

or:

$$\text{Operational gearing} = \frac{\text{Profit before taxes} + \text{Fixed costs}}{\text{Profit before tax}}$$

Let us look at the following illustration with two companies (company A and company B) with identical sales and total costs, but with a different cost structure (mix of fixed and variable costs):

	<i>Sales</i>	<i>Fixed costs</i>	<i>Variable costs</i>	<i>Profit before tax</i>	<i>Operational gearing</i>
<i>Company A</i>	100	20	70	10	3:1
<i>Company B</i>	100	70	20	10	8:1

If sales increase by 10 per cent, net profit of company A will increase by 30 per cent (increase in sales minus proportionate increase of variable costs, or 10 minus 7), while net profit of company B would increase by 80 per cent. Conversely, if sales decline, this would have a much more dramatic impact on the profitability of the company with high operational gearing (company B).

Unfortunately, the split between fixed and variable costs is not transparent from financial statements and the external analyst will have to settle with a rough proxy for operational gearing (a proxy for fixed costs to total costs), or the ratio:

$$\frac{\text{Long-term assets}}{\text{Total asset}} \text{ or } \frac{\text{Long-term assets}}{\text{Current assets}}$$

This assumes that the fixed cost element comes from plant costs (labour and materials being relatively variable). The high variable cost operator will buy semi-finished goods, for example, rather than process raw materials in house, so variable costs are higher and the asset base is lower.

## Z scores

Some analysts like to use computerized models for assessing company performance. The best known in this kind of area are Altman in the US and Tafler in the UK. Essentially their technique consists of comparing the past financial statements of successful companies with those of similar but unsuccessful companies from which they derive a model against which to assess other companies. To give a simplified example, such a model typically works on a weighted series of ratios such as

$$0.2 \text{ ROE} + 0.5 \text{ Debt/equity} + 0.25 \text{ Current ratio} \geq 1$$

If a company scores below a certain value, it is deemed to be at risk. These models are known generically as 'Z scores' after Altman's original work. Declining profitability and liquidity ratios typically have a significant effect in business failure models.

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