

Choosing the Right Relative Valuation Model

Many analysts choose to value assets using relative valuation models. In making this choice, two basic questions have to be answered -- Which multiple will be used in the valuation? Will this multiple be arrived at using the sector or the entire market?

Which multiple should I use?

In the chapters on multiples, we presented a variety of multiples. Some were based upon earnings, some on book value and some on revenues. For some multiples, we used current values and for others, we used forward or forecast values. Since the values you obtain are likely to be different using different multiples, deciding which multiple to use can make a big difference to your estimate of value. There are three ways you can answer this question -- the first is to adopt the cynical view that you should use the multiple that reflects your biases, the second is to value your firm with different multiples and try to use all of the values that you obtain and the third is to pick the best multiple and base your valuation on it.

The Cynical View

You can always use the multiple that best fits your story. Thus, if you are trying to sell a company, you will use the multiple which gives you the highest value for your company. If you are buying the same company, you will choose the multiple that yields the lowest value. While this clearly crosses the line from analysis into manipulation, it is a more common practice than you might realize. Even if you never plan to employ this practice, you should consider ways in which how you can protect yourself from being victimized by it. First, you have to recognize that conceding the choice of multiple and comparables to an analyst is the equivalent of letting him or her write the rules of the game. You should play an active role in deciding which multiple should be used to value a company and what firms will be viewed as comparable firms. Second, when presented with a value based upon one multiple, you should always ask what the value would have been if an alternative multiple had been used.

The Bludgeon View

You can always value a company using a dozen or more multiples and then use all of the values, different thought they might be, in your final recommendation. There are three ways in which can present the final estimate of value. The first is in terms of a range of values, with the lowest value that you obtained from a multiple being the lower end of the range and the highest value being the upper limit. The problem with this approach is that the range is usually so large that it becomes useless for any kind of decision-making. The second approach is a simple average of the values obtained from the different multiples. While this approach has the virtue of simplicity, it gives equal weight to the values from each multiple, even though some multiples may yield more precise answers than others. The third approach is a weighted average, with the weight on each value reflecting the precision of the estimate. This weight can either be a subjective one or a statistical measure – you can, for instance, use the standard error on a prediction from a regression.

The Best Multiple

While we realize that you might be reluctant to throw away any information, the best estimates of value are usually obtained by using the one multiple that is best suited for your firm. There are three ways in which you can find this multiple.

- Σ *The Fundamentals approach:* You should consider using the variable that is most highly correlated with your firm's value. For instance, current earnings and value are much more highly correlated in consumer product companies than in technology companies. Using price earnings ratios makes more sense for the former than for the latter.
- Σ *The Statistical approach:* You could run regressions of each multiple against the fundamentals that we determined affected the value of the multiple in earlier chapters and use the R-squared of the regression as a measure of how well that multiple works in the sector. The multiple with the highest R-squared is the multiple that you can best explain using fundamentals and should be the multiple you use to value companies in that sector.
- Σ *The Conventional Multiple approach:* Over time, we usually see a specific multiple become the most widely used one for a specific sector. For instance,

price to sales ratios are most commonly used multiple to analyze retail companies.

Table 35.1 summarizes the most widely used multiples by sector.

Table 35.1: Most widely used Multiples by Sector

<i>Sector</i>	<i>Multiple Used</i>	<i>Rationale/ Comments</i>
Cyclical Manufacturing	PE, Relative PE	Often with normalized earnings.
High Tech, High Growth	PEG	Big differences in growth across firms make it difficult to compare PE ratios.
High Growth/Negative Earnings	PS, VS	Assume future margins will be positive.
Infrastructure	V/EBITDA	Firms in sector have losses in early years and reported earnings can vary depending on depreciation method.
REIT	P/CF	Restrictions on investment policy and large depreciation charges make cashflows better measure than equity earnings.
Financial Services	PBV	Book value often marked to market.
Retailing	PS VS	If leverage is similar across firms. If leverage is different.

In an ideal world, you should see all three approaches converge – the fundamental that best explains value should also have the highest R-squared and be the conventional multiple used in the sector. In fact, when the multiple in use conventionally does not reflect fundamentals, which can happen if the sector is in transition or evolving, you will get misleading estimates of value.

Market or Sector Valuation

In most relative valuations, you value a firm relative to other firms in the industry that the firm operates and attempt to answer a simple question: Given how other firms in the business (sector) are priced by the market, is this firm under or over valued? Within this approach, you can define comparable firms narrowly as being firms that not only operate in the business in which your firm operates but also look like your firm in terms of size or market served, or broadly in which case you will have far more comparable firms. If you are attempting to control for differences across firms subjectively, you should stick with the narrower group. If, on the other hand, you plan to control for differences statistically – with a regression, for instance – you should go with the broader definition.

In the chapters on relative valuation, we presented an alternative approach to relative valuation, where we valued firms relative to the entire market. When we do this, we are not only using a much larger universe of questions, but asking a different question: Given how other firms in the market are priced, is this firm under or over valued? A firm can be under valued relative to its sector but overvalued relative to the market (or vice versa), if the entire sector is mispriced.

The approach you use for relative valuation will depend again upon what your task is defined to be. If you want to stay narrowly focused on your sector and make judgments on which stocks are under or over valued, you should stick with sector based relative valuation. If you have more leeway and are trying to find under or overvalued stocks across the market, you should look at the second approach – perhaps in addition to the first one.

Can a firm be under and over valued at the same time?

If you value a firm using both discounted cash flow and relative valuation models, you may very well get different answers using the two – the firm may be under valued using relative valuation models but over valued using discounted cash flow models. What do we make of these differences and why do they occur? If a firm is overvalued using a discounted cash flow model and undervalued using relative valuation, it is usually an indication that the sector is over valued, relative to its fundamentals. For instance, in

March 2000, we valued Amazon at \$30 a share using a discounted cash flow model, when it was trading at \$70 a share – it was clearly overvalued. At the same time, a comparison of Amazon to other dot com firms suggested that it was undervalued relative to these firms.

If a firm is undervalued using a discounted cashflow model and overvalued using relative valuation, it usually indicates that the sector is under valued. By March 2001, Amazon's stock price had dropped to \$15 but the values of other internet stocks dropped by almost 90%. In March 2001, a discounted cash flow valuation suggested that Amazon was under valued but a relative valuation indicated that it was now over valued relative to the sector.

As an investor, you can use both discounted cash flow and relative valuation to value a company. Optimally, you would like to buy companies that are under valued using both approaches. That way, you benefit from market corrections both across time (which is the way you make money in discounted cash flow valuation) and across companies.

When should you use the option pricing models?

In the chapters on applying option pricing models to valuation, we presented a number of scenarios where option pricing may yield a premium on traditional discounted cash flow valuation. We do not intend to revisit those scenarios, but offer the following general propositions that you should keep in mind when using option pricing models.

- Σ *Use Options sparingly*: Restrict your use of options to where they make the biggest difference in valuation. In general, options will affect value the most at smaller firms that derive the bulk of their value from assets that resemble options. Therefore, valuing patents as options to estimate firm value makes more sense for a small biotechnology firm than it does for a drug giant like Merck. While Merck may have dozens of patents, it derives much of its value from a portfolio of developed drugs and the cash flows they generate.
- Σ *Opportunities are not always options*: You should be careful not to mistake opportunities for options. Analysts often see a firm with growth potential and assume that there must be valuable options embedded in the firm. For

opportunities to become valuable options, you need some degree of exclusivity for the firm in question – this can come from legal restrictions on competition or a significant competitive edge.

- Σ *Do not double count options:* All too often, analysts incorporate the effect of options on fundamentals in the company value and then proceed to add on premiums to reflect the same options. Consider, for instance, the undeveloped oil reserves owned by an oil company. While it is legitimate to value these reserves as options, you should not add this value to a discounted cashflow valuation of the company, if your expected growth rate in the valuation is set higher because of the firm's undeveloped reserves.

Conclusion

The analyst faced with the task of valuing a firm/asset or its equity has to choose among three different approaches -- discounted cashflow valuation, relative valuation and option pricing models; and within each approach, they must also choose among different models. These choices will be driven largely by the characteristics of the firm/asset being valued - the level of its earnings, its growth potential, the sources of earnings growth, the stability of its leverage and its dividend policy. Matching the valuation model to the asset or firm being valued is as important a part of valuation as understanding the models and having the right inputs.

Once you decide to go with one or another of these approaches, you have further choices to make – whether to use equity or firm valuation in the context of discounted cashflow valuation, which multiple you should use to value firms or equity and what type of option is embedded in a firm.