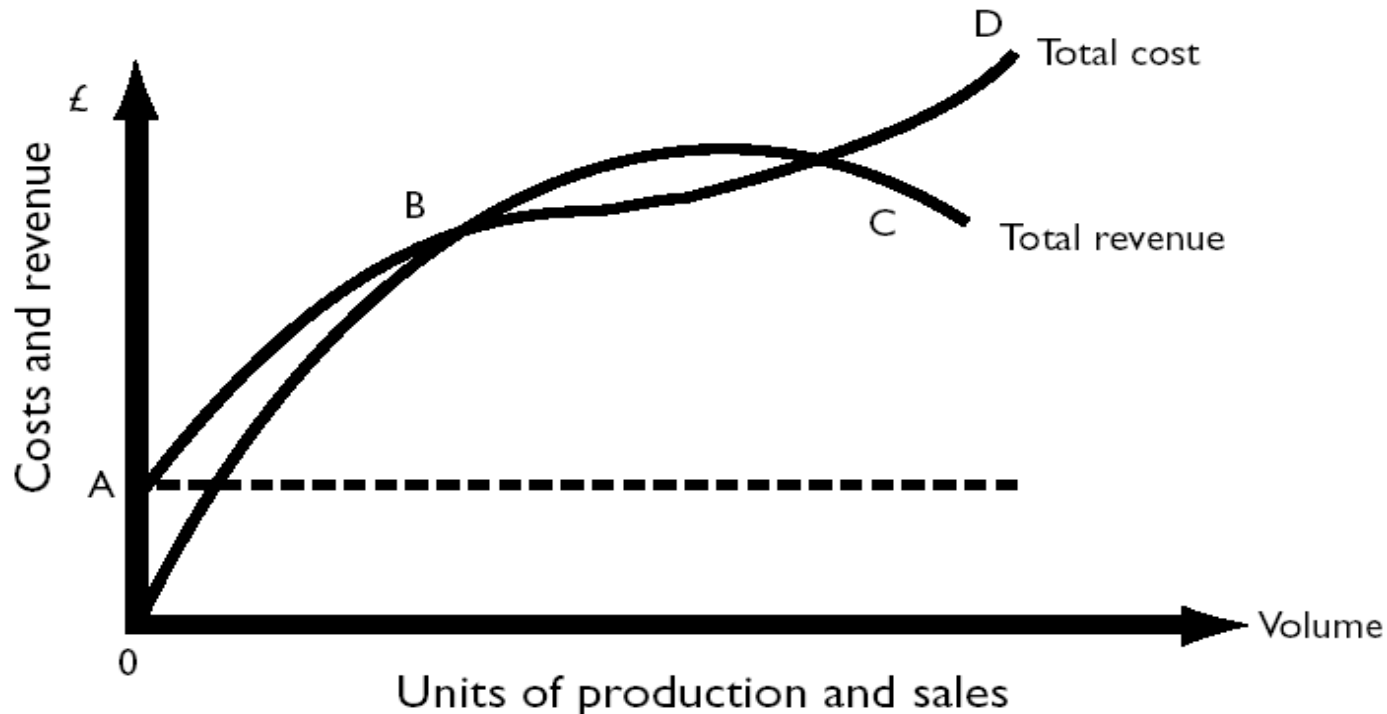
Chapter Three: **Cost-volume-profit analysis**

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Curvilinear cost-volume graph



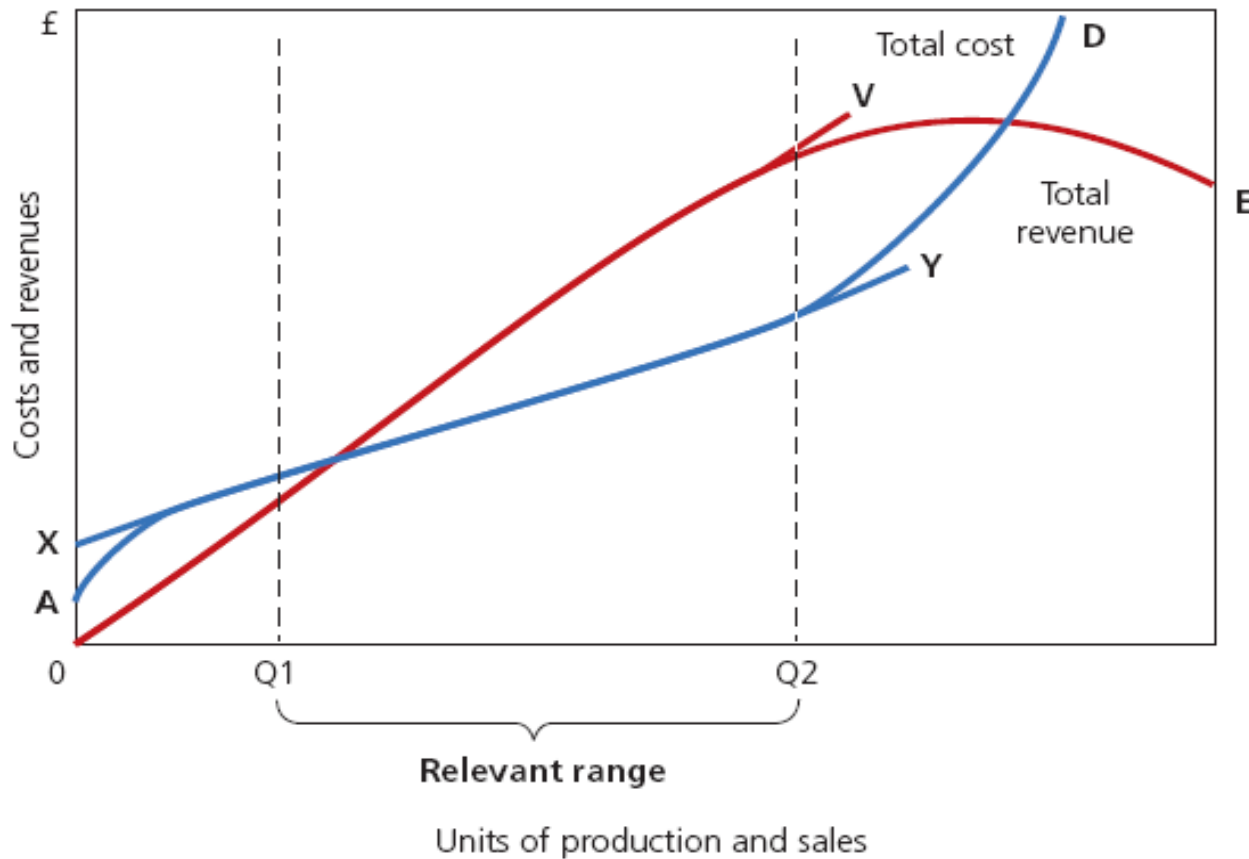
1. Results in two break-even points.
2. Note the shape of the total cost function:
 - initial steep rise, levels off, followed by a further steep rise.
3. The total revenue line initially rises steeply, then levels off and declines.

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Linear CVP relationships



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Linear cost-volume-profit model

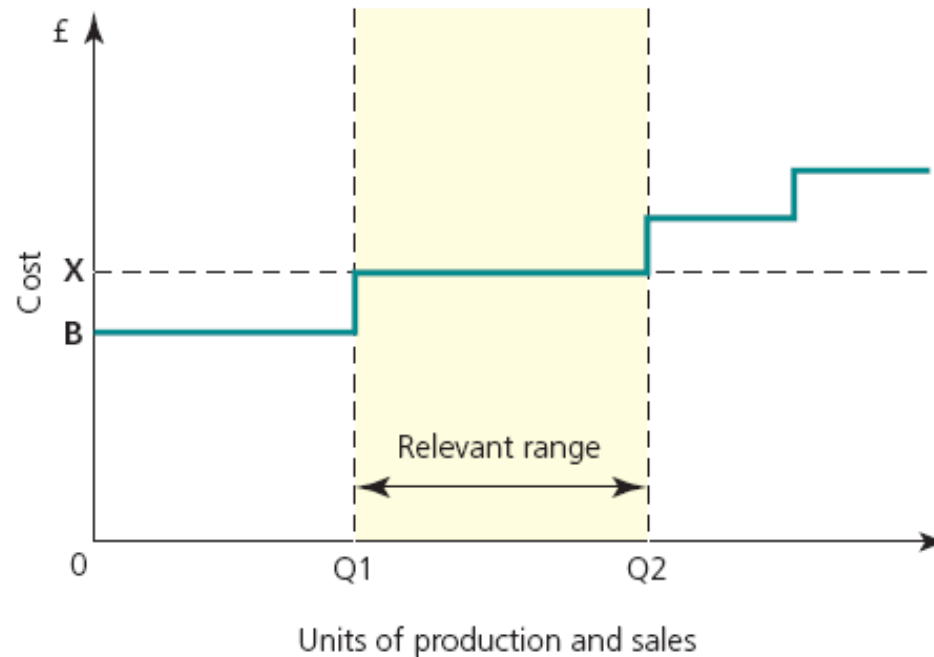
1. Constant variable cost and selling price is assumed.
2. Only one break-even point, and profit increases as volume increases.
3. The diagram is not intended to provide an accurate representation for all levels of output. The objective is to provide an accurate representation of cost and revenue behaviour only within the relevant range of output.





Fixed cost function

1. Within the short term the firm anticipates that it will operate between output levels Q_1 and Q_2 and commits itself to fixed costs of OX .
2. Costs are fixed in the short term, but can be changed in the longer term.





CVP analysis: non-graphical computations

1. Example 1

Fixed costs per annum	£60 000
Unit selling price	£20
Unit variable cost	£10
Relevant range	4 000 - 12 000 units

2. Break-even point

$$\frac{\text{Fixed costs}}{\text{Contribution per unit}} = \frac{£60\,000}{£10} = 6\,000 \text{ units}$$

3. Units to be sold to obtain a £30 000 profit:

$$\frac{\text{Fixed costs} + \text{desired profit}}{\text{Contribution per unit}} = \frac{£90\,000}{£10} = 9\,000 \text{ units}$$





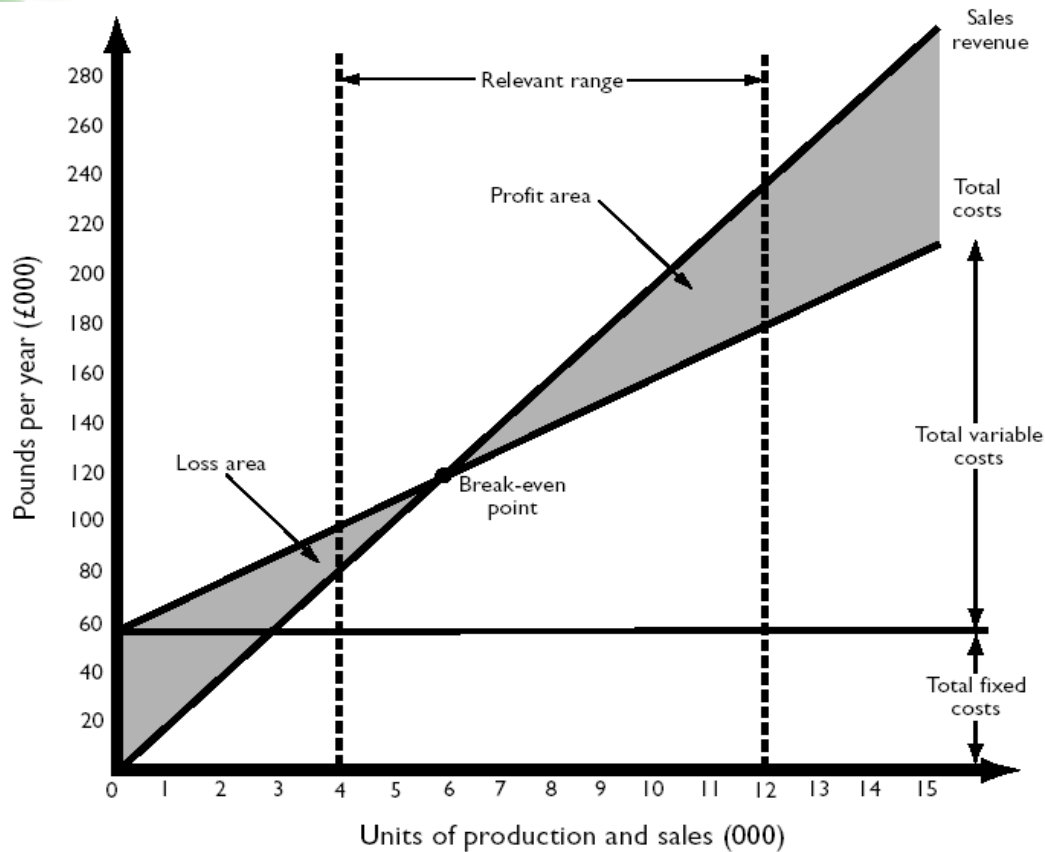
4. If unit fixed costs and revenues are not given, the break-even point (expressed in sales values) can be calculated as follows:

$$\frac{\text{Total fixed costs}}{\text{Total contribution}} \times \text{Total sales} = \text{£120 000}$$

$$5. \text{ Profit volume ratio} = \frac{\text{Contribution}}{\text{Sales revenue}} \times 100 = 50\%$$

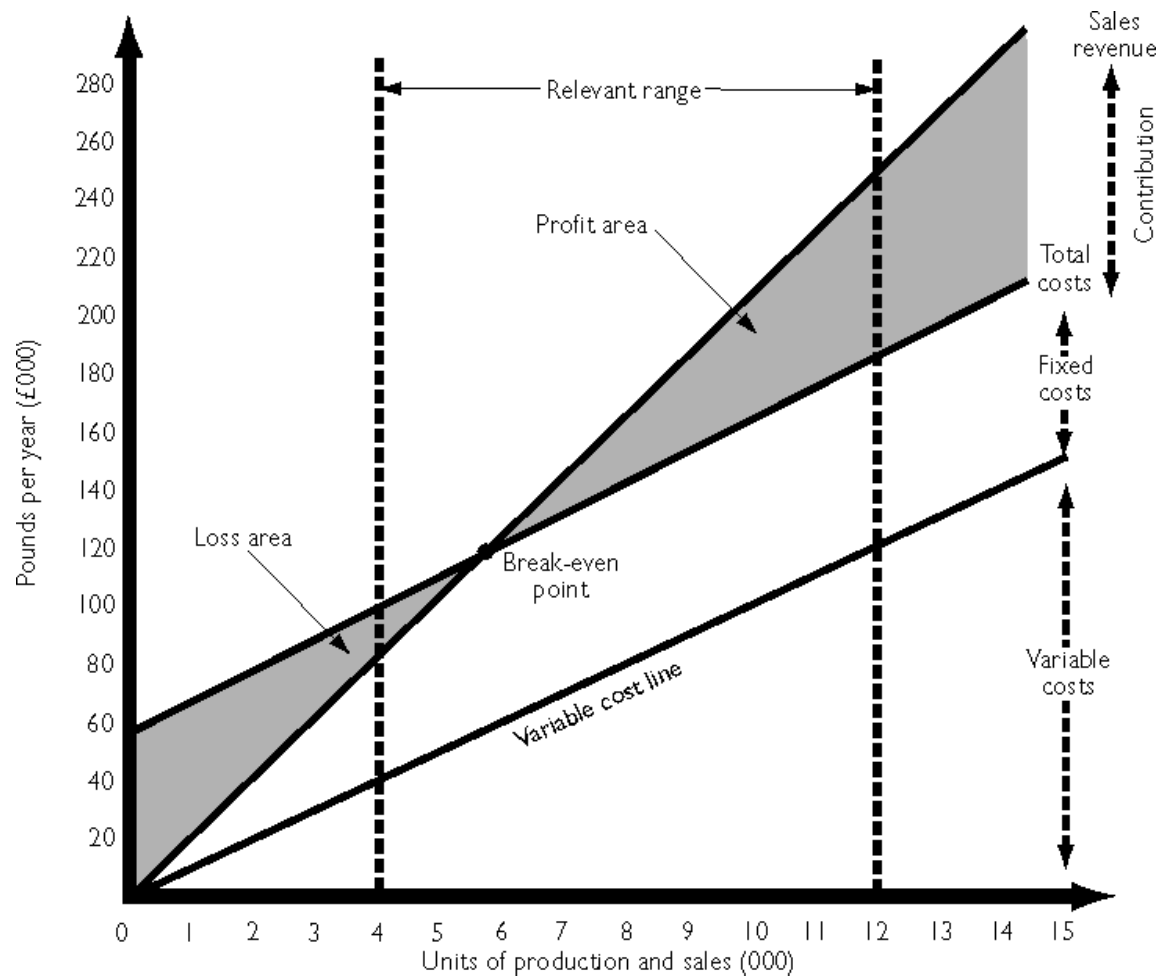
$$6. \text{ Percentage margin of safety} = \frac{\text{Expected sales} - \text{Break-even sales}}{\text{Expected sales}} = 25\% \text{ for £160 000}$$





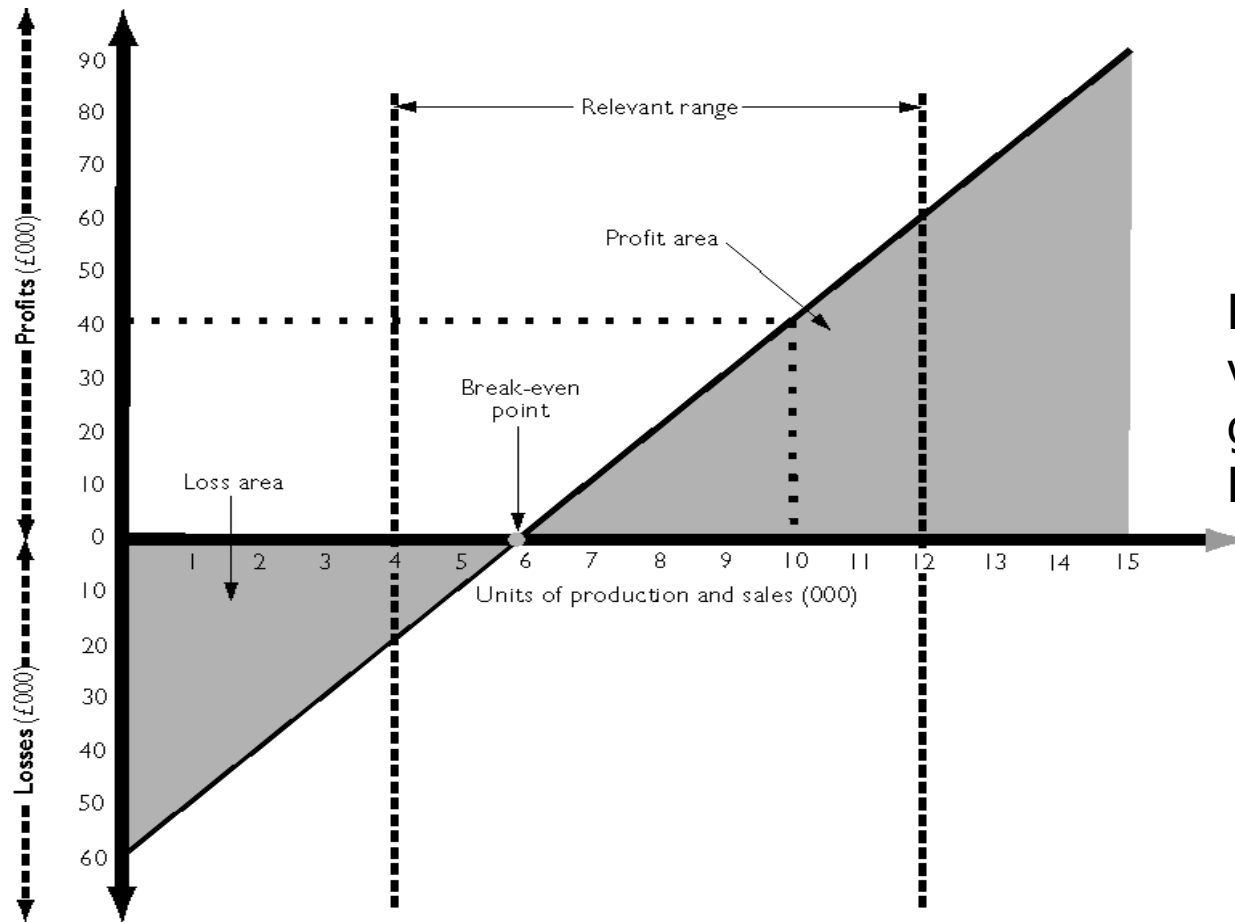
Break-even
chart for
Example 1





Contribution
n
Chart for
Example 1





Profit-
volume
graph for
Example 1





CVP analysis assumptions

1. All other variables remain constant
 - e.g. sales mix, production efficiency, price levels, production methods.
2. A single product or constant sales mix.
3. Total costs and total revenues are linear functions of output.
4. The analysis applies only to the relevant range.
5. The analysis applies only to a short-term horizon.





Example

	<u>Product X</u>	<u>Product Y</u>
Unit contribution	£12	£8
Budgeted sales mix	50%	50%
Actual sales mix	25%	75%

Fixed costs are £180 000

Budgeted BEP = £180 000 / £10 (a) = 18 000 units

Actual BEP = £180 000 / £9 (b) = 20 000 units

$$^a (50\% \times £12) + (50\% \times £8)$$

$$^b (25\% \times £12) + (75\% \times £8)$$

