



# Papers in the Management Accounting pillar

Although it's hard for investors to calculate it reliably from a company's published accounts, operational gearing is a useful measure of risk, writes **Grahame Steven**.

Much of the risk that a company faces is determined by its external environment, but risk is also affected by its own decisions, including those on how to finance the business and the cost structure to adopt. Although students who have studied financial accounting will know about financial gearing, which considers sources of long-term finance, they might not be so familiar with the concept of operational gearing. But it is important to understand and measure operational gearing to gain a full appreciation of a company's risk profile and of the consequences of using a particular cost structure.

In simple terms, a company's cost structure is made up of fixed and variable costs. Their relative proportions are largely a consequence of its business strategy. For example, a company that manufactures its own products or provides services using its own staff will tend to have a higher proportion of fixed costs. A firm that obtains its products for resale from another manufacturer or uses contractors to provide its services will tend to have a higher proportion of variable costs.

Operational gearing (also known as operating leverage) is based on the mix of fixed and variable costs. It can be determined in different ways, but the simplest method is to consider the level of contribution earned in relation to sales – ie, the contribution-to-sales ratio (C/S ratio). A low C/S ratio signifies that a company has a low proportion of fixed costs and a high C/S ratio signifies that it has a high proportion of fixed costs. But why is this important?

Panel 1 contains data for two similar-sized companies that operate in the same industry, sell comparable products and have similar financial gearing ratios. The key difference between them is how their costs are structured. Company A has a high level of fixed costs, since it manufactures the products it sells. Company B has a high level of variable costs, since it purchases its products from another manufacturer. The C/S ratios calculated for A (80 per cent) and B (40 per cent) confirm this.

The figures in panels 2 and 3 are based on three levels of sales and assume that the C/S ratio and fixed costs remain constant across this range of activity. In practice, they may not remain constant, owing to the impact of economies of scale, the learning effect and semi-fixed costs. The profit-volume graph in panel 4, based on the data in panels 2 and 3, demonstrates the significance of the differing C/S ratios for the two companies.

The graph illustrates that each company has a different profit profile across a range of sales. A has higher losses than B when sales are below the break-even point but higher profits when sales are above it. Why does this occur? A has a higher level of

## 1 KEY DATA FOR COMPANY A AND COMPANY B

Key figures	Company A	Company B
Sales price per unit	£5.00	£5.00
Variable cost per unit	£1.00	£3.00
Contribution per unit	£4.00	£2.00
Contribution-to-sales ratio	80%	40%
Fixed costs	£20,000	£10,000

## 2 PROFIT / SALES VOLUME FIGURES FOR COMPANY A

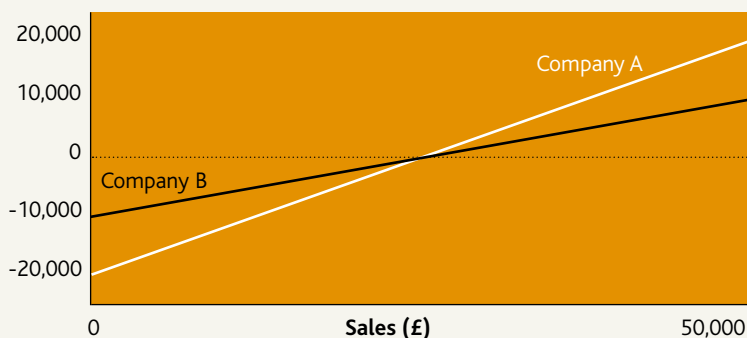
Sales	£0	£25,000	£50,000
Contribution	£0	£20,000	£40,000
Fixed costs	£20,000	£20,000	£20,000
Profit (loss)	(£20,000)	£0	£20,000

## 3 PROFIT / SALES VOLUME FIGURES FOR COMPANY B

Sales	£0	£25,000	£50,000
Contribution	£0	£10,000	£20,000
Fixed costs	£10,000	£10,000	£10,000
Profit (loss)	(£10,000)	£0	£10,000

## 4 PROFIT / SALES VOLUME GRAPH FOR A AND B

Profit/loss £





### 5 KEY FIGURES FOR COMPANY C AND COMPANY D

Key figures	Company C	Company D
Sales price per unit	£100	£100
Variable cost per unit	£68	£40
Contribution per unit	£32	£60
Contribution-to-sales ratio	32%	60%
Fixed costs	£314,000	£625,000

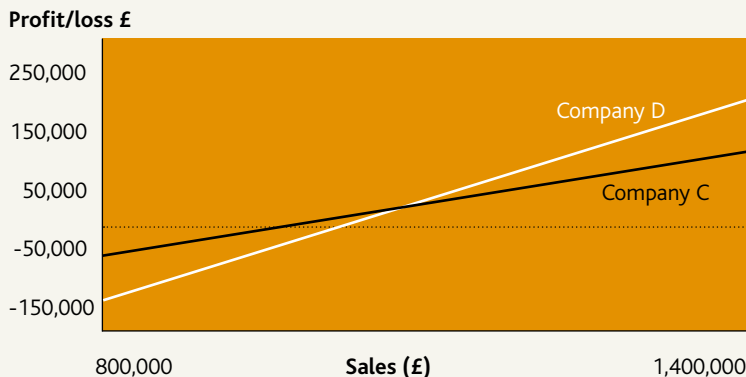
### 6 PROFIT / SALES VOLUME DATA FOR COMPANY C

Sales	£800,000	£1,100,000	£1,400,000
Contribution	£256,000	£352,000	£448,000
Fixed costs	£314,000	£314,000	£314,000
Profit (loss)	(£58,000)	£38,000	£134,000

### 7 PROFIT / SALES VOLUME DATA FOR COMPANY D

Sales	£800,000	£1,100,000	£1,400,000
Contribution	£480,000	£660,000	£840,000
Fixed costs	£625,000	£625,000	£625,000
Profit (loss)	(£145,000)	£35,000	£215,000

### 8 PROFIT / SALES VOLUME GRAPH FOR C AND D



fixed costs than B. These fixed costs will be incurred irrespective of the amount of sales achieved. But, when sales are above break-even, A reaps the reward of having a higher C/S ratio, since it earns more than B for every product sold.

So which firm has the better operating gearing ratio? Risk-taking managers, who are more concerned with the upside of an investment, will prefer A, since it offers higher levels of return if the company is successful. Risk-averse managers, who are more concerned with the downside, will prefer B, since it would incur fewer losses if there is downturn in trading conditions.

Managers may also use operational gearing to influence the overall risk profile of a company. For example, managers of highly financially geared companies operating in risky industries may seek to reduce risk by adopting a lower level of operational gearing. Equally, companies with low levels of business and financial risks may take on higher levels of operational gearing to improve potential returns when sales are high.

There is, consequently, no right or wrong cost structure. It depends on business strategy, management attitude towards risk and other risks faced by a company.

The data, calculations and profit-volume graph in panels 5, 6, 7 and 8 for companies C and D, which are similar in every respect apart from their cost structures, present a more realistic picture. Firms with different cost structures will not have the same break-even points. But the dilemma is the same: which cost structure is best? C has a lower break-even point, but offers poorer returns when sales are high. D offers higher returns but has a higher break-even point and will produce greater losses when sales are low. Once again, there is no simple answer.

Operational gearing is of interest not only to managers, but also to investors, since it may affect their investment decisions. While they may have a view on an appropriate level of operational gearing for a company based on their understanding of its business, they cannot confirm that view, since it's not possible to calculate a reliable gearing ratio from published accounts.

Managers must be aware of the impact of operational gearing on profits and risk to make good business decisions. Investors also require information about operational risk to allow them to make informed investment decisions. It is time to understand the importance of operational gearing for business and investment decisions – and appreciate that there is no simple view on what constitutes an acceptable ratio. **FM**

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