CHAPTER 6: FOCUS ON THE ENTERPRISE

> Seek simplicity, and distrust it.
>
> Alfred North Whitehead

Simplifying our life is a great thing to do. If you have ever cleaned out a garage, wardrobe or bedroom of 'junk' accumulated over many years, you know what I mean. Perhaps some of these items were useful to us in the past; perhaps they were never useful, but we thought they might be one day. Why is it a good idea to 'free' ourselves of unnecessary possessions? How can less be more? Well, removing unnecessary belongings allows us to focus our energy and attention on those possessions that can help us to do what we need to do.

It is the same with financial statement analysis. Fundamental analysis of a firm is a lot of work. It requires time, energy and effort. I do not know about you, but these are commodities that are in short supply in my life. The key benefit of simplifying our analysis is that it allows us to focus our efforts on those aspects of a business that are more likely to be adding value and to do a better job at analysing them. We have seen how in the DCF and economic profit frameworks we can focus our efforts on analysing the enterprise, not the company. The enterprise is a firm's operations, the activities of a firm that add value without regard to how they are financed. We will see we do not need to consider how a firm has financed its operations if we think a firm is not materially adding value through its financing activities.

In this chapter, we will see how in the economic profit framework we focus on the Abnormal earnings from net assets not at market value. This can be based on Operating income after tax (OI), if net financial obligations (NFO) are measured in the balance sheet at market value. Also, we will see later in Chapter 7 that focusing on the enterprise, not the company, can have several significant advantages, including that we do not need to change the cost of capital with changes in leverage and that we only need to focus on the risks of a firm's operations. In this chapter, we will also discuss Price-to-book (P/B) ratios for operations, rather than for equity, and consider the relationship between levered (company) and unlevered (enterprise) ratios. We will see that levered (company) ratios are influenced by both a firm's leverage and its unlevered (enterprise) ratios. First, we will first look at how we can simplify the economic profit framework.

6.1 Economic Profit Framework

We have seen in Chapter 3 that the economic profit framework can be expressed as:

V_0^E = BV of Equity + PV of Abnormal Earnings (AE)

If all the items in a firm's balance sheet are at market value, then the book value of equity could be expected to earn at the required rate of return. Abnormal earnings would be expected to be zero.

Another way of saying this is:

V_0^E = BV of Equity

This implies forecasted Abnormal earnings (AE) equals zero. In principle, if the accounts could include

everything at market value then financial statement analysis would be totally straightforward; we could simply accept the book value of equity as equaling its market value. Unfortunately, this is not typically how accounting works. Even if some items in the balance sheet are at, or close to, market value, there will be others that are not. As we discussed earlier in Chapter 2, accounting generally does not seek to capture estimates based on expected future economic and business events that may affect the firm's future earnings; and where it does, these will be subjective and open to potential manipulation or to various biases in their estimation. However, some assets and liabilities may have zero expected Abnormal earnings (AE) because they are measured at market value.

For this reason, we can express our economic profit framework as follows:

V_0^E = BV of Equity + PV of AE from net assets *not* at market value

The reason we can safely exclude net assets at market value when calculating Abnormal earnings (AE) is because, by definition, they will not contribute to Abnormal earnings. All their value will be captured in the accounting book values.

Different Abnormal Earnings Measures

In Chapter 4 above, we have seen that restating a firm's Income statement can help us separate the earnings of a firm into Operating income after tax (OI) and Net financial expenses after tax (NFE):

$$\textbf{Earnings} = \textbf{OI} - \textbf{NFE}$$

Restating a firm's Balance sheet can also help us separate the book value of Equity into Net operating assets (NOA) and Net financial obligations (NFO):

$$\textbf{Equity} = \textbf{NOA} - \textbf{NFO}$$

We can then separate Abnormal earnings into Abnormal earnings relating to operations and Abnormal earnings relating to financial activities. First, we can see that:

$$AE_t = Earn_t - (\rho_E - 1) \times BV_{t-1}$$

This is the same expression as:

$$AE_t = [ROE - (\rho_E - 1)] \times BV_{t-1}$$

Since,

$$ROE = Earn_t / BV_{t-1}$$

Then,

$$AE_t = Earn_t - (\rho_E - 1) \times BV_{t-1}$$

$$= [Earn_t/BV_{t-1} - (\rho_E - 1)] \times BV_{t-1}$$

$$= [ROE - (\rho_E - 1)] \times BV_{t-1}$$

As we know, Abnormal earnings are the additional, or excess, earnings over and above the earnings needed to earn the required rate of return on the book value of Equity. This can be separated into Abnormal earnings relating to operations, that is Abnormal operating income (Abnormal OI); and into

Abnormal earnings relating to financial activities, that is Abnormal net financial expenses (Abnormal NFE):

$$\textbf{Abnormal } OI_t = OI_t - (WACC - 1) \times NOA_{t-1}$$

$$\textbf{Abnormal } NFE_t = NFE_t - (\rho_D - 1) \times NFO_{t-1}$$

You will see we now have *three* different measures of the cost of capital: cost of equity capital (ρ_E); cost of capital for operations (WACC); and cost of capital for debt (ρ_D).[1] A different cost of capital is used for each measure of Abnormal earnings, as the risks relating to each are different. The Net financial obligations (NFO) of a firm are usually at, or close to, market value in a firm's Balance sheet. This means that the Abnormal earnings from NFO (that is, Abnormal NFE) can usually be expected to be at, or close to, zero:

$$V_0^{NFO} = NFO_0 + \text{PV of Abnormal NFE}$$

Thus,

$$V_0^{NFO} = NFO_0$$

where PV of Abnormal NFE equals zero.

However, the Net operating assets (NOA) of a firm are usually not at market value in a firm's balance sheet. This means that the Abnormal earnings from NOA (that is, Abnormal OI) can usually be expected to be material (either positive or negative):

$$V_0^{NOA} = NOA_0 + \text{PV of Abnormal OI}$$

We also know that we can calculate the value of a firm's equity by deducting the value of a firm's NFO from its NOA:

$$V_0^{E} = V_0^{NOA} - V_0^{NFO}$$

This can be restated as:

$$V_0^{E} = (NOA_0 + \text{PV of Abnormal OI}) - NFO_0$$

$$= (NOA_0 - NFO_0) + \text{PV of Abnormal OI}$$

$$= \text{BV of Equity} + \text{PV of Abnormal OI}$$

Do you see what has changed? The present value of Abnormal OI has replaced the present value of Abnormal earnings on Equity. If a firm's NFO are at (or close to) market value in its Balance sheet, then we can focus on Abnormal operating income rather than on Abnormal earnings on Equity (which is after deducting interest). Or in other words, we can focus on the enterprise (or operations) of a firm regardless of how it is financed by equity or debt.

A specific focus

We know that Abnormal operating income equals the difference between a firm's Operating income after tax (OI) and the required rate of return on its NOA:

$$\textbf{Abnormal } OI_t = OI_t - (WACC - 1) \times NOA_{t-1}$$

This can be restated as:

$$\textbf{Abnormal OI}_t = [\textbf{RNOA}_t - (\textbf{WACC}-1)] \times \textbf{NOA}_{t-1}$$

where,

$$\textbf{RNOA}_t = \textbf{OI}_t/\textbf{NOA}_{t-1}$$

You will remember we use the subscripts (such as $_t$ or $_{t-1}$) to refer to the year. If t = 2018 and so t-1 = 2017, then $RNOA_{2018}$ would refer to RNOA for the year 2018 and NOA_{2017} would refer to closing NOA in 2017 (or, in other words, opening NOA for 2018).

In the formula above, we can see that the drivers of Abnormal OI are:

- Return on net operating assets (RNOA);
- Cost of capital for operations (WACC-1); and
- Net operating assets (NOA) put in place to earn the RNOA.

Rather than considering both the operating and financial activities of a firm we will now focus only on a firm's operating activities. We will focus on analysing a firm's Return on net operating assets (RNOA), being the relationship of its Operating income after tax (OI) to its Net operating assets (NOA); and on the amount of NOA the firm has in place to earn that return. How a firm finances its NOA with equity or debt, or the terms on which it borrows or invests in Net financial obligations (NFO) or Net financial assets (NFA), will be disregarded and considered to have no material impact on value. Rather, we will focus on a firm's operations, which are, after all, the total enterprise, the firm itself.

In restating a firm's financial statements, we separate a firm's operating and financial activities and identify these key accounting measures of the enterprise of a firm: Operating income after tax (OI) and Net operating assets (NOA). The missing item, however, is WACC, or the cost of capital for operations. When focusing on a firm itself (rather than on the equity of a firm) we also need to focus on the opportunity cost of the capital required to fund a firm's operations (not the opportunity cost of the capital required to fund its equity).

Cost of capital for operations

The operations of each firm will have their own unique risks. A firm will face various potential risks, such as risks in its markets from the actions of competitors, customers and suppliers; risks from changes in technology, customer tastes and demographics; risks due to weather, general economic factors, exchange rate movements and changes in commodity prices; risks from changes in tax and regulatory rules and requirements; and many other types of risks. Businesses face uncertainty and risk in relation to their operations every day. Indeed, in business there are risks at every turn, lurking under every rock. The risks of a business (relative to other investment opportunities) determine the return that someone would require to invest in the operations of a firm. This is a firm's cost of capital for its operations, or the cost of capital for the firm, that is its WACC. This cost of capital is usually called the weighted average cost of capital (WACC), because it can be expressed as the weighted average of the cost of capital for equity and the cost of capital for debt:

$$\textbf{WACC} = \frac{V_0^E}{V_0^F}\rho_E + \frac{V_0^D}{V_0^F}\rho_D$$

This will be a familiar concept for those who have studied finance. The cost of capital for a firm's operations, or for the firm or enterprise, is WACC. The cost of capital for a firm's equity and debt

respectively are ρ_E and ρ_D. V_0^E is the market value of a firm's equity at the end of period 0, V_0^D is the market value of a firm's debt at the end of period 0, and V_0^F is the market value of a firm's operations at the end of period 0. WACC, ρ_E and ρ_D are related to each other by a simple expression based on the proportions of the market value of a firm represented by the market value of its equity and by the market value of its debt, or in other words by a measure of its gearing or financial structure.

The cost of capital for a firm's operations (WACC) comprises the proportion of the market value of a firm represented by the market value of its equity multiplied by its equity cost of capital plus the proportion of the market value of a firm represented by the market value of its debt multiplied by its debt cost of capital. You will notice that both equity and debt are at market value, not at accounting or book values. Also, the cost of capital for debt is usually the after-tax cost of debt, namely the nominal cost of debt multiplied by *(1-t)*, where *t* is the firm's marginal tax rate. For example, if the tax rate is 30%, then *(1-t)* equals 1 minus 0.3, which equals 0.7. Multiplying by 0.7 will reduce the cost of debt. This reflects the fact that a firm can deduct interest on debt from its earnings before calculating its taxable income. This will result in a firm paying less tax if it already has taxable income against which the interest can be deducted. Let us now look at how these different costs of capital interact.

6.2 Costs of Capital Interact

It is easy to think that the cost of capital for operations, or the WACC, is derived from the cost of capital for equity and the cost of capital for debt. After all, the formula indicates the cost of capital for operations can be calculated as the weighted average of ρ_E and ρ_D. Indeed, as I have already said, the cost of capital for operations is usually referred to as the weighted average cost of capital (WACC) in finance textbooks. However, this formula simply sets out the *relationship* between WACC, ρ_E and ρ_D. This same formula could just as easily be expressed as:

$$\rho_E = \frac{V_0^F}{V_0^E} WACC - \frac{V_0^D}{V_0^E} \rho_D$$

Or as:

$$\rho_D = \frac{V_0^F}{V_0^D} WACC - \frac{V_0^E}{V_0^D} \rho_E$$

As you can see, ρ_E could just as easily be viewed as the weighted average of the cost of capital for operations (WACC) and ρ_D; or ρ_D could be viewed as the weighted average of the cost of capital for operations (WACC) and ρ_E. It is purely a matter of convenience to refer to the cost of capital for operations as the WACC rather than ρ_E or ρ_D.[2]

Source of risk

As we have seen, the familiar finance formula that shows the cost of capital for operations as the 'weighted average cost of capital' does not imply that the WACC is derived simply from a weighted average of ρ_E and ρ_D, with the weighting depending on a firm's level of gearing. A moment or two of reflection should make this clear to us. Both the cost of capital for equity and the cost of capital for debt will be driven by the cost of capital for operations, by the risks inherent in the business, rather than the other way around. In determining their required rate of return, both providers of equity and debt capital will consider the risks of a firm's business or operations relative to the risks they would face with alternative investment opportunities. There is an *interaction* between supply and demand for capital in the capital markets, between the risks of a firm's operations and the requirements of

providers of capital (based on the amount of capital they have and the risks of other investment alternatives they face). However, fundamentally risk (and the rate of return required to compensate providers of capital for assuming these risks) comes from a firm's operations, not from the capital markets and not from anywhere else.

Indeed, the cost of capital for equity could reasonably be seen as derived from a firm's cost of capital for operations (rather than the other way around) and from its level of gearing, being a weighted average cost of capital based on the cost of capital for operations and the cost of capital for debt, as follows:

$$\rho_E = \frac{V_0^F}{V_0^E} WACC - \frac{V_0^D}{V_0^E} \rho_D$$

Or alternatively, since $V_0^F = V_0^E + V_0^D$, this formula can be re-expressed as:

$$\rho_E = \frac{V_0^E + V_0^D}{V_0^E} WACC - \frac{V_0^D}{V_0^E} \rho_D$$

$$= WACC + \frac{V_0^D}{V_0^E} WACC - \frac{V_0^D}{V_0^E} \rho_D$$

Thus,

$$\rho_E = WACC + \frac{V_0^D}{V_0^E} (WACC - \rho_D)$$

Equity risk, and the equity cost of capital, can be seen to have *two* components:

- Operational risk (WACC); and
- Financial risk, comprising leverage (V_0^D / V_0^E) and spread (WACC - ρ_D).[3]

Effect of leverage

Let us illustrate this relationship by using it to calculate the equity cost of capital for Ryman Healthcare. If we take the view that because of its operational risks the cost of capital for operations of Ryman Healthcare is 8%; that its cost of capital for debt (ρ_D) is its Net borrowing cost (NBC), which is 1.3%[4]; that the market value of debt (V_0^D) for Ryman Healthcare is the book value of its Net financial obligations (NFO) as at 31 March 2018 which is $1,068.7 million; and that the market value of equity (V_0^E) for Ryman Healthcare is its market capitalisation of $5,295 million (based on a share price of $10.59 per share at 31 March 2018 and multiplying it by 500 million shares), then we can calculate Ryman Healthcare's equity cost of capital as follows:

$$\rho_E = WACC + \frac{V_0^D}{V_0^E} (WACC - \rho_D)$$

$$= 8\% + \frac{1,068.7}{5,295} (8\% - 1.3\%)$$

$$= 8\% + 1.4\%$$

$$= 9.4\%$$

This now brings us to an interesting, and critical, point. As the leverage of a firm increases (by increasing the amount of debt relative to the amount of equity funding a firm) the required rate of return on

equity (ρ_E) will *increase*, given the required rate of return on operations is greater than the required rate of return on debt (that is, the spread is positive) and that the required rate of return on debt does not change as leverage increases. For example, if we were to increase Ryman Healthcare's debt on 31 March 2018 (that is, at the end of Year 0) from $1,068.7 million to $2,137.4 million (that is, double it), then we can calculate Ryman Healthcare's equity cost of capital as follows:

$$\rho_E = WACC + \frac{V_0^D}{V_0^E}(WACC - \rho_D)$$

$$= 8\% + \frac{2{,}137.4}{5{,}295}(8\% - 1.3\%)$$

$$= 8\% + 2.7\%$$

$$= 10.7\%$$

We have also seen in Section 4.3 of Chapter 4, that a firm's Return on equity (ROE) can be increased by increasing leverage, if the operating spread between Return on net operating assets (RNOA) and Net borrowing cost (NBC) is positive (and NBC does not change with increased leverage), as follows:

ROE = RNOA + (FLEV x SPREAD)

This can be expressed as:

$$\textbf{ROE} = \textbf{RNOA} + \frac{\textbf{NFO}}{\textbf{Equity}} \times (\textbf{RNOA} - \textbf{NBC})$$

as FLEV = NFO/Equity and Spread equals RNOA – NBC. See Figure 4.2 in Chapter 4, Section 4.3.

You will notice that the items in this expression are accounting measures, not market-based measures. We have seen in Chapter 4 that in 2018 these figures for Ryman Healthcare were:

$$\textbf{ROE} = \textbf{RNOA} + \frac{\textbf{NFO}}{\textbf{Equity}} (\textbf{RNOA} - \textbf{NBC})$$

$$= 14.4\% + \frac{½\,(1{,}068.7 + 845.0)}{½\,(1{,}940.5 + 1{,}652.1)} \times (14.4\% - 1.3\%)$$

$$= 14.4\% + \frac{956.9}{1{,}796.3} \times (14.4\% - 1.3\%)$$

$$= 14.4\% + 0.533 \times 13.1\%$$

$$= 14.4\% + 7.0\%$$

$$= \mathbf{21.4\%}$$

If we were to increase Ryman Healthcare's debt on 31 March 2018 from $1,068.7 million to $2,137.4 million (that is, double it), then we can calculate Ryman Healthcare's ROE as follows:

$$\textbf{ROE} = 14.4\% + \frac{½\,(2{,}137.4 + 845.0)}{½\,(1{,}940.5 + 1{,}652.1)} \times (14.4\% - 1.3\%)$$

$$= 14.4\% + \frac{1{,}491.2}{1{,}796.3} \times (14.4\% - 1.3\%)$$

$$= 14.4\% + 0.83 \times 13.1\%$$

$$= 14.4\% + 10.9\%$$

$$= \mathbf{25.3\%}$$

How much a firm is financed by debt or by equity will affect both the required rate of return (or cost of capital) for equity and the accounting return provided to equity investors in a firm. In our illustration above, increasing debt increased ρ_E from 9.4% to 10.7% and increased ROE from 21.4% to 25.3%. If both measures of spread are positive (and are unaffected by the change in leverage), increasing leverage will increase both the ROE provided to equity investors and their cost of capital (or required rate of return). Using an economic profit framework, increasing ROE will *increase* the value of a firm and increasing ρ_E will *reduce* the value of a firm.

If these two effects of leverage exactly offset each other, then the financing of a firm between debt and equity would have no net effect on the expected future economic profit of a firm and have no effect on the value of the equity of a firm. This would be consistent with the theorems proposed by Modigliani and Miller that under certain circumstances the financing of a firm has no effect on its value. Under certain circumstances, there would be no ability for a firm to add value for equity investors through its financing activities. In such circumstances, any increases in ROE achieved through increasing financial leverage would be *exactly* offset by the higher cost of capital for equity required by equity investors.

A simplified illustration

Let us explore this idea a bit further by considering a simplified view of the future for Ryman Healthcare. The purpose of this simplified illustration is to help us get a feel for the relationship between a firm's financial activities and its equity cost of capital (ρ_E) and Return on equity (ROE). This is central to understanding how the various costs of capital interact with each other and the extent to which a firm can or cannot add value for equity investors through its financial activities. There is very little in the world that continues unchanged forever. However, let us take the view that certain aspects of Ryman Healthcare's financial performance and financial position as reflected in its 2018 financial statements continue unchanged forever.

No doubt, Ryman Healthcare's operations will undergo substantial change in future years. However, let us think about the situation that its Operating income after tax (OI) in 2018 of $396.6 million and its Net financial expenses after tax (NFE) in 2018 of $12.2 million continue unchanged each year into the future. Let us also take the view that its Net operating assets (NOA), Net financial obligations (NFO) and Equity in 2018 stay unchanged each year into the future. We know that Ryman Healthcare is reinvesting its substantial operating cash flow into new Net operating assets (NOA), developing new (and extending existing) retirement villages. However, let us think about the situation where all this development activity stops, and Ryman Healthcare's Free cash flow is instead paid out as dividends each year. This is a 2018 'steady-state' or 'no growth' view of Ryman Healthcare.

Let us also take the view that because of its operational risks the cost of capital for operations (WACC) of Ryman Healthcare is 8% in 2018 and this also continues unchanged each year into the future. Based on a cost of capital for operations of 8%, the Abnormal operating income (Abnormal OI) of Ryman Healthcare each year in the future can be calculated as:

Abnormal OI_t = OI_t – [(WACC-1) x ½(NOA_t + NOA_{t-1})]

= $396.6m – (8% x $2,753.1m)

= $396.6m – $220.3m

= $176.3 million

We know that the economic profit model suggests we can value the equity of a firm as follows:

V_0^E = BV of Equity + PV of Abnormal OI

If we expect Ryman Healthcare to earn Abnormal OI of $176.3 million for ever, or for eternity, then we can value the present value (PV) of its Abnormal OI as if it were a perpetuity[5] of $176.3 million discounted at the cost of capital of operations of 8% per year, which would equal:

$$\frac{\text{Abnormal OI}}{\rho_F} = \frac{\$176.3\text{m}}{8\%}$$

$$= \textbf{\$2,204.2 million}$$

The value of Ryman Healthcare's equity would equal its Book value of equity in 2018 of $1,940.5 million plus $2,204.2 million, that is $4,144.7 million. As Ryman Healthcare has 500 million shares on issue, this would represent a value of about **$8.28 per share**.

Similarly, we can value Ryman Healthcare based on a valuation of its Abnormal earnings (AE). We can calculate Ryman Healthcare's cost of capital for equity, as follows:

$$\rho_E = \text{WACC} + \frac{V_0^D}{V_0^E} \times (\text{WACC} - \rho_D)$$

$$= 8\% + \frac{956.9}{4{,}144.7} \times (8\% - 1.3\%)$$

$$= 8\% + (0.23 \times 6.7\%)$$

$$= 8\% + 1.5\%$$

$$= \textbf{9.5\%}^6$$

You will see I have used the average book value[7] of the firm's Net financial obligations (NFO) as adequately representing its market value and have used our measure of the market value of Ryman Healthcare's equity ($4,144.7million) from our calculations using the economic profit framework.

Ryman Healthcare's Return on equity (ROE) is 21.4%. This is based on Comprehensive income (CI) of $384.4 million divided by the Book value of shareholders' equity of $1,796.3 million, that is ½ x [$1940.5m + $1,652.1m]). The Abnormal earnings (AE)of the firm are calculated as:

$AE = [ROE – (\rho_E - 1)] \times BV$

$$= (21.4\% - 9.5\%) \times 1{,}796.3$$

= **$208.9 million**

The economic profit model suggests we can value a firm's equity as follows:

V_0^E = BV of Equity + PV of Abnormal Earnings (AE)

If we expect Ryman Healthcare to earn Abnormal earnings (AE) of $208.9 million for ever, or for eternity, then we can value the present value (PV) of its Abnormal earnings (AE) as if it were a perpetuity of $208.9 million discounted at the equity cost of capital of 9.5% per year, which would equal:

$$\frac{AE}{\rho_E} = \frac{\$208.9\text{m}}{9.5\%}$$

= **$2,198.9 million**

The value of Ryman Healthcare's equity equals its Book value of equity in 2018 of $1,940.5 million plus $2,198.9 million which is $4,139.4 million. As Ryman Healthcare has 500 million shares on issue, this would represent a value of about **$8.28 per share.**

In this simplified illustration the economic profit valuations of Ryman Healthcare using either discounted Abnormal OI or discounted Abnormal earnings (AE), provide the same value (after allowing for rounding) for Ryman Healthcare, namely about $4,140 million or $8.28 per share. Notice that the Price-to-book (P/B) ratio for Ryman Healthcare is 2.1 times, based on a price (or market value of equity) of about $4,140m (that is, the 'P') and a book value of $1,940.5m (that is, the 'B'); 4,140m/1,940.5m = 2.1 times. How is it that we can value a firm using discounted Abnormal OI or discounted Abnormal earnings (AE) and arrive at the same value for its equity? The reason is that in our example the firm's Net financial obligations (NFO) is at market value, or in other words, Abnormal net financial expenses (Abnormal NFE) equals zero. We will now have a look at the impact of a firm's leverage and other factors on its earnings growth.

6.3 'Good' and 'Bad' Earnings Growth

In this section, we will take our simplified, 'no growth' view of the future for Ryman Healthcare that we used in Section 6.2 above a bit further by considering the effects of a change in the way Ryman Healthcare is financed. We will see how it is possible to grow the Return on equity (ROE) of Ryman Healthcare by increasing its leverage. This is one of a number of ways in which 'earnings' can be increased without changing the economic and business drivers of a firm's operations; without getting involved in the messy and difficult task of adding value to various stakeholders of a firm, such as its customers. A question we will ask ourselves in this section is whether it is possible to add value to a firm's equity investors by a change in a firm's leverage.

Change in leverage

What happens if we change the way a firm is financed? Let us assume we increase the gearing of Ryman Healthcare by increasing its borrowings - that is, its Net financial obligations (NFO) - by $828 million from $1,068.7 million to $1,896.7 million. These funds are used to decrease equity by $828 million by the firm repurchasing 100 million of its shares at $8.28 per share (leaving the firm with 400 million shares on issue). Note that the shares are repurchased at our estimate of their value (based on our simplified illustration of 'no growth' in Section 6.2 above) of $8.28 per share; no more, no less. There is no transfer of value between those equity investors whose shares were repurchased by the firm and those equity investors whose shares were not. The firm will continue to have Net operating assets (NOA) of $3,009.2 million in 2018, but these will now be financed by $1,896.7 million of Net financial obligations (NFO) and $1,112.5 million of equity (that is, $1,940.5m - $828m). There has simply been a change in how the firm's existing NOA are financed between debt and equity; quite a significant change, with its financial leverage (FLEV), which is based on book values, increasing from 0.55 times (1,068.7/1,940.5) to 1.36 times (½[1,896.7+956.9]/1,112.5).

The firm's Abnormal OI will be unchanged by the change in financing and will remain at $396.6 million each year. The Present value (PV) of Abnormal OI will also be unchanged at $2,204.2 million, as the cost of capital for operations will be unchanged at 8%, being unaffected by any change in gearing. The value of equity would be $3,316.7 million (1,112.5m + 2,204.2m) and the value per share (with 400m shares outstanding) would be about $8.28 per share. The value per share would be unaffected by this change in gearing of the firm. We look at value of equity per share rather than the value of equity in total, as the total amount of equity has been reduced by the refinancing. However, the firm's Price-to-

book (P/B) ratio increases to 3.0 times (3,316.7/1,112.5m) compared to the previous P/B ratio in our simplified 'no growth' illustration of 2.1 times (see Section 6.2 above). Changes in how a firm is financed will not affect a firm's value for equity investors but will change its P/B ratio. We will discuss this further in Section 6.4 below.

This is all very well when valuing a firm using Abnormal OI, as how a firm is financed will not affect its Operating income (OI). But what happens when we value a firm using discounted Abnormal earnings (AE), as earnings (after interest) will be affected by changes in how a firm is financed. The change in leverage for Ryman Healthcare in our simplified 'no growth' illustration results in Operating income (OI) each year remaining unchanged at $396.6 million. However, Net financial expenses (NFE) will increase because of the additional borrowings of $828 million. Based on a net borrowing cost (NBC) of 1.3%, the increase in NFE because of the additional borrowings would be $10.8 million (1.3% x $828 million). As a result, NFE would increase from $12.2 million to $23.0 million; and Comprehensive income (CI), which is after deducting NFE, will reduce by $10.8 million each year from $396.6 million to $385.8 million. Nevertheless, with the reduced amount of equity capital, Return on equity (ROE) for Ryman Healthcare would increase from 21.4% to 34.7% (calculated as CI/Equity which equals 385.8/1,112.5).

We have assumed (for simplicity) that the Net borrowing cost after tax (NBC) remains unchanged at 1.3%, even though we have increased debt substantially. However, the cost of capital for equity will increase. We can calculate the firm's cost of capital for equity, as follows:

$$\rho_E = WACC_F + \frac{V_0^D}{V_0^E} \times (WACC - \rho_D)$$

$$= 8\% + \frac{1,784.8^8}{3,316.7} \times (8\% - 1.3\%)$$

$$= 8\% + 3.65\%$$

$$= \mathbf{11.65\%}$$

Because of increasing its gearing, Ryman Healthcare's cost of capital for equity would have increased from 9.5% to 11.65%. Abnormal earnings (AE) for the firm would also increase from $208.9 million to $256.4 million, as follows:

$$\mathbf{AE = [ROE - (\rho_E - 1)] \times BV}$$

$$= [34.7\% - 11.65\%] \times 1,112.5$$

$$= \mathbf{\$256.4 \text{ million}}$$

The Present value (PV) of AE would then be $2,201.0 million, calculated as a perpetuity of $256.4 million discounted at the cost of capital for equity (ρ_E) of 11.65%:

$$\frac{AE}{\rho_E} = \frac{\$256.4m}{11.65\%}$$

$$= \mathbf{\$2,201.0 \text{ million}}$$

The value of equity would equal $3,313.5 million, as follows:

$$\mathbf{V_0^E = BV \text{ of Equity} + PV \text{ of AE}}$$

$$= \$1,112.5m + \$2,201.0m$$

$$= \mathbf{\$3,313.5 \text{ million}}$$

This gives a value per share (on 400 million shares) of $8.28 per share (i.e. 3,313.5/400). We see the valuation of Ryman Healthcare is the same, whether we use discounted Abnormal OI or discounted Abnormal earnings (AE), regardless of changes in the gearing or leverage in our simplified 'no growth' illustration for Ryman Healthcare. Consider again why this might be so. Why might,

V_0^E = BV of Equity + PV of Abnormal OI

and

V_0^E = BV of Equity + PV of Abnormal Earnings (AE)?

This will be the case if the financial activities of a firm do not 'add value' or, in other words, if the Net financial assets (NFA) or Net financial obligations (NFO) of a firm are at market value on its balance sheet. If a firm can add significant value through its financial activities, focusing on Abnormal OI will exclude some value. However, if a firm is not adding value through its financial activities, ignoring financial activities will make our task of analysing a firm simpler (and more focused), without ignoring any material aspect of value for equity investors.

We have seen in Section 6.2 above, that a firm's cost of capital for equity will be determined by its operational risk, as reflected in its cost of capital for operations (WACC); and by its financial risk, as reflected in its leverage (V_0^D/ V_0^E) and spread (WACC - ρ_D). Yet how is a firm's operational risk reflected in its cost of capital for operations? It is through the operation of the capital markets and the returns required by equity and debt investors for the level of operational and financial risk they take when investing in a firm. In this way, a firm's cost of capital for operations (WACC), cost of capital for equity (ρ_E) and cost of capital for debt (ρ_D) interact with each other. In this sense, each of a firm's WACC, ρ_E and ρ_D are the weighted average cost of capital of each other.

Sources of earnings growth

> We hold these truths to be self-evident, that all men are created equal …
>
> US Declaration of Independence, July 4, 1776
>
> Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal.
>
> Abraham Lincoln, 1863[9]

The founding fathers of the United States of America may have been committed to the notion that every person is created equal. How well this exists in practice in the world, given there is a huge divide between the haves and have-nots in our world, between the oppressed and the oppressors, between the weak and the powerful, may be arguable. Indeed, slavery was practiced extensively in the US at the time the US Declaration of Independence was written. However, this notion of equality is certainly not true when it comes to earnings growth. Not all earnings growth is created equal. There is 'good' earnings growth and 'bad' earnings growth; earnings growth that adds value to equity investors, and that which does not. There is earnings growth that we should be prepared to pay for and that which we should not. We need to be careful that we do not pay for earnings growth that does not add value; we need to be careful we are not deceived by earnings growth that is not the genuine thing.

We have seen in Chapter 3 in Section 3.4 above, that the value of equity in a firm is based on the present value of all the future dividends a firm provides its equity investors (plus any return of capital

on liquidation or any proceeds received if a firm is taken over). We have also seen that cash flows and earnings are related to dividends, so the value of the equity of a firm can be equally seen as related to the present value of the future cash flows or earnings of a firm. This means that if a firm's earnings are expected to grow strongly in the future, its value would be greater than if its earnings were not expected to grow as strongly. Well, yes and no. Accounting earnings can be 'manufactured' in several ways without there having been a change in the underlying economic and business realities of a firm. These are forms of 'imitation' earnings growth that do not add value to equity investors.

The way a firm's operations are financed, its leverage or gearing, can generate growth in earnings, but may not normally add value to equity investors. We have seen our simplified, 'no growth' illustration of Ryman Healthcare when we looked at two different levels of gearing, the operations of the firm were the same regardless of the level of gearing. The value of equity in Ryman Healthcare in both cases was the same: $8.28 per share. However, Return on equity (ROE) increased with the extra leverage from 21.4% to 34.7%; quite a large difference. My younger son is 25 years old. At a return of 21.4%, my son's current share portfolio valued at about $120,000 would grow to about $215,000 over the next three years, by the time he was 28 and perhaps starting a career, settling down and perhaps wanting to buy a house. Not a bad amount to have. However, at a return of 34.7%, it would grow to over $293,000 over the next three years (an extra $78,000).

There is certainly quite a difference between a ROE of 21.4% and 34.7%, although both are excellent rates of return. In our simplified, 'no growth' illustration of Ryman Healthcare, the only difference between Ryman Healthcare earning a ROE of 21.4% or 34.7% was its leverage. Increasing its ROE involved Ryman Healthcare borrowing $828 million from the bank and buying back 100 million shares. Is it really that easy for a firm to enrich its equity investors? As we have seen above, this can increase a firm's ROE but not its value if the changes in ROE are exactly offset by changes in the firm's cost of capital for equity (ρ_E). This would be the case if debt markets are efficient and a firm is unable to take advantage of any inefficiency in the debt markets. In other words, this would mean that in any refinancing a firm would not be able to extract value for its equity investors by increasing returns to equity investors without assuming an offsetting amount of additional risk.

Three areas in which we need to be careful when looking at firms with strong earnings growth, are earnings growth 'created' by:

- Financial leverage;
- Investment; or
- Changes in accounting methods.

'Good' earnings growth, that creates value for equity investors, is the result of changes in the economic and business drivers of the firm's operations. These changes are reflected in the firm's accounting drivers which are in turn reflected in earnings growth for the firm. This is what we value as equity investors and are prepared to pay for. However, in analysing a firm's financial statements we need to be aware that earnings growth can be 'manufactured' in a firm's accounts. This is an imitation of the real thing rather than the real thing itself. As owners of brands such as Coke will tell us many times, beware of imitations; they are not the real thing.

So how do we tell imitations from the real thing? How do we distinguish between 'good' earnings growth (which adds value) and 'bad' earnings growth (which does not)? How can we ensure we do not mistakenly ascribe value to 'bad' earnings growth? The key is to be aware of how earnings growth can be 'manufactured'. One way of 'imitating' earnings growth is through changes in financial leverage. Be careful of firms showing growth in Return on equity (ROE) over time that also steadily increase the

firm's leverage. We need to disentangle the leverage (or financial activities) of a firm from its operations. We need to disentangle the effect of increasing the leverage of a firm on its earnings growth, to be able to determine whether there is any real earnings growth taking place.

In addition, you may read in the financial press that a firm might have grown its earnings by, say, 50% in the past year. This sounds great. Growing earnings by 50% sounds like a pretty good outcome for any firm. Ryman Healthcare has been a highly successful firm and has been able to grow its Operating income after tax (OI) from $13.1 million in 2000 to $396.6 million in 2018, an average growth rate of about 21% per year. If a firm has been able to grow its earnings by 50% in a year surely something 'good' must be going on in the business? However, what if it transpired that the firm had made a major acquisition of another business during the year and that its growth in earnings was solely due to it having made this investment? Indeed, if we looked only at its original business, its earnings growth might be zero. Would this make any difference to the way we viewed the impact of this earnings growth on the value of a firm?

Earnings growth through acquiring another business may or may not be as good as earnings growth from growing and developing an existing business. For example, suppose the equity cost of capital for a firm is 9.5% and the new business acquired is returning 8% on the equity the firm invests in the new business. Although acquiring the new business might result in a large increase in the firm's earnings, it would have destroyed value for equity investors as the acquired business would be returning less than the firm's cost of capital. Equally, if the new business that was acquired returned, say, 15% on the equity invested in the business and the firm's equity cost of capital was 9.5%, then the acquisition would have added value and the resulting earnings growth because of the acquisition would be 'good' earnings growth and add value to equity investors.

It is a generalisation, but often larger firms can tend to grow by acquiring smaller firms; whereas smaller firms can tend to grow through developing and growing their existing business. Ryman Healthcare is an example of a firm that has grown by internal growth, not by the acquisition of other businesses. It started out as a small private firm in 1984. Fifteen years later it listed in 1999 with a market capitalisation of $135 million. It has subsequently grown into a large firm with a market capitalisation of over $5 billion. As it has grown into a large business, Ryman Healthcare has continued to grow only by internal growth (and not by acquisition).

Earnings growth could be by way of investment in new acquisitions or by way of investment in internal growth (for example, through investment in Property, plant and equipment, Inventories and Receivables). Whether either source of earnings growth adds value to equity investors and is 'good' earnings growth depends on whether the new investment earns more than the cost of the additional capital needed to support the new investment. It is not uncommon for acquisitions by firms of other businesses to add earnings growth and yet destroy substantial value. For example, Wesfarmers acquired Homebase in the UK and Ireland for $705 million in 2016. They also invested significant further funds to restructure and grow the business. In 2018, it sold Homebase to Hilco Capital (a private equity firm) for £1 (that is, $1.60). It is estimated Wesfarmers destroyed well over $1 billion of value to equity investors in Wesfarmers through this acquisition. This was an expensive way to grow the earnings of Wesfarmers; that is, expensive to its equity investors.

Another form of earnings growth to be careful of is earnings growth due to changes in the accounting treatments or policies of a firm. For example, if a firm changes the basis of how it makes its allowance for doubtful debts (say, reducing its allowance from 2% of sales to 1% of sales) this could result in growth in earnings. However, this would not add value to equity investors unless it was the result of a change in the economic and business realities of a firm (that is, a change in the actual experience of

bad debts).

> People are paid not to win, but to keep assets under management and stay in the game … the pay structures for most managers have a 12-month horizon, which means that the idea that money managers have the flexibility to look out long term is contradicted by a basic reality of the business.
>
> *Henry McVey*, Morgan Stanley.[10]

We saw in Chapter 3 that capital markets can tend to focus on earnings or cash flows in the short-term. One reason this can happen is that earnings or cash flows of firms often are difficult to forecast very far into the future, even beyond the current year.

> So, for guys like us, where our capital can be pulled, we have to make sure that we build staying power around our expected value metrics. Emphasizing the quick return of your capital is how you protect the staying power of an investment organisation.
>
> *Mitch Julis*, Canyon Capital[11]

If a firm can present its financial statements to show earnings growth in the recent past, this might encourage the capital markets to form the view that this earnings growth is likely to continue in the future. Indeed, psychological studies suggest it is all too easy for us to over-estimate the likelihood that an existing trend will continue 'indefinitely' into the future. So, it is important to be careful to assess whether a firm's past earnings growth was 'good' or 'bad' growth. Whether a firm's earnings growth adds value or not depends on where the earnings growth comes from. Does it come from investment within a business to fund internal growth (or investment in acquiring another business) that provides the firm with a return greater than its cost of capital? If it does, then it is 'good' earnings growth. Or does the earnings growth come from investment in acquiring another business that provides a return less than a firm's cost of capital (such as Wesfarmer's acquisition of Homebase in the UK); or is the earnings growth simply the result of a change in accounting treatments; or is it the result of a firm increasing its leverage? If it does, then it is 'bad' earnings growth. Not all earnings growth of firms is created equal; some earnings growth is certainly more equal than others.

6.4 Levered and Unlevered Ratios

To complete our discussion of the benefits of focusing on the enterprise, rather than on the company, we will look at the relationship between levered (company) and unlevered (enterprise) Price-to-book (P/B) ratios. We will see that levered ratios include the effects of both the operating and financial activities of a firm. This means they can be influenced by changes in a firm's financial activities, even if there is no change in a firm's operating activities. For this reason, we need to be careful about interpreting levered ratios of a firm.

Ratios of listed companies published in the financial media (or supplied by the major providers of financial information) are usually levered or company ratios. For example, Price-to-book (P/B) ratios are usually based on the listed share price of a firm's equity (the 'P') and the firm's Net tangible assets per share, that is the Total assets of a firm less Liabilities, Goodwill and various Intangible assets divided by the number of shares on issue (the 'B'). A firm's Net tangible assets will include both operating and financial assets and liabilities. For example, the New Zealand Stock Exchange (NZX) each day provides

information on Ryman Healthcare, including its share price, trading volumes and market capitalisation; as well as various measures such as Price earnings ratio (P/E), Earnings per share (EPS) and Net tangible assets per share (NTA). See link here. On 15 January 2019, the NZX reported the NTA of Ryman Healthcare was $4.06 per share and its share price was $11.16 per share. From these numbers we could calculate the levered P/B ratio of Ryman Healthcare as 11.16/4.06 = 2.7 times.

Similar information is provided on listed companies in Australia and in many other countries. For example, on 15 January 2019, Wesfarmers share prices was $32.06 and its Net tangible assets per share was $4.33. This gave a levered P/B ratio of Wesfarmers of 32.06/4.33 = 7.4 times. The websites for the New Zealand Stock Exchange, the Australian Securities Exchange and many other stock exchanges in the world, provide access to a wide range of data on each listed company, including links to individual company's websites which generally give access to each firm's financial statements. From all these sources we could calculate *levered* P/B ratios for listed companies in many countries, based on comparing the market value of equity with the book value of equity.

We can express levered and unlevered Price-to-book (P/B) ratios as follows:

$$\textbf{Levered P/B ratio} = \frac{V_0^E}{BV_0}$$

$$\textbf{Unlevered P/B ratio} = \frac{V_0^{NOA}}{NOA_0}$$

The *levered* P/B ratio is the relationship between the value of equity and the Book value of equity. As we have seen in Section 6.3 above, a firm's levered P/B ratio can be changed through changes in financial leverage; it is, in part, determined by how a firm's operations are financed. We saw that by changing Ryman Healthcare's leverage we could increase its levered P/B ratio from 2.1 to 3.0 times (using the simplified, 'no growth' illustration), without changing the value of the firm's equity. The *unlevered* P/B ratio is the relationship between the value of a firm's operations - that is, the value of its Net operating assets (NOA) - and the book value of its NOA. This cannot be changed through changes in a firm's financial leverage; it will be unaffected by how a firm's operations are financed.

Let us examine more carefully the relationship between a firm's levered and unlevered Price-to-book (P/B) ratios. We can restate a firm's levered P/B ratio as follows:

$$\textbf{Levered P/B ratio} = \frac{V_0^E}{BV_0}$$

$$= \frac{V_0^{NOA} - V_0^{NFO}}{NOA_0 - NFO_0}$$

$$= \frac{V_0^{NOA}}{NOA_0 - NFO_0} - \frac{V_0^{NFO}}{NOA_0 - NFO_0}$$

$$= \frac{V_0^{NOA}}{NOA_0 - NFO_0} - FLEV$$

$$= \frac{V_0^{NOA}}{NOA_0} - \frac{NFO}{NOA_0 - NFO_0} \times \frac{V_0^{NOA}}{NOA} - FLEV^{12}$$

$$= \frac{V_0^{NOA}}{NOA_0} + FLEV \times \left(\frac{V_0^{NOA}}{(NOA_0} - 1\right)$$

A firm's levered P/B ratio equals its unlevered P/B ratio (V_0^{NOA}/NOA_0) plus the effect of financial leverage. In other words, a firm's unlevered P/B ratio is its levered P/B ratio with the effect of financial leverage removed. If we think a firm's financial leverage does not affect value to equity investors, then a firm's unlevered P/B ratio will give a clearer indication of the relationship between market and book values for a firm than will its levered P/B ratio. In our simplified, 'no growth' illustration of Ryman Healthcare (in Section 6.2 above), the firm's V_0^{NOA} = \$5,101.6m[13]. This is based on market-based measures as at 31 March 2018. Its *unlevered* P/B ratio = V_0^{NOA}/NOA = 5,101.6/2,753.1 = 1.85 times. Ryman Healthcare's unlevered P/B ratio would be unchanged with a change in the level of financial leverage. It would remain at 1.85 times. However, as we saw in Section 6.3 above, with a change in leverage its *levered* P/B ratio increased from 2.1 times to 3.0 times.

A firm's levered P/B ratio will equal its unlevered P/B ratio when it has no financial leverage (that is, FLEV = 0) or where its unlevered P/B ratio = 1. If the book value of a firm's NOA does not accurately reflect the value of a firm's NOA (that is, unlevered P/B ratio ≠ 1), as is usually the case; and if the firm has some financial leverage, which is also usually the case, then a firm's levered and unlevered P/B ratios will be different. As we have seen with the simplified illustration in Section 6.2 above, Ryman Healthcare's *levered* P/B ratio was 2.1 times, which was greater than its *unlevered* P/B ratio of 1.85 times.

This relationship can be expressed as follows:

$$\frac{V_0^E}{BV_0} = \frac{V_0^{NOA}}{NOA_0} + FLEV \times \left(\frac{V_0^{NOA}}{NOA_0} - 1\right)$$

$$= 1.85 + 0.55^{14} \times (1.85 - 1)$$

$$= 2.1 \text{ times}$$

As we saw in Section 6.3 above, when we increased the financial leverage (FLEV) of Ryman Healthcare from 0.55 to 1.36 times, its *levered* P/B ratio was increased from 2.1 times to 3.0 times. This increase in the levered P/B ratio was solely due to the substantial increase in Ryman Healthcare's financial leverage. The *unlevered* P/B ratio of Ryman Healthcare remained unchanged at 1.85 times, being unaffected by the change in leverage (as both the market value and book value of its NOA are unchanged as the result of the change in leverage). This relationship at the higher level of financial leverage (FLEV) can be expressed as:

$$\frac{V_0^E}{BV_0} = \frac{V_0^{NOA}}{NOA_0} + FLEV \times \left(\frac{V_0^{NOA}}{NOA_0} - 1\right)$$

$$= 1.85 + 1.36 \times (1.85 - 1)$$

$$= 1.85 + 1.15$$

$$= 3.0 \text{ times}$$

If the book value of a firm's Net operating assets (NOA) accurately reflects the market value of its NOA (i.e. $V_0^{NOA}/NOA_0 = 1$), then a firm will also have a levered P/B ratio equal to 1, regardless of the firm's financial leverage (FLEV) (which is NFO/BV of Equity). This is because if $V_0^{NOA}/NOA_0 = 1$, then $V_0^{NOA}/NOA_0 - 1 = 0$; and so FLEV x 0 = 0 regardless of the level of FLEV. This would then mean $V_0^E/BV_0 = V_0^{NOA}/NOA_0 = 1$. Intuitively, this makes sense if we consider a firm's Net financial obligations (NFO) are at their market value in a firm's accounts. As a firm's BV of Equity = NOA – NFO, then if the book

values of both NOA and NFO are at market value then a firm's BV of Equity will also be at market value. However, when the book value of a firm's NOA does not accurately reflect the value of a firm's NOA (as is usually the case) then a firm's unlevered P/B ratio will diverge from 1 and a firm's levered and unlevered P/B ratios will be different.

For example, Ryman Healthcare's *unlevered* P/B ratio in our simplified, 'no growth' illustration was 1.85 times. In other words, the market value of its Net operating assets (NOA) was significantly greater than the book value of its NOA. Although Ryman Healthcare's financial leverage (FLEV) was about average at 0.55 times, the significant difference between the market value and book value of its NOA meant that an average level of FLEV resulted in the firm's *levered* P/B ratio (at 2.1 times) being materially higher than its *unlevered* P/B ratio of 1.85 times. By substantially increasing Ryman Healthcare's FLEV (from 0.55 to 1.36 times) we were able to dramatically increase the firm's *levered* P/B ratio from 2.1 times to 3.0 times (with its *unlevered* P/B ratio remaining at 1.85 times).

A firm's *unlevered* P/B ratio indicates a firm's level of expected future Abnormal operating income (Abnormal OI). Under our economic profit framework, the PV of Abnormal OI is the only factor that results in a difference between a firm's V_0^{NOA} (the 'P') and its NOA_0 (the 'B'). On the other hand, a firm's *levered* P/B ratio also includes the effect of FLEV effectively interacting with a firm's expected future Abnormal OI (through its *unlevered* P/B ratio). As we saw in the case of the simplified, 'no growth' illustration of Ryman Healthcare, with a high level of FLEV (and a high *unlevered* P/B ratio) this effect can be substantial. The relationship between a firm's levered and unlevered P/B ratios is set out in Table 6-1 below.

The key takeout from Table 6.1 is that, except in the special case where a firm has an unlevered P/B ratio equal to 1.0 (that is, the book value of its NOA equals its market value), FLEV will impact on a firm's levered P/B ratio. Where a firm's unlevered P/B ratio is greater than 1.0 (the 'right-hand side' of Table 6.1) and a firm has some FLEV, a firm's levered P/B ratio will be *greater* than its unlevered P/B ratio. Where a firm's unlevered P/B ratio is less than 1.0 (the 'left-hand side' of Table 6.1) and a firm has some FLEV, a firm's levered P/B ratio will be *less* than its unlevered P/B ratio. Of course, where a firm has no FLEV, its levered and unlevered P/B ratios will be the same, regardless of the level of a firm's unlevered P/B ratios.

The levered P/B ratios of a firm will be affected by the amount of the firm's leverage. By increasing a firm's leverage, you can increase (or decrease) its levered P/B ratio even though its unlevered P/B ratio remains unchanged. This means that a firm's levered P/B ratio is influenced by both:

- The extent to which the book value of a firm's Net operating assets (NOA) diverge from their market value (that is, a firm has either positive or negative expected future Abnormal operating income); and
- The level of a firm's leverage.

Table 6-1 Levered P/B Ratios: *Relationship with FLEV and Unlevered P/B Ratios*

	Unlevered P/B Ratios								
		0.5	0.8	0.9	1.0	1.1	1.2	1.5	2.0
	0	0.5	0.8	0.9	1.0	1.1	1.2	1.5	2.0
	0.25	0.375	0.75	0.875	1.0	1.125	1.25	1.625	2.25
FLEV	0.5	0.25	0.7	0.85	1.0	1.15	1.3	1.75	2.5
	1.0	0	0.6	0.8	1.0	1.2	1.4	2.0	3.0
	1.5	(0.25)	0.5	0.75	1.0	1.25	1.5	2.25	3.5
	2.0	(0.5)	0.4	0.7	1.0	1.3	1.6	2.5	4.0

Note: Levered P/B ratio = unlevered P/B ratio + FLEV x (unlevered P/B ratio – 1)

It is usually a firm's *levered* P/B that is referred to in the financial media, often in the form of a levered Price/NTA. If a firm's levered Price/NTA was relatively high, say, 2.5 times (see shaded cells in Table 6-1 above), what does this tell us? If the firm had a relatively high level of gearing (say FLEV = 2) then the market would be saying the firm's Net operating assets (NOA) was somewhat undervalued in its financial statements (that is, unlevered P/B = 1. 5).[15] In other words, its relatively high equity value compared to the book value of its equity was largely due to its high level of financial leverage, with only a relatively smaller part due to the level of expected future Abnormal OI of the firm.

Alternatively, if the firm had a low level of gearing (say FLEV = 0. 5) and its Price/NTA was 2.5 times, then the market would be saying the firm's Net operating assets (NOA) was more significantly undervalued in the firm's financial statements (unlevered P/B = 2.0).[16] In other words, its relatively high equity value compared to the book value of its equity was largely due to the level of expected future Abnormal OI of the firm, with only a relatively small part due to the firm's level of financial leverage. What this means is that it is not possible to interpret a firm's levered P/B ratio without also referring to its level of financial leverage.

Unlevered ratios of a firm can also be referred to as *enterprise* ratios. I could say a lot more about levered (company) and unlevered (enterprise) ratios. For example, just as the financial media and various providers of financial information will usually refer to levered (or company) P/B ratios, so they will also usually refer to other ratios as levered (or company) ratios. Levered (or company) P/E (Price-to-earnings) ratios are usually referred to in the financial media. Similar considerations apply to interpreting levered P/E ratios as apply to interpreting levered P/B ratios; that is, levered P/E ratios need to be interpreted in the light of the impact of a firm's leverage on its earnings.

In this section, we have looked at the relationship between levered (company) and unlevered (enterprise) ratios by focusing on a firm's Price-to-book (P/B) ratios. As we can focus on the enterprise, rather than on the company, in our financial statement analysis so we can also focus on unlevered (enterprise) ratios rather than levered (company) ratios. In this way, we can disentangle the effect of financial leverage on a firm's ratios, such as its P/B and Price-to-earnings (P/E) ratios.

Conclusion

This chapter has looked at how we can simplify the task of financial statement analysis by excluding how a firm has financed its operations. We saw how we can restate the economic profit framework to make it simpler, as follows:

V_0^E = BV of Equity + PV of Abnormal OI

This works if a firm's Net financial obligations (NFO) are at (or close to) market value in its Balance sheet. We also saw that the risks of a firm's operations can be seen to drive a firm's cost of capital for equity and for debt, rather than the other way around. It is the risk of a firm's operations relative to the risk of alternative investments in the equity and debt markets that is relevant. We saw that a firm's equity risk, and its equity cost of capital, has two components:

- Operational risk (WACC); and
- Financial risk, comprising leverage (V_0^D/V_0^E) and spread (WACC - ρ_D).

As a firm increases its leverage its equity cost of capital will usually increase as will its Return on equity (ROE); and that if debt markets are efficient, the effect of each on the value of a firm can be expected to exactly off-set each other. If this is the case, the financing of a firm between debt and equity will have no effect on the expected future economic profit of the firm and have no effect on its value. We also looked at how we need to be careful to assess whether a firm's earnings growth has been 'manufactured' by changes in financial leverage, poor investment or changes in accounting methods; and we also examined the relationship between levered and unlevered Price-to-book (P/B) ratios, and how a firm's leverage can impact on its levered ratios. We noted that the financial media usually refers to levered ratios, such as P/B ratios and Price-to-equity (P/E) ratios; and that these ratios need to be interpreted after considering the level of a firm's leverage.

Focusing on the enterprise (or a firm's operations) rather than on the company (or a firm's equity) can simplify our financial statement analysis by allowing us to focus on those activities of a firm most likely to be adding value to its equity investors (and to its other stakeholders). This can help us better analyse the key drivers of value of a firm. It can also help us to not be deceived by the financial activities of a firm (such as increasing financial leverage) which might appear to be adding value when they are not. To focus on the enterprise, on a firm's operations rather than on the company, can have many advantages. It can significantly simplify our forecasting task as we will not need to forecast a firm's financial activities. And in Chapter 7 below, we will see that by focusing on the enterprise we do not need to adjust the cost of capital as the leverage of a firm changes in the future.

As we look in Chapter 7 at the significant challenges of extending our forecasts beyond our horizons, beyond how far we can reasonably 'see' ahead, and as we spread our imaginations into eternity, we will see that the advantages of simplifying our forecasting task by focusing on the enterprise becomes even more valuable. This can all make the task of forecasting a lot more do-able in practice. We should 'seek simplicity, and distrust it.' Simplifying our analysis by focusing on the enterprise has many advantages. Yet here is a word of caution. The extent to which we can make this simplification in the

way we look at a firm depends on whether a firm's financial activities are materially adding (or subtracting) value to the equity investors in a firm. In business, and in financial statement analysis, simplification and focus can be powerful. With one caveat: if we are not leaving out, or failing to see, something that is significant.

FOOTNOTES

1. I have used WACC, or the weighted average cost of capital, to refer to the cost of capital for operations.

2. To see that these formula work, try using them for a firm with 50% equity, 50% debt, and a WACC = 15%, ρ_F = 10% and ρ_D = 5%. The calculations are as follows:

$$WACC = \frac{V_0^E}{V_0^F}\rho_E + \frac{V_0^D}{V_0^F}\rho_D$$

$$= ½ \times 15\% + ½ \times 5\%$$

$$= 7.5\% + 2.5\%$$

$$= 10\%$$

$$\rho_E = \frac{V_0^F}{V_0^E} WACC - \frac{V_0^D}{V_0^E}\rho_D$$

$$= 2/1 \times 10\% - 1/1 \times 5\%$$

$$= 20\% - 5\%$$

$$= 15\%$$

$$\rho_D = \frac{V_0^F}{V_0^D} WACC - \frac{V_0^E}{V_0^D}\rho_E$$

$$= 2/1 \times 10\% - 1/1 \times 15\%$$

$$= 20\% - 15\%$$

$$= 5\%$$

3. Equally, debt risk, and the debt cost of capital, can be seen as being derived from a firm's cost of capital for operations and its level of gearing and spread, as follows:

$$\rho_D = \frac{V_0^F}{V_0^D} WACC - \frac{V_0^E}{V_0^D} \rho_E$$

$$= \frac{V_0^D + V_0^E}{V_0^D} WACC - \frac{V_0^E}{V_0^D} \rho_E$$

$$= WACC + \frac{V_0^E}{V_0^D} WACC - \frac{V_0^E}{V_0^D} \rho_E$$

$$= WACC - \frac{V_0^E}{V_0^D} \rho_E + \frac{V_0^E}{V_0^D} WACC$$

$$\rho_D = WACC - \frac{V_0^E}{V_0^D} (\rho_E - WACC)$$

In this way, debt risk, and the debt cost of capital, can be seen to have *two* components:

- Operational risk (WACC); and
- Financial risk, comprising leverage (V_0^E/V_0^D) and a measure of spread between a firm's equity cost of capital and its cost of capital for operations (ρ_E - WACC).

The greater the amount (at market values) of equity relative to debt (that is, the *less* the gearing of a firm) and the *greater* the difference between a firm's equity cost of capital and its cost of capital for operations, the *less* will be a firm's cost of capital for debt relative to its cost of capital of operations (or risk of its operations). It is difficult to understand the meaning of a concept of spread between the cost of equity capital for a firm and its cost of capital for operations, except to realise that this difference can *only* be due to a firm's cost of capital for debt being different to its equity cost of capital and to its cost of capital for operations. If a firm's cost of capital for debt was equal to its cost of capital for operations, then a firm's equity cost of capital must also equal its cost of capital for operations and its debt cost of capital. This points to the *interaction* of a firm's equity cost of capital, debt cost of capital and its cost of capital for operations, which is essentially the interaction of the perceived risks of a firm's operations (the demand side of the capital markets) with the amount of available capital and the perceived risk of alternative investments that providers of equity and debt capital face (the supply side of capital markets). Remember that capital markets differ to, say, the Sydney Fish Market in that participants are not trading in fresh fish in their hands today but in entitlements to expected payoffs or benefits in the future, which involves a consideration of the substantial risks involved when trading in expectations of uncertain future worlds that may never come to exist.

4. Ryman Healthcare's NBC is particularly low because it capitalizes quite a bit of interest into the cost of its property developments and does not include this Interest capitalized in its Interest expense. Without Interest capitalized in 2018, Ryman Healthcare's NBC would have been 3.1%.

5. A perpetuity is a series of payments that continues forever. If the payments are constant, the formula for the value of a perpetuity is:

$$\text{Value of perpetuity} = \frac{\text{Payment}}{\text{Discount rate}}$$

6. This differs slightly to the cost of capital for equity (9.4%) calculated earlier in this section. This is because I used a different measure of the market value of the equity of Ryman Healthcare of $5,295 million earlier in this section. This was based on a share price of $10.59 per share multiplied by 500 million shares on issue. Since in our simplified illustration we have assumed, among other things, that there is no further growth in Ryman Healthcare's development of retirement villages, it is noteworthy that our measure of the market value of Ryman Healthcare using the economic profit framework (with no growth) is less than its market value based on its 31 March 2018 listed share price. This suggests the share price of Ryman Healthcare as at 31 March 2018 includes some value for expected future growth.

7. We have used average book value of Net financial obligations (NFO), not closing NFO. This is because our measure of the market value of Ryman Healthcare's equity is based on our calculations using the economic profit framework which is based on Operating income (OI) and average figures for Net operating assets (NOA) in our calculation of Abnormal OI.

8. Calculated as ½ [1,896.7 + (845.0 + 828.0)].

9. From Abraham Lincoln's Gettysburg Address of 1863.

10. Harris T et al (2006), "From Stock Selection to Portfolio Alpha Generation: The Role of Fundamental Analysis," *Journal of Applied Corporate Finance*, Vol.18, Nos 1, Winter 2006: 73.

11. Ibid: 71.

12. This step requires some slightly sophisticated algebra (which is not shown).

13. $V_0^{NOA} = V_0^E + V_0^D$

$= 4,144.7 + 956.9$

$= 5,101.6$

14. FLEV = NFO/Equity = 1,068.7/1,940.5 = 0.5507. These are all at book values.

15. The calculation is as follows:

$$\frac{V_0^E}{BV_0} = \frac{V_0^{NOA}}{NOA_0} + FLEV \times \left(\frac{V_0^{NOA}}{(NOA_0} - 1\right)$$

$$= 1.5 + 2 \times (1.5 - 1)$$

$$= 2.5 \text{ times}$$

16. The calculation is as follows:

$$\frac{V_0^E}{BV_0} = \frac{V_0^{NOA}}{NOA_0} + FLEV \times \left(\frac{V_0^{NOA}}{(NOA_0} - 1\right)$$

$$= 2.0 + 0.5 \times (2.0 - 1)$$

$$= 2.5 \text{ times}$$

QUESTIONS

6-1. Select three listed companies and calculate their P/B ratios (using financial media information). What do these ratios tell you about each firm? Of the firms you selected, which one does the share market think is likely to generate the highest expected future Abnormal earnings? Explain your reasons for thinking this?

6-2. Refer to Table 6.1. Look at the levered P/B ratios for a firm with FLEV of 2.0 times (the bottom row of Table 6.1). A firm with an unlevered P/B ratio of 1.2 times and FLEV of 2.0 times has a levered P/B ratio of 1.6 times (that is, the firm's levered P/B ratio is *one-third* greater that its unlevered P/B ratio). A firm with an unlevered P/B ratio of 2.0 times and FLEV of 2.0 times has a levered P/B ratio of 4.0 times (that is, the firm's levered P/B ratio is *two times* greater than its unlevered P/B ratio). Why should firms with a larger difference between the market value and the book value of their operations have levered P/B ratios (that is, V_0^E/BV_0) that are more affected by FLEV (NFO/ BV_0) than those of firms with a smaller difference between the market value and the book value of their operations?

6-3. In our simplified illustration of Ryman Healthcare, we changed the financial leverage of Ryman Healthcare by increasing the borrowing by $828 million and repurchasing 100 million of its shares at $8.28 per share. If Ryman Healthcare had been able to acquire its shares at $7.80 per share, would the firm be able to 'add value' by changing its leverage? If so, to *whom* would the firm be adding value? Where would the value come from? Would the value have been 'created' by giving more to real human beings (for example, customers) than is being taken from other real human beings (for example, suppliers) or is it simply being transferred, or appropriated, from some human beings to other human beings? Does it matter to you either way? … Really? Discuss the issues that such choices might involve for Ryman Healthcare's directors and senior management. Given value is inherently subjective, what implications are there for Ryman Healthcare's directors and senior management in that no-one is 'forcing' equity investors to sell their shares to the firm at $7.80 (or, for that matter, at $8.28).