

Hoffmann & Partner M&A Insights: Allocation of the total equity value of a company to different share classes

Deriving the adequate values per preferred and common share is not straightforward. Dividing the total equity value or agreed company pre-money valuation in a financing transaction by the total amount of existing shares to receive the issue price is not correct if several share classes exist. The preferred shares are worth more, the common shares less. Common shareholders have to be cautious not to be disadvantaged in such a case. We explain how it works.

This is the third article of the preferred shares series by the Hoffmann & Partner Mergers and Acquisitions (M&A) team. In the first article, we introduced different equity financing structures including preferred shares and in the second article, we presented an overview of the use of preferential rights in the Swiss life sciences industry.

In this article, we describe methods to allocate the total equity value (100%) of a company to preferred and common shares. For companies, e.g. life sciences or ICT high-tech start-ups, with venture capital (VC) or private equity (PE) financing it is complex to determine the valuation of the share classes due to the liquidation preferences. **For complex capital structures with no imminent exit the best practice method is the option-pricing method (OPM) based on a combination of options valued by Black-Scholes or Monte Carlo simulation models.** Other methods are the probability weighted expected return method (PWERM) and the current value method (CVM).

The current value method (CVM) is based on the enterprise value derived with traditional valuation methods. The company is valued as a whole and thereafter the proceeds allocated to each security according to its distribution right are deducted from the value, starting with the most senior security to common equity. This method is also referred to as the waterfall approach. The CVM method lacks a forward-looking perspective as it assumes a M&A exit scenario (IPO, merger, acquisition, company sale, liquidation, etc.) per valuation date. However, often companies are not at the point of an imminent liquidity event. The method can lead to the interpretation that common shares of an early-stage company have no or little value, because based on the waterfall approach the value is allocated first to preferred shareholders. However, this does not mean that common shares have zero value. The common shareholders have a claim on future value exceeding the threshold of the preferred shares, which is not reflected with the current value method.

The Option Pricing Model (OPM) is a forward-looking method, which treats this claim on current and future value as a call option on the respective equity share, which can be valued with the Black-Scholes model or a Monte Carlo simulation.

The **Black-Scholes model** treats the preferred and common stocks as call options on the company's equity value. The payoff can be illustrated using a combination of long and short calls with different exercise prices (bull spread). The exercise prices are equal to the liquidation preference breakpoints of the different share classes, whereby breakpoints are defined by analysing the various terms of the stockholder agreements that affect the distribution in case of a liquidation event.

To value the call options at the defined breakpoints, the following Black-Scholes parameters need to be determined:

Parameter	Input
Stock price	Current equity valuation
Exercise price	Breakpoint
Time to liquidity	Estimated time to liquidation event
Volatility	Derived from peer group
Risk-free rate	Derived from government bond yields

Once the options are valued for each breakpoint, the incremental option value can be allocated to each share class.

Alternatively to the Black-Scholes model, a **Monte Carlo simulation model** can be applied. The model simulates the underlying asset price by generating a random number for a number of paths. It is often used for more complex valuation features. It is for example possible to take into account the variation of the volatility over time.

The third is **the probability weighted expected return method (PWERM)**, which is like the OPM a forward-looking method. The PWERM defines future M&A exit scenarios (IPO, merger, acquisition, company sale, liquidation, etc.) including their respective proceeds and liquidation preferences. Each exit scenario is then probability weighted and discounted back to the valuation date.

A simplified illustrative example:

In this simplified example we define the value of the common shares of a biotech company with the following assumptions.

Parameters	Assumptions
Valuation	CHF 30m
# of preferred shares	100'000 shares
# of common shares	50'000 shares
Liquidation preference	CHF 30m (2x, participating)
Time to exit	5 years
Risk free rate	1.50%
Volatility	50.00%

Dividing the total value of CHF 30m by the number of total shares would result in a per share value of CHF 200, which is not correct as preferred shares must be worth more than common shares due to the liquidation preference.

When we apply the current value method (CVM), the common share value would be CHF 0 as according to the waterfall method the total value is needed to cover the liquidation preference. As discussed, this is neither correct if there is no imminent exit because the common shares have a claim on future value exceeding the liquidation preference.

Hence, in this case the Option Pricing Model (OPM) is the most appropriate valuation methodology as it considers the time value of the common shares. Assuming an exit in 5 years, 1.5% risk free rate and 50.0% volatility, the value per common share and preferred share is CHF 89 and CHF 422, respectively. The value of CHF 89 reflects the time value of the common share.

This article provides only an overview of the best practise methods used to value capital structures including preferred shares of venture capital backed start-ups. Contact our M&A team if you wish to learn more about the Hoffmann & Partner valuation approaches or if you need support with a specific corporate finance use case.