

Introduction to Volatility

Cody Rosson, CVA, Senior Valuation Analyst | Private Capital Markets

When valuing a private company, one key factor that should be considered is volatility. What does this mean? In simple terms, volatility is used to measure the standard deviation of stock prices for a given sample. Standard Deviation measures the dispersion of numbers from the mean. So how does this affect a valuation? When analyzing a private company we understand that both our subject company and the comparable public entities have a fair degree of variance in their stock prices over a given amount of time. This is what we use volatility to measure. We use it to help quantify the dispersion of these stock prices over a given amount of time.

When thinking about volatility we should consider where it comes from, what type of volatility to use and how it is calculated.

While we are valuing a private company, we must realize that we cannot retrieve private data in order to calculate volatility. Even if we could, private stock prices are not actively trading and there is not much information that could be used in calculating an accurate volatility measure. We must look at historical volatility from the public markets. There are various sources for obtaining public market data. The primary goal is to represent the industry sector, or sample of the sector, in which your company operates and calculate the volatility on each company. You may then analyze the results and apply them to your subject company accordingly.

When using volatility in an Option Pricing Model, one thing to consider is the capital structure of the company you are valuing. It is important to consider the debt/equity relationship in the company and understand how that affects volatility. When valuing a company, we should consider whether equity volatility should be considered in comparison, or if we should be looking at an un-levered approach to volatility and apply asset volatility. The use of asset volatility is most appropriate in circumstances where the subject company is leveraged or operates in a sector with a highly leveraged peer group. Asset volatility functions as un-levered equity volatility, allowing outstanding debt, along with all the other classes of equity, to be treated as a call option on the market value of invested capital. Once you have considered the debt/equity relationship of your subject company, you can then move forward and calculate the appropriate volatility.

Volatility can be complex. We can pull the data from public sources, calculate the volatility, apply it to our company and analyze the results. There are several significant areas volatility impacts including our backsolve, our OPM allocation and our discount for lack of marketability. Regardless of how we retrieve the data and how it is applied, it is a significant factor in many private valuations and we should carefully analyze and apply volatility in a manner that is both consistent with the subject company and a good representation of the industry in which it operates.

The reason we care about volatility is because of the effect it has on a private company valuation. It serves as one of the key factors in a Black Scholes calculation. So when we run an Option Pricing Model, the volatility used will have a material impact. How do we use the public data to indicate the volatility we should use? The next article, part of a series of volatility related articles, will provide more details on how volatility specifically affects a valuation.