

profitability measure). Sales divided by total assets is the total asset turnover ratio. In fact, we decompose the ROA ratio into other financial characteristics that can be examined individually.

The ROA decomposition suggests two ways to improve the ROA: by increasing either the net profit margin or the turnover of total assets (or both). The net profit margin will increase by earning more profit per currency unit of sales. The total asset turnover will increase in either of two ways: (a) by generating more sales volume with the same amount of assets, or (b) by reducing the amount of assets required for a given volume of sales (for example by disposing of or decreasing less productive assets). The total asset turnover ratio can be analysed further through the component measures of total assets turnover (inventory turnover, fixed asset turnover, receivables turnover, etc.). Profit margins will improve by (a) reducing cost of sales and other operating costs for a given volume of sales or (b) increasing unit sales prices.

The ROI decomposition logic underscores the fact that an overall ROI measure is the combined effect of a large number of factors and responsibilities. It can be used by external analysts as a guide to drill-down to specific policy areas and identify areas of concern.

To a certain extent the relationships among the decomposed ratios/factors are industry specific. Industries that are capital intensive are likely to have a low asset turnover ratio. However, such an industry is also usually characterized by high margins because it is difficult for new companies to enter the market. A company which is capital intensive but also has low margins will be on a declining trend in its life cycle. Industries that have little capital involved will have higher asset turnover ratios. However, they will normally be highly competitive because of the lack of barriers to entry into the market and will therefore show lower margins.

## Financial leverage

Taking the analysis one step further, the ROE can be analytically linked to the return on assets ratio with the introduction of the concept of financial leverage.

$$\text{ROA} \times \text{Financial leverage} = \text{ROE}$$

Starting with the ROA ratio, we arrive at the following algebraic equality:

$$\frac{\text{Profit before interest}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Equity}} = \frac{\text{Profit before interest}}{\text{Equity}}$$

Alternatively, we can start from the original ROE definition and get the following:

$$\frac{\text{Net profit for the period}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Equity}} = \frac{\text{Net profit for the period}}{\text{Equity}}$$