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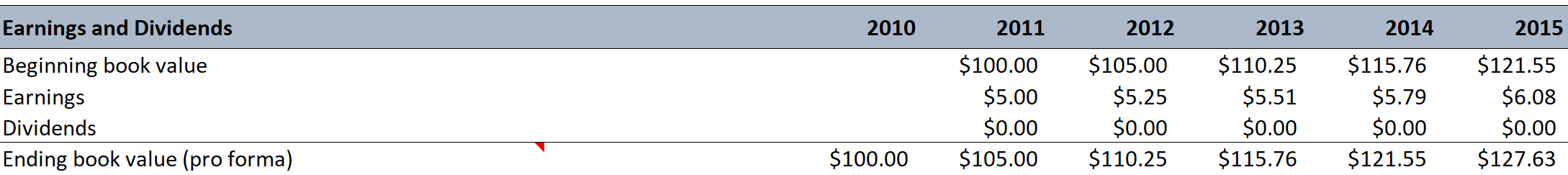
**Introduction**

***Appropriate*** accounting supplies the anchor that the investor seeks to challenge speculation in market prices. Analysts must avoid the trap of pretending they have precision, which they in fact lack. When it comes to valuation this is especially problematic. Valuation is riddled with uncertainty and assuming growth rates and applying CAPM to plug in discount rates exacerbates that uncertainty. We therefore must be honest in what we can do in handling uncertainty and what we cannot do. How do we circumvent these pitfalls?

**An Accounting Prototype**

The savings account is a simple instrument on which to test any valuation method. If the method does not work for a savings account, it will not work for equities.

*Figure 2.1 – Basic savings account with zero dividends (0% payout)*

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The savings account in Figure 2.1 has properties related to corporations that we are trying to value.

1. On-going concern – the account doesn’t have an expiration date,
2. the payout rate determines what proportion of earnings are paid out as dividends; in Figure 2.1 the payout rate is 0%, that is all earnings are retained and reinvested and earn a rate-of-return identical to the rate-of-return on book value,
3. the payout rate determines year-over-year growth rate in earnings and book value,
4. the accounting numbers for the future – 2011 and beyond – are pro forma numbers where earnings are the bottom-line number from the pro forma income statement and book value of equity derives from the pro forma balance sheet.

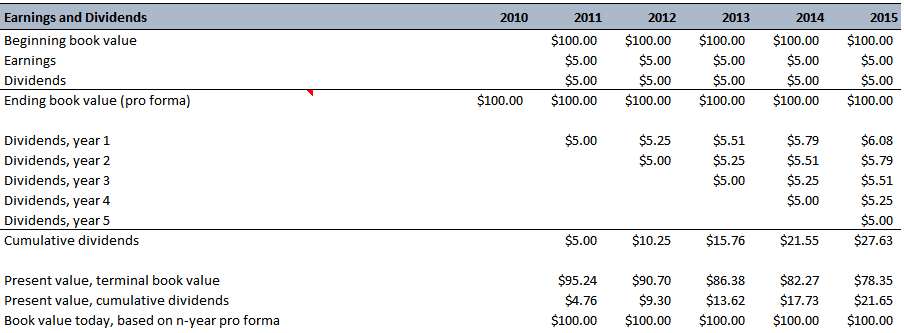
In Figure 2.1 the pro forma are certain (riskless). The required rate-of-return for the investment (discount rate) is the risk-free rate. In this situation, the rate-of-return on book value and the required rate-of-return are equivalent.

The current value of the savings account, $100, is the price at which it should trade if a market for savings accounts were efficient. Next we’ll develop a valuation approach that arrives at that value.

***Value is based on expected future cash flows*** (modern finance principle). The problem of applying this approach to the basic savings account in Figure 2.1 is that in the short and medium term there are no cash flows since dividends are zero. If we stick firmly to assessing expected future cash flows, then we must forecast long term cash flows and this sort of forecast is strewn with uncertainty. Can we develop a valuation approach that focuses on the present rather than the distant future, that is, can we ***anchor on what we know rather than on speculation*** (fundamentalist principle)?

In Figure 2.2 all earnings are paid out as dividends – that is a saving account with 100% payout. In this account, expected cash flows are paid out in the short term and hence we do not need to speculate. Notice that the book value today of both the 0% and 100% payout saving accounts is identical. This illustrates another principle of modern finance – ***value does not depend on payout***.

*Figure 2.2 – Basic savings account with all earnings paid out as dividends (100% payout)*



Value in both accounts is still based on expected cash flows over the life of the account but the timing of the payout is not relevant (cash flow is either paid in the form of dividends earlier on or extracted from the book value in the long term). This is the basic concept underlying Miller and Modigliani’s dividend irrelevance principle. However, this in turn gives rise to the dividend conundrum – value is based on expected dividends but forecasting dividends typically does not give us much of a handle on the value.

In the short term when there are no dividends, what other metrics can we assess in order to estimate value? The answer lies in forecasting dividends **and** book value via the “stocks-and-flows” (also called the “clean surplus”) equation as encapsulated in Accounting Principle #1 below.

***Accounting Principle #1***

Having done the accounting for future book value, the expected book value is then employed in valuation (by discounting the future book value to the present).

***Valuation Principle #1***

To get a handle on value, think of what the book value is likely to be in the future.

Putting Accounting Principle # 1 into context, in cases where the dividend payout rate is low, most of the future book value is generated by future earnings and within a five- and ten-year period, stock returns are largely explained by earnings that firms add to book value. This accretion of book value also represents a future source of dividends. When short term consumption is increased through dividends, this compensation is charged against future book value. This dynamic is captured in Equation 2.1 below:

We are going to tie the valuation method represented in Equation 2.1 with Equation 2.2 below:

Equation 2.3 is a reformulation of Equation 2.2. For the savings account with certain payoffs, the speculative value in Equation 2.3 is zero. Therefore, the price at which the savings account trades, and its value are both $100. This also results in a price-to-book ratio of 1. Furthermore, this suggests that when there is uncertainty, the P/B will be different than 1. This infers insights from Valuation Principle #2 below:

***Valuation Principle #2***

If one forecasts that the rate-of-return on book value will be equal to the required rate-of-return, the asset must be worth its book value.

Valuation Principle #2 ties another accounting measure, book rate-of-return, to valuation. It follows that an asset that is expected to earn a book rate-of-return greater than the investor’s required rate-of-return must be worth more than book value and vice versa.

**Cash Accounting for Value**

Discounted cash flow (DCF) analysis focuses on free cash flows. This technique is popular because some perceive accounting numbers as suspect whereas cash flows are “*real”*. Unlike forecasting pro forma income statements and balance sheets (both based on accrual accounting), DCF forecasts pro forma cash flow statements (cash accounting). When it comes to valuation, do we want cash accounting or accrual accounting? Equation 2.5 shows the DCF model using free cash flows (FCF):

The DCF model attempts to finesse the dividend conundrum by focusing on cash flows generated within the firm rather than cash flows paid out of the firm to shareholders (dividends). This is good in a sense since it focuses on the generation of value rather than the distribution of value. However, is this good accounting for value?

The DCF model as shown in Equation 2.5 has several problems:

1. The valuation does not anchor on anything in the present (except for net debt),
2. the valuation involves the highly uncertain task of estimating continuing value that relies heavily on estimating the long term growth rate,
3. since FCF is equal to cash flows from operations minus cash investments, subtracting cash investments often drives FCF negative and this can lead to a negative present value from FCFs,
4. if the present value from FCFs is negative, then the terminal value has to be greater than 100% of the current value and this embeds a high degree of speculation terminal value is pegged to a long term growth estimate that is highly uncertain.

The problem with DCF valuation is an accounting problem. FCF is more a liquidation concept than a measure of added value from increasing investments; hence FCF is not good accounting for value. Furthermore, growth in a continuing value is speculative and a valuation that rides on estimated growth is a risky valuation. It is better to anchor a valuation on something we can observe now or can predict confidently in the short term. We want value justified by the facts. For that we need an alternative, less speculative accounting.

**Accrual Accounting for Value**

Accrual accounting reports earnings rather than cash flows. Does is translate to accrual accounting being better accounting for value? Accrual accounting has two benefits:

1. Investments typically are not allowed to affect the value-added measure, earnings. Rather than being expensed against cash flow from operations, investments are booked to the balance sheet and hence to book value. As assets, investments are modelled as something that produces value in the future rather than as a detriment to value.
2. Cash flows from operations are modified by additional accruals. These accruals bring the future forward in time and reduce our reliance on speculative forecasts of the long term.

Accrual accounting produces a book value, which one can potentially anchor on. Accrual accounting even recognizes value when there are no cash flows.

***Accounting Principle #2***

Accrual accounting brings the future forward in time, anticipating future cash flows.

Accrual accounting is applied as a straightforward “correction” to cash flows. Accrual earnings from a business (before interest) is calculated in Equation 2.6 below:

Investments and additional accruals are placed on the balance sheet so that book value consists of cash, debt, and business assets made up of investments and accruals. Therefore, while FCFs are negative, the add back of investments and accruals often results in positive earnings and EPS and these positive earnings look like something we can anchor on when accounting for value.

The criticism here is that analyst may perceive cash flows as “real” and accounting numbers as “concocted”. The straight up expensing of R&D (shouldn’t R&D be considered an asset that increases future value) and Warren Buffet’s “owner earnings” versus GAAP depreciation are examples of wrinkles in accrual based numbers versus cash flow based numbers. This is why we have to be concerned about how the accounting is done and not just take GAAP numbers at face value.

Accrual accounting brings the future forward in time but one would not want to bring too much speculation about the future into the accounting – *understand what you know and separate it from speculation* (fundamentalist principle). Eschewing speculation is at the core of accounting for value. Is maintenance capital expenditure (ingredient that goes into Warren Buffets “owner earnings”) too much of a subjective notion to enter the accounting? Is GAAP depreciation, with its need to estimate useful lives of assets, too speculative?

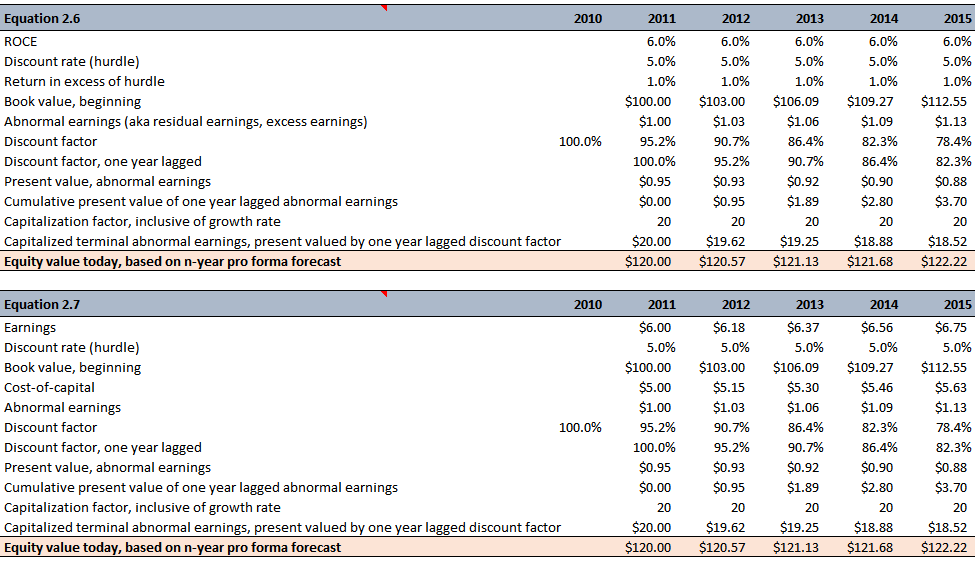
**Adding Speculation to Book Value**

If valuation amounts to anchoring on book value and then adding speculation, we need guided and constrained discipline for adding speculation. Accounting supplies this discipline. One adds value to book value only if the expected rate-of-return on book value is greater than the required rate-of-return.

According to Equation 2.6, we anchor on the current book value then forecast earnings and book value over the next three years vis-à-vis pro forma balance sheets and income statements. Equations 2.6a and Equation 2.6b are ancillary to Equation 2.6:

Equation 2.6b represents residual earnings – also called excess earnings or abnormal earnings. ***The growth rate, g,*** is the rate at which abnormal earnings is expected to grow after year 3 (or the terminal year of the forecast period). Equation 2.6 can be presented in a compact alternate form by Equation 2.7 below:

*Figure 2.3 – Valuing equity based on abnormal earnings at 50% payout rate*



We can now integrate the model represented by Equation 2.7 (or equivalently Equation 2.6) with the value derived by discounted dividends and book value calculated in Equation 2.1. This integrated model is shown in Equation 2.8 below:

Equation 2.8 modifies Equation 2.1 to account for the ROCE being different from the discount rate. This extra term equals the present value of the capitalized abnormal earnings in the for the last year in the forecast horizon. Equation 2.8 leads of Valuation Principle #3.

***Valuation Principle #3***

To get a handle on value, think first of what the book value is likely to be in the future and, second, what the rate-of-return on that book value is likely to be.

Valuation accounts for the future book value but also for future earnings on the book value, the ROCE at the forecast horizon. If ROCE is forecasted to be equal to the discount rate, the accounting has brought all value to be recognized into the value (Equation 2.1). If book value is not a complete accounting for value, further value is added by forecasting earnings on the book value (the last term in Equation 2.8a).

*Figure 2.4 – Valuing equity based on dividends and abnormal earnings at 50% payout rate*

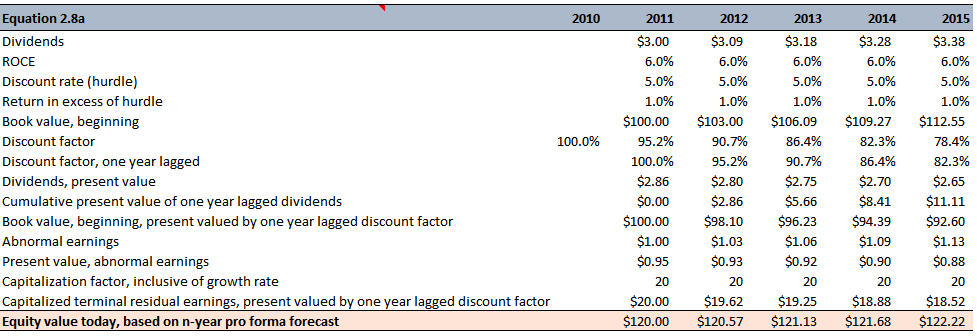


Figure 2.4 demonstrates that valuing equity with a focus on dividends is equivalent to value equity based on earnings and book value as demonstrated in Figure 2.3. The advantage of the the formulation represented in Figure 2.3 is that we can focus on accounting to arrive at short term pro forma balance sheets and income statements as opposed to being dependent on dividends streams, that in the short term may be non-existent.

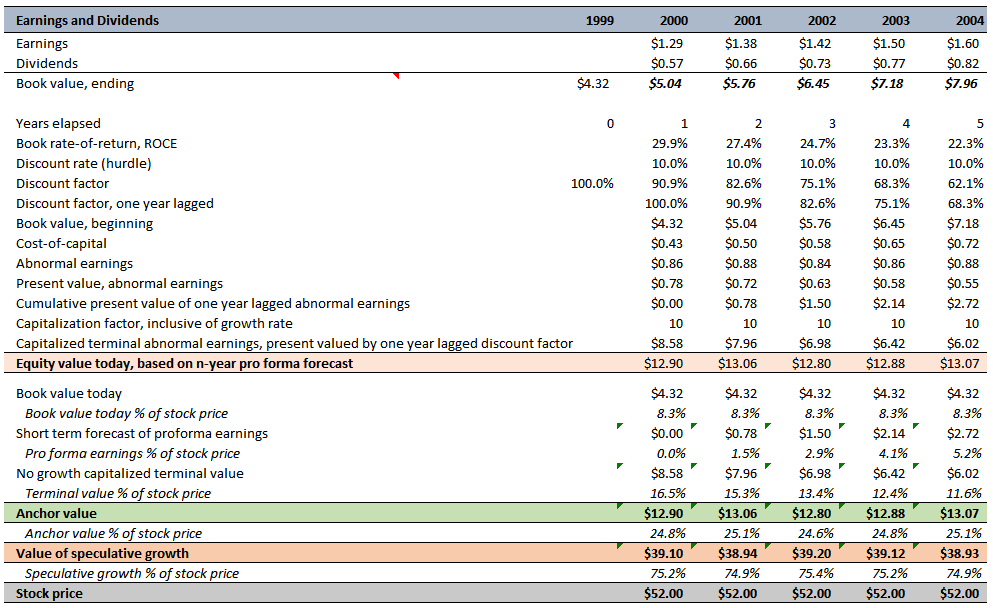
Value is the present value of book value expected at the forecast horizon, plus the value of any intervening dividends, but with added value for the ROCE at which book values are expected to be earning at that point, in accordance with Valuation Principle #3. This formulation allows us to work with shorter forecasting horizons and with more assurance than we can with speculative long term cash flows – **provided that the accounting is good accrual accounting**.

It is important to understand that the equity value derived using Equations 2.6 through 2.8 assumes a growth rate, g, of zero as explicitly shown in Equation 2.6c below:

This is the valuation without growth, and it is a bedrock valuation per fundamentalist principles because it does not include value stemming from speculative growth – *because of paying too much for growth*. In summary, we know the current book value (this comes from the current balance sheet) and if we have quality short term accounting pro forma then these two components form the anchor for the valuation. This support two more fundamentalist principles – *understand what you know and don’t mix what you know with speculation* **and** *anchor valuation on what you know rather than speculation*.

Let’s analyze the following information for GE’s common stock at the end of 1999:

*Figure 2.5 – Decomposition of GE’s stock price at the end of 1999*



The three year forecast (2002) shows that we should be skeptical about 75% of the market price of equity. This either means that the accounting for value ($12.80) is missing a lot (or is flawed) or the market is paying too much for growth.

From an ex-post perspective, the accounting for value showed little growth in abnormal earnings. Therefore, was the growth implied by the value of speculative growth considering the ex-post growth in abnormal earnings tell a consistent story? It is this notion that we must challenge.

The no-growth valuation means that abnormal earnings are deemed to continue at a constant level (with no growth) after the forecast horizon. Abnormal earnings is the product of ROCE and book value. In the GE’s case, ROCE decreased and book value (net assets) increased resulting in constant no-growth abnormal earnings. To combat this, companies can attempt to generate abnormal earnings growth by figuring out how to increase profitability (ROCE) or growing the balance sheet (this will boost earnings despite constant or even declining profitability as long as the incremental asset earn a rate-of-return greater than the discount rate).

The bottom line is that one must have good reasons to adding value for speculative growth.

**Anchoring on Earnings: The P/E Ratio**

The equity valuation shown in Equation 2.6c focus on book value and thus is centered on the P/B ratio. However, analysts usually think in terms of P/E multiples, earnings, and earnings growth rather than book value and abnormal earnings. Let’s transform Equation 2.6c to an equity valuation focused on P/E instead.

Change in residual earnings is equivalent to abnormal earnings growth (AEG), which is earnings growth over and above growth at the required rate-of-return.

Note that Equation 2.11 is the shorthand version of Equation 2.10. AEG compares the current year’s earnings with the previous year’s earnings growing at the required rate-of-return. Earnings growth that exceeds the required rate-of-return generates positive growth in abnormal earnings. However, we must be sensitive to the dividend payout rate when testing earnings growth relative to the hurdle (i.e. required rate-of-return). Let’s start by setting AEG to zero in Equation 2.11:

Equation 2.12 connects earnings growth to the required rate-of-return and dividend payout rate. Earnings growth that exceeds the required rate-of-return adjusted for dividend payout will result in abnormal earnings growth. This adjustment accounts for dividend reinvestment and this is an important feature because shareholders derive earnings from two sources: earnings in the firm and earnings from reinvested dividends.

Equation 2.9a is a simple rewrite of Equation 2.9. This valuation allows for growth in the short term – that is the terms in the square bracket – but does not acknowledge growth in the long term. Let’s recast the value of equity with an accounting for dividends as shown in Equation 2.13 below:

Equation 2.14 below shows the standard model for the P/E ratio:

In this standard model the growth rate, g, is interpreted as the earnings growth rate. But this interpretation is problematic because earnings growth is usually near or exceeds the required rate-of-return. In this situation the standard model does not work. This is because one does not but earnings growth, one buys abnormal earnings growth (AEG) – beware of paying too much for growth and definitely do not pay at all for an earnings growth rate that is less than the required rate-of-return.

The standard model will have you paying too much for growth. Both the AEG and the abnormal earnings model involve accounting that protects you from paying for growth when you should not. The way to protect yourself for paying for this growth is to set growth, g, to zero and move the assessment of growth to the speculative growth component of equation 2.13.

**Accounting for Value**

Equity investors should buy earnings because earnings move prices. When a firm’s earnings differ from expectation, stock prices change and in fact earnings explain most of the stock’s price movement over time – prices gravitate to earnings. In this chapter, we are separating what we know from speculation and establishing a starting point on which to anchor our valuation. What parts of equations 2.6c, 2.9a, and 2.13 represent the anchor and what parts represent speculation?

To carry out accounting for value, first think of where the book value is likely to be in the future and then what will be the likely earnings on book value. Also, when accounting for the future, understand what you are relatively certain about and that which is more speculative and translate the relative certain components into the accounting analysis – for example, modeling of sales drivers, profit margins, expenses, so on and so forth. This allows you to anchor on no-growth valuation and then focus on a rigorous assessment of growth prospects.

At this point the accounting for value is incomplete – what is the framework for adding value from speculative growth; how do we go about choosing a required rate-of-return; what type of accounting is needed? If we desire accounting numbers to inform us about value, then these numbers must connect to the firm’s business activities that generate value. FCF does a poor job of making this connection. On the other hand, residual earnings valuation does seemingly make the connection. Accrual accounting adds investment back to book value on the balance sheet and on top of that incremental value is added if superior returns are earned on this book value. The bottom line is that the accounting must be something to anchor on so we can challenge the speculation implied in the market price.

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