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## **VALUING GROWTH**

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### **Introduction**

For absolute return investors concerned with the 30% of the MSCI World index comprised of high-growth companies, properly (and profitably) valuing this growth has presented an enduring challenge. Valuation ratios adopted by relative-return, benchmark-driven managers investing in stable industries and homogeneous companies have proven themselves ill-suited to funds looking to produce alpha by investing and short selling in health care, information technology and telecommunications companies. For these, a discounted cash flow (DCF) framework is required.

### **Valuation Rules of Thumb**

A surprising number of equity investors use ratios to value growth companies despite clear problems with doing so. It is curious that competent investors are able to value an arbitrary set of future cash flows, but once told that these cash flows accrue to equity holders revert to a completely different way of thinking about their financial value.

### **Equity Value Ratios**

Ratios with equity value in the numerator have a denominator related to the claims of equity holders. For this reason price-to-sales is meaningless unless companies have equal debt. The common valuation measures for equity value are price earnings (PE), price earnings-to-growth (PEG) and price-to-book value. Book Value contains more information about the type of assets held by the company, tangible or intangible (and their accounting policy), than about prospects for equity owners.

The major failing of PE is that it ignores growth rates. An investor faced with two companies otherwise equal, trading at equal PE ratios, would prefer the one with the higher growth rate. Another problem with using PE is unequal levels of research and development (R&D). An investor should generally prefer a company producing earnings while still investing in R&D, as that is likely to lead to higher growth and margins in the future.

PEG is a crude attempt to account for growth by ranking PE relative to growth rates. PEG itself fails when companies have different gross margins. Clearly companies with equal PEG ratios do not indicate equal valuations when one company produces twice the profit from the same increment of growth.

Ignoring levels of R&D investment, sales growth and gross margins are not trivial shortcomings in the valuation of high-growth companies. These are precisely the three variables that are most significant to growth valuations.

## **Enterprise Value Ratios**

Enterprise value (EV) is the market value of equity plus the market value of other claims on the assets of the firm. EV-to-sales is a great improvement on price-to-sales. Sales figures are generally more difficult for firms to manipulate and so are more reliable than earnings. What EV-to-sales misses is the relative ability of firms to convert sales to cash flows and profits, which is what stakeholders are ultimately interested in.

EV-to-EBITDA (Earnings before Interest, Taxation, Depreciation and Amortisation) gets closer to cash flows than earnings or sales, and avoids problems with depreciation policy differences; but it still differs between industries with differing capital requirements and companies with differing asset structures. EV-to-Free Cash Flow takes into account additional requirements for capital (such as capital expenditure and working capital). The biggest problem with this near-cash ratio is comparing companies that are at different growth stages.

A lot of money was invested, and at this point looks lost, on very crude metrics like EV to eyeballs and EV to population. Proponents of the metrics argued that at very early stages of businesses or industries, these are the only metrics available, but any investment should be premised on a business model that incorporates forecasts of actual cash flows.

## **DCF Modelling**

The theoretical value of an investment is the risk-adjusted present value of the future cash flow streams on which the investment has a claim. For a company, these free cash flows consist of net cash flows from operations; adjusted for tax, capital expenditure and working capital requirements. DCF valuation is theoretically sound, minimises issues with accounting policy, and addresses the entire range of investment opportunities within a single consistent framework.

DCF modelling is not something you can do on the back of an envelope; its practical use is dependent on software. The model structure will differ between analysts and can give very different results. In practice, fine-tuning the structure is a subject of much testing and debate. Issues with structure include how many periods to model, which variables are independent, the method of forecasting, deriving a starting position from reported information and appropriate global assumptions.

A valuation derived from a DCF model assumes that funding will be continuously available at an internal rate of return (IRR) equal to the discount rate and that proceeds will be distributed, or at least re-invested at the same IRR. If credit and capital markets break down, or analysis is conducted over long time frames, this can be a poor assumption.

Even if the analysis is run for a period of a decade or even longer, the assumption used to calculate the terminal value or final cash flow, is critical to the present value. The high rates of growth and high discount rates for high-growth companies make this less of a concern than it is with steady-state companies.

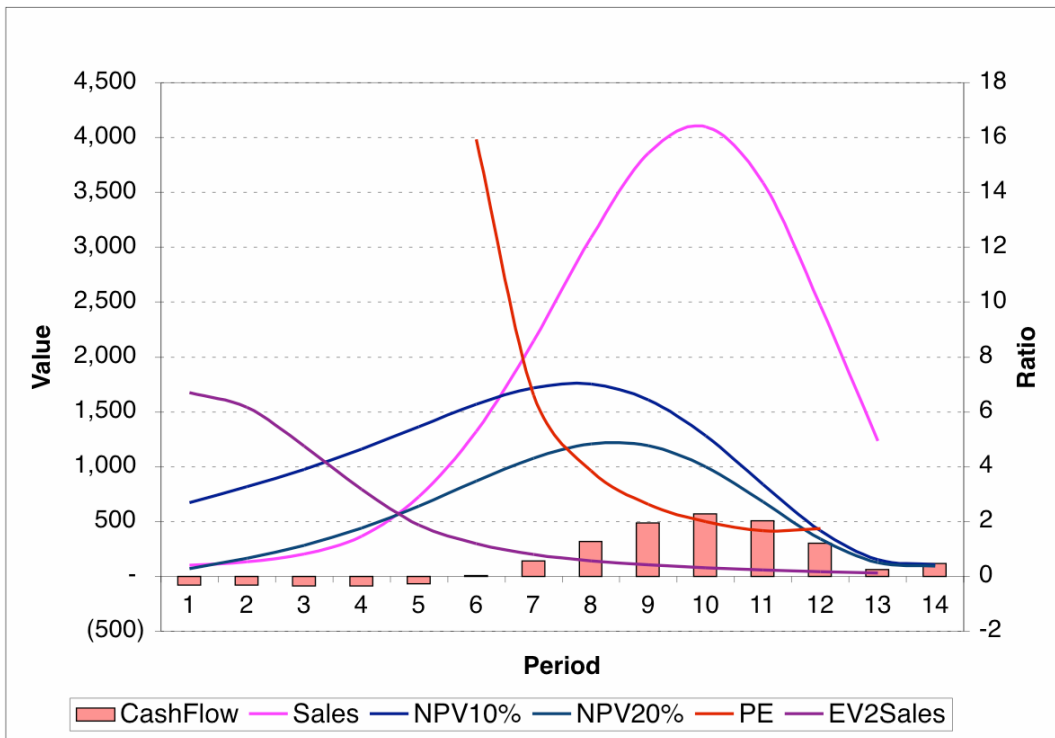
In setting up the data, accounting differences have to be resolved to put firms on an equal footing. Growth rates have to be adjusted to reflect organic growth - that achieved with a constant quantum of shareholders' funds. Company data should be as recent as possible, but recent results can include noise so averages over several periods are often better. Compensation expense must be adjusted for the value of option issues.

Finally, and critically, valuations are driven by forecasts including a discount rate that reflects forecasting risk. Poor forecasts create inaccurate valuations, as they should. The difficulty with forecasting is often cited as a criticism of DCF valuation, but that is not a valid criticism. The difficulty of forecasting is a real and general problem that DCF does not ignore. The fact that valuations are extremely sensitive to risk, growth rates and margins is simply a reality that investors should seek to come to terms with, not avoid.

### Simple Growth Company Illustration

#### Simple Growth Company Model

Image 1 illustrates the results of a simple model of a single product growth company. This company has developed something in R&D - a new drug, a new material, a new chip design - and is raising capital to produce and sell it as quickly as possible.



## Image 1

The assumptions to the model are simple and typical - a growth rate rising from 10% to a peak of 100% then scaling back to an eventual decline, a 50% gross margin decaying over time as competitors emulate and enter the market, R&D starting at 50% of sales and then scaling at 20% of sales growth, and Selling, General & Administrative Expenses (SG&A) scaling at 50% of sales growth. The fixed asset turnover ratio is constant at 10. In this model the company ceases operations when marginal profit just covers fixed costs, and then sells its remaining fixed assets at book value.

Cash flows and earnings are negative for the initial six years as sales ramp up to cover fixed costs. There is then an eight-year period during which the company produces positive cash flows and profits. The DCF valuation for this company is shown using discount rates of 10% and 20% to reflect a safer and riskier scenario.

This simple model illustrates several important points. The fair value of these cash flows is not zero at the beginning despite an outlook of six years of negative cash flows accompanied by accounting losses. The value of the safe cash flows is more than three times the value of the risky ones at half the discount rate. The value of the company rises rapidly through the negative cash flow years as these flows become sunk costs and the positive cash flows become more imminent. The value then peaks and falls back to the residual as cash is disbursed. If the company retained the cash the value would go on climbing, but level off at the value of the cumulative cash.

On an EV to sales basis the company goes from an initial high of 6.7x to 0.2x at the end of its life. The PE, which only becomes meaningful near the peak growth years, steadily decreases from an infinite level to only two. The model illustrates that these ratios carry more information about the company's maturity than its value.

### **Summary**

Rule of thumb methods are meaningful, and cost-effective, for the relative valuation of homogenous companies that are not changing rapidly. They are useful to relative-return benchmark-driven managers investing in stable, low-growth sectors. They are emphatically not appropriate for absolute-return managers investing and short selling in rapidly changing, diverse industries - such as health care, information technology or communications.

For these managers a DCF framework is required and justified.