

Discounted Cash Flow Analysis

In recent years, we have made an increased reference to discounted cash flow analysis (DCF) as a basis for STARS recommendations. Here's an explanation of how DCF works.

You've seen "discounted cash flow analysis" used in these pages, and perhaps you have been somewhat perplexed by the term. What is DCF analysis, and why is it important in the stock valuation process?

Imagine first that you are asked to place a value on a house. How would you proceed? More likely than not, you would assess the home in at least three major ways:

- A comparison of the asking price for the property with recent prices paid for similar area homes.
- An assessment of the potential replacement value of the home.
- An assessment of the present value of the future rental income that the house could generate.

These assessments would likely provide you with a substantial amount of information that could assist in placing a value on the home.

Although common stocks are not houses, these two assets do share enough traits to justify a similar approach to valuation. Common stocks of companies in the same or similar industries can be compared, the "private market value" of a company can be assessed by observing prices of similar companies that have been recently acquired, and the present value of future cash flows that a company can generate can be determined. This last method is often described as the "intrinsic" approach because it is not dependent on the worth of peers, nor is it influenced significantly by the state of the markets. The latter point is important because there are times when stocks may trade on a par with (or even below) the price of similar issues, yet still be overvalued on an intrinsic basis.

An intrinsic value analysis is based on the premise that the value of a common stock equals the present

value of its expected cash flows, discounted for the risk and timing of those cash flows. The risk part is easy to understand: Stocks are not guaranteed investments, and a company's business prospects can change. The timing question can be understood by noting that a dollar you have today is worth more (even with modest inflation) than a dollar you will receive five years from now.

To determine intrinsic value, an analyst must understand the basic factors that determine a company's prospects: the nature of the business, the growth potential of the industry, and to what extent the firm can generate cash flows in the future. In producing these analyses, S&P equity analysts make projections of a firm's annual "free cash flow" (net income before depreciation & amortization expenses, minus capital expenditures, dividends, and changes in working capital). Specifically, they project annual growth rates of free cash flow over a 15-year period, then apply a terminal growth rate for the period beyond 15 years into perpetuity. Then they determine the appropriate discount rate to apply. To do this, they take into account the interest rate that investors should demand as compensation for what they would give up by buying the stock instead of a risk-free 10-year Treasury note, plus a premium to reflect the particular stock's risk and the company's indebtedness. Once these important variables are determined, S&P analysts can calculate the intrinsic value (or range of values) of the stock.

Here's how an analyst might appraise the hypothetical XYZ Corp. stock: XYZ is a mature company and is expected to increase its free cash flow (currently \$125 million) at a mediocre 7% annual rate over the next five years, by 6% over the sub-

sequent five years and by 5% over the following five years. S&P believes that XYZ Corp. will then generate 4% annual growth in free cash flow into perpetuity. XYZ has 32.5 million shares outstanding. We assume an average level of historical share price volatility, a risk-free rate of 4.5% and a debt-to-capital ratio of 35% (total debt of \$760 million). XYZ's weighted average cost of capital (WACC) is 9.3%, calculated by taking the risk-free rate and adding an equity risk premium of 6%, less a tax benefit from debt financing. What should you pay for the shares from an intrinsic perspective?

Here's how we do the calculations: Starting with \$125 million in the base year, we add up the growing year-by-year free cash flow over 15 years, and discount that by the WACC. The result is \$1.524 billion.

Next we calculate the net present value of the stock's terminal value, assuming 4% growth in perpetuity after year 15, again discounted by the WACC. The result is \$1.533 billion.

We add those two results to get \$3.057 billion, and then subtract the company's total debt of \$760 million to obtain \$2.297 billion. That result, divided by XYZ's 32.5 million common shares, equals \$70.68.

Our conclusion: The present value of XYZ Corp.'s future free cash flows is about \$71.

By combining this process with relative valuation metrics and private market valuation techniques, S&P equity analysts determine a range of values that forms the basis of a 12-month target price and, in turn, the S&P STARS recommendation. ❖

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