the past 72 years, while its value has deflated over a longer period. The Rule of 72 is useful for doing a quick mental calculation that is not required to be precise.

MEASURING THE BUSINESS PERFORMANCE

Before a stock can be valued, we must first measure the business performance, which, as discussed later, includes making adjustments to managements declarations to arrive at a fair determination of profitability.

The basic principle of measuring business performance can be described by the following simplistic example. Imagine you were interested in buying a business, and the only accounting information considered reliable was the value of the business's net assets five years ago and today, together with funds taken from and put back into the business by the proprietors. In spite of the absence of further accounting records and no idea of what the annual profits were, you have sufficient information to determine the five-year business performance.

Table 5.1

Measuring the business performance using five-year basic records

$millions	Year	0	1	2	3	4	5	Total
Dividends			15	10	10	25	–	60
New capital			5	5	15	–	15	40
Net value of assets		100	–	–	–	–	169	
Owner's notional cash flow		-100	10	5	-5	25	154	

IRR of cash flow using owner's notional cash flow: 15% per period

Note: The net value of assets in year zero is deemed to be the initial investment shown as a negative in the cash flow row for the purpose of calculating IRR. Subsequent owner's cash flow figures are dividends less new capital subscriptions plus closing equity (net assets or book value) in year five.

By entering the annual cash flow amounts into a financial calculator that has a 'cash flow' facility or any computer spreadsheet program, the IRR is calculated in round numbers as 15%. This means that over the five-year review period the business has produced a return to the owners of 15% per period, or in this case 15% p.a. If a buyer happened to be of the opinion that the future performance of the business was likely to be similar to its historical performance and was satisfied with an investment return of 15%, the value would be the same as the closing equity (net asset value) of $169 million: equity $169 million × IRR15% ÷ RR15% = $169 million. If a buyer's required rate of return (RR) happened to be other than 15%, we need to determine the portion of earnings distributed and reinvested.

The first question is: how much cash and reinvested value has the business generated for its owners? Cash taken out in dividends is $60 million while the value accumulated in the business is closing equity of $169 million less new capital contributions of $40 million less opening equity of $100 million, which equals $29 million. Total earnings over five years inclusive of dividends are therefore $89 million, which, for the sake of simplicity, we will assume is entirely attributable to the normal operations of the business.

If we decided that the future business performance was likely to be similar to that during the review period, the 15% IRR would be the adopted performance criteria (APC). However, the value will depend on what portion of the APC is attributable to dividends (D), and what portion is attributable to reinvestment (RI) (retained profits and other accretions in value).

Given normalised earnings over the review period of $89 million, of which $60 million was paid out in dividends, D as a portion of APC15% will be: 60 ÷ 89 × 15% = 10.1%, while RI will be the remainder: APC15% less D10.1% = 4.9%, or: 29 ÷ 89 × 15% = 4.9%. The RI portion of 4.9% is what the market might like to think of as the annual growth factor.

If there were 16.9 million shares on issue, equity per share would be $10. After considering the fundamentals of the business and its deemed prospects, we might decide that 14% is an appropriate return and use that figure as the RR. We now have the requisite data to calculate the value, namely: RR 14%, APC 15%, D 10.1%, RI 4.9%, and equity per share E $10. The StockVal valuation equation is: (APC ÷ RR × RI + D) ÷ RR × E, the rationale of which is discussed later. Therefore: (APC15% ÷ RR14% × RI4.9% + D10.1%) ÷ RR14% × E$10 = $10.96. Alternatively, an RR of 16% would reduce the value to $9.18 per share.

While Table 5.1 told us what the five-year business performance and reinvestment ratio had been, it told us nothing about unusual events that might have reduced or increased profitability. The lack of annual profit data also meant we were unable to determine any trend in profitability. We also need to decide if declared profits and changes in balance sheet reserves have been understated or overstated and make the appropriate adjustments in determining 'normalised earnings'.

$$\frac{APC \div RR \times RI}{RR} + \frac{D}{RR}$$