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Why Understanding Valuation Methods Is Paramount to Success of Early-stage Health Tech Companies

By Josh Lefcowitz

The healthcare industry is facing significant changes, not only in the practice of medicine, but also in the tools by which providers practice. Significant changes are also underway to the methods by which healthcare is paid for vis-a-vis value-based payment models. Technological advancements have opened the door to an era of digital medicine, an expanded environment for telemedicine and the increased use of robotics in patient care.

Value-based payment models are intended to align provider motivations to a common goal: patient wellness. As a result, a renewed focus on preventive healthcare measures is starting to take place and will expand in the coming years.

Companies that are creating new technologies to assist in the advancement of these industry changes are seeing significant investments. Understanding proper valuation methods around these types of investments is paramount to a successful outcome for the investors.

Early-stage companies have traditionally determined value through a market-centric basis. This occurs by asking two questions: 1) What are market multiples for companies with similar products that are more advanced in their business lifecycle? and 2) What will an investor pay to get into the company? Market multiples are a great indicator if you can obtain relevant information. This approach is and always will be a “garbage in, garbage out” technique: Without a sound benchmarking analysis to determine whether the “comparables” are actually comparable, the investor is in a more vulnerable position. Often, with early-stage companies, value is simply determined based on what the market will bear. If an investor is hungry enough, current economic principles may take a backseat to hope for the future.

Once an enterprise valuation is determined, the rights and preferences associated with the equity class being acquired need to be assessed. This includes the ability to convert to common stock, participation rights and dividend rates.

Option-Pricing Method: When Future Possible Liquidity Events Are Speculative

The option-pricing method (OPM) treats the various classes of equity securities outstanding in an entity's capital structure as a series of call options on the entity's overall equity value. OPM considers the potential upside from the distribution of possible future equity values over the remaining term to a liquidity event.

The OPM is most appropriate to use when future possible liquidity events are speculative. It is generally appropriate in situations in which the entity's equity value depends on how well the entity navigates through various possible business opportunities and changes in the economic environment over the term to an exit event. The major drawbacks to the OPM are its complexity and the difficulty of formulating appropriate assumptions.

The following general steps comprise the OPM analysis:

- Analyze the rights, privileges and preferences associated with each class of equity outstanding.
- Derive the amount of proceeds that would be paid out to each class of equity based on its liquidation preferences (if any) in the event of the sale of the business. Use the equity breakpoints and the relative priority of the claims to define the total amount of proceeds required for each equity class to receive funds exceeding the liquidation preference, in the event the business is sold.
- Derive the value at which securities receive additional preferences by determining the value at which each security holder would receive the same amount in conversion as in liquidation.



These values (as calculated in steps b and c) reflect the value of the economic rights and preferences of the various classes of securities in a company's capital structure. Collectively, the values at which the liquidation preferences begin to be satisfied if the company were sold, or the values at which conversions are economically justified, are the breakpoints, used in the OPM.

- Apply the Black-Scholes model, based on appropriate inputs and assumptions.
- Identify the percentage claim on each tier value attributable to each class of security based on each security's relative right to the proceeds, and multiply each tier value by the percentage attributable to each class of security.
- The final step involves the aggregation of the tier values to calculate the value of each class of equity.

Monte Carlo Simulation: When a Single-Scenario Model is Not Enough

In certain instances, a static single-scenario model is not sufficient to properly assess the potential outcomes. In those cases, a Monte Carlo simulation model is a useful tool. A Monte Carlo simulation is a method for iteratively evaluating a deterministic model based on one or more random numbers as inputs. Using multivariate statistical analysis and appropriate modeling, healthcare organizations can go beyond binary analysis to show all the possible outcomes of clinical treatment, insurance premium pricing, business valuations and even personalized medicine in near-real time.

Due to their ability to assess risks, probabilities and varying scenarios, [Monte Carlo simulations](#) are used by practitioners of many industries to model highly sophisticated and complex issues. In addition, Monte Carlo simulations are often adopted to value complex investments, portfolios, derivatives and hard-to-value assets.

Healthcare organizations can also use Monte Carlo to decide whether to pursue certain business opportunities such as real estate acquisitions, partnerships or research initiatives—and perhaps more importantly, when to abandon them because the risks outweigh the reward.

With a thorough understanding of valuation for early-stage companies revolutionizing the industry, healthcare

companies looking to invest will be well positioned to make smart decisions regarding the tools and innovations that will propel the industry into the next era centered on value-based care.