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Valuation of Healthcare Start-Ups

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Start-up companies have seen an unprecedented rise in the healthcare industry over the past decade. Driven by high service demand, service inefficiencies, opportunities for innovation, and add-on investment potential, these companies seek to disrupt the healthcare delivery system and make money in a sector that has historically provided consistently lucrative returns. This article will (1) define start-ups generally and discuss the unique characteristics of the U.S. healthcare industry, and show how those characteristics result in differences between healthcare start-ups and start-ups in other industries, and (2) review the valuation approaches, methods, and techniques that may be used in valuing healthcare start-ups, including a consideration of risk factors.

Introduction to Start-Ups

Start-ups can be characterized as being in the preliminary stages of business operations; focusing on a single product or service; requiring significant financial investment (from the founders or outside investors, for a piece of the company); experiencing rapid growth; and having the ultimate goal of an initial public offering (IPO)—that is, going public.¹

Start-ups in the healthcare industry have become quite popular, demonstrated in part by the record amount of private equity (PE) money invested in healthcare in 2021—\$151 billion and 515 deals²—and where that money was invested. The top sectors for PE investment (and thus start-ups) were telehealth, digital health, and health information technology. The trends driving investment include

- Movement toward virtual management of health conditions;
- Technological support of the healthcare workforce shortage; and
- Interest in solving the mental health crisis.

Start-ups are also focusing on new paths for meeting the needs of patients and providers, including the following:

- Remote patient monitoring
- Pairing patients with providers
- Virtual care platforms
- Women's health
- Optimizing diagnosis and treatment³

Healthcare start-ups' focal points are largely driven by the unique characteristics of the U.S. healthcare industry. First, the healthcare reimbursement environment is unlike any other industry in the U.S. economy. The industry operates under a third-party payer system, wherein providers are often not paid for medical services by the patients themselves, but by employers, insurance companies, and government agencies. As the largest payer of healthcare in the U.S., the federal government has a significant impact on the expectation of future return on investment through

1 Rebecca Baldrige, "What Is A Start-up? The Ultimate Guide," *Forbes Advisor*, updated October 16, 2022, <https://www.forbes.com/advisor/business/what-is-a-startup/>.

2 Nirad Jain, et al., *Healthcare PE Market 2021: The Year in Review* (Boston: Bain & Company, 2022), <https://www.bain.com/insights/year-in-review-global-healthcare-private-equity-and-ma-report-2022>.

3 "How Healthcare Startups Are Molding the Future of Care Technology," *Welkin*, August 10, 2022, <https://welkinhealth.com/how-healthcare-startups-are-molding-the-future-of-care-technology/#:~:text=Startups%20are%20focusing%20on%20friction,and%20optimizing%20diagnosis%20and%20treatment>.

1. Stringent provider reimbursement regulation;
2. Regulation of the very existence of provider entities;
3. Restrictions on how providers can be organized and operated;
4. Limitations on the products and services providers may offer; and
5. Limitations on the types of technology and supplies that providers may use.⁴

Consequently, the federal government acts as the “price setter,” with government payment rates serving as benchmarks for all reimbursement schemes. Further, while in other industries the prices of products and services rise and fall to reflect changes in supply and demand, this is not the case in healthcare. The healthcare services market has historically exhibited a supply/demand profile contrary to that of the general economy, characterized as having supply-driven demand with inelastic pricing attributes. In other words, demand is unaffected by changes in consumer income or healthcare pricing.

Second, the healthcare industry has a number of barriers to entry, including state certificate of need (CON) laws and licensure requirements. CON laws are among the most significant market entrance barriers affecting the U.S. healthcare delivery system. A state CON program is one in which a government determines where, when, and how capital expenditures will be made for public healthcare facilities, services, and major equipment.⁵ CON requirements are based on the highly contested theory that in an unregulated market, healthcare providers will provide the latest costly technology and equipment, regardless of duplication or need. Currently, 35 states and Washington, D.C., retain some sort of CON program.⁶ In addition, state laws typically control the licensure, certification, and accreditation of healthcare facilities and providers, which allows states to regulate entry into the medical field and restrict the professional scope of practice for the delivery of healthcare services.

Third, the healthcare industry is arguably the most regulated sector in the U.S. economy. Healthcare organizations face a range of federal and state legal and regulatory constraints, which affect their formation, operation, procedural coding and billing, and transactions. This complex, overlapping regulatory scheme spans a myriad of issues, including (but not limited to) tax; fraud and abuse; antitrust; privacy; safety; corporate/organization; and licensure, certification, and accreditation.

For these reasons, the healthcare industry has historically been populated by traditional healthcare entities, such as hospitals and health systems, clinicians, and payers. However, over the past several years, in an effort to solve some of the greater issues plaguing the healthcare industry, non-healthcare entities have begun to get involved, including PE and venture capital firms; retail companies, such as Amazon and Wal-Mart; and start-ups. These nontraditional players tend to have different purposes and goals than traditional players. For example, traditional healthcare entities typically seek to grow their market share, meet their mission (if they are tax-exempt entities), and supplement their continuum of care. Nontraditional entities, on the other hand, are looking for new market opportunities and tend to be drawn to the stability of the healthcare market. Because the healthcare industry is still largely fragmented, there are numerous turnaround and growth opportunities.

Over the past several years, in an effort to solve some of the greater issues plaguing the healthcare industry, non-healthcare entities have begun to get involved.

Healthcare start-ups differ from start-ups in other industries in a number of ways. For the reasons set forth above, entering the healthcare space requires industry expertise. Further, due to the complex, overlapping healthcare regulatory scheme, these entities must embody certain business structures, making it complex to scale up across state lines (due to state licensure and corporate practice of medicine laws, for example). Similarly, a number of federal and state laws dictate the handling and treatment of patient data, which is highly restricted. If accepting government reimbursement (as most providers do), establishing a revenue stream can be difficult, because government payers reimburse at a lower rate than private, commercial insurers.

4 Stephen C. Schoenbaum, et al., “Obtaining Greater Value from Health Care: The Roles of the U.S. Government,” *Health Affairs* 22, No. 6 (November/December 2003): 184–88.

5 “Certificate of Need State Laws,” National Conference of State Legislatures, updated December 20, 2021, <https://www.ncsl.org/health/certificate-of-need-state-laws>.

6 Ibid.

Valuation of Healthcare Start-Up Companies

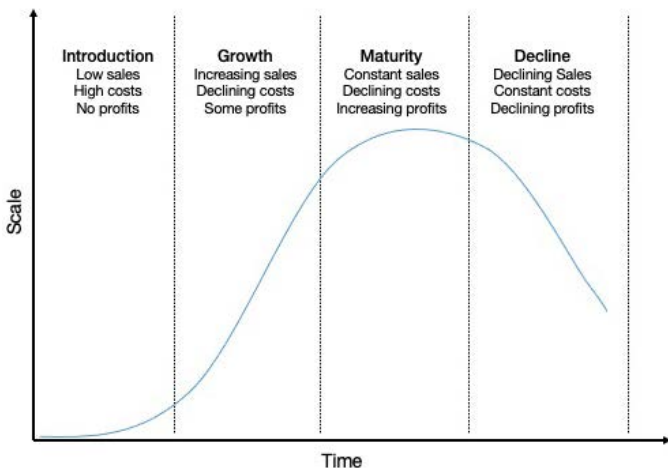
Healthcare start-ups may require a valuation for any number of reasons. Perhaps most often, parties to a prospective transaction involving a start-up may seek a valuation to establish a purchase/sale price. Parties seeking capital investment (equity or debt) may obtain a valuation to bolster their prospectus, put investors' minds at ease, or comply with funder (e.g., bank) requirements. As illustrated in Figure 1, start-ups often go through a number of rounds of funding:

Figure 1: Start-Up Funding Rounds

Pre-Seed	Series A
<ul style="list-style-type: none"> • Prototype stage • Seeking to hire • Looking for an investment of up to \$1 million 	<ul style="list-style-type: none"> • Revenue growth stage • Looking to develop operations and market services/products • Looking for investment(s) of \$1–10 million
Series B	Series C
<ul style="list-style-type: none"> • Growth stage • Looking to hire more and expand the business • Looking for investment(s) of \$10–\$25 million 	<ul style="list-style-type: none"> • Large scale growth stage • Looking to acquire and further expand • Looking for investment(s) of \$50+ million

Coinciding with the four main rounds of funding, start-ups all go through the same four business life cycle stages, as set forth in Figure 2.

Figure 2: Business Life Cycle



Pre-Money versus Post-Money

When valuing a start-up business, it is important to denote whether the valuation opinion is pre-money or post-money. Pre-money valuation refers to the value of a company before (i.e., excluding) external funding. It is best described as how much a start-up might be worth before it begins to receive any investments. In contrast, post-money valuation refers to how much the company is worth after it receives funding.

Assume an investor is looking to invest in a healthcare start-up. The founder and the investor agree that the company is worth \$1 million and that the investor will put in \$200,000. The ownership percentages will depend on whether this is a \$1 million pre-money or post-money valuation. If the \$1 million valuation is pre-money, the company is valued at \$1 million before the investment and at \$1.2 million after the investment. If the \$1 million valuation takes into consideration the \$200,000 investment, it is referred to as post-money.

	Pre-Money Valuation		Post-Money Valuation	
	Value	Percentage	Value	Percentage
Founder	\$1,000,000	83.3%	\$800,000	80.0%
Investor	\$200,000	16.7%	\$200,000	20.0%
Total	\$1,200,000	100.0%	\$1,000,000	100.0%

Start-Up Company Valuation Methods

Several valuation methods may be used for start-up engagements, including the following:

- Berkus method
- Scorecard valuation method
- Risk factor summation method
- Venture capital method
- Cost approach
- Market approach comparable transaction method
- Discounted cash flow method
- First Chicago method

Each will be discussed below in turn.

Berkus method. The Berkus method was created by venture capitalist Dave Berkus, specifically to estimate the value of pre-revenue start-ups. The aim is to avoid unreliable valuations based on unrealistic forecasted revenues. Under this method (as set forth in Table 1), the valuator assigns equal dollar amounts to five key success factors that are important to the success of early-stage start-ups.

Table 1: Berkus Methodology

If the following exists:	Add up to this amount to company value:
Sound idea (basic value)	\$500,000
Prototype (reducing technology risk)	\$500,000
Quality management team (reducing execution risk)	\$500,000
Strategic relationships (reducing market risk)	\$500,000
Product rollout or sales (reducing production risk)	\$500,000

While many users of the Berkus method cap each category at a maximum of \$500,000 (for a maximum pre-money valuation of \$2.5 million), the methodology may be modified to adjust the theoretical maximum. This modification can add flexibility in terms of both area (including geographical region) and amount (average valuation for a given start-up). For instance, if the average valuation for a given start-up is \$5 million, all five areas would get up to 20 percent of \$5 million. This would result in \$1 million each instead of \$500,000.

There are a number of advantages to using the Berkus method. For example, it is relatively quick and does not rely on forecasts (which are likely to be largely unreliable with a pre-revenue company). The method also has a number of drawbacks. First, like many of the methods described in this article, it is dependent on choosing an appropriate benchmark start-up valuation to set the maximum value. The method's simplicity is both a strength and a weakness. Because each of the five areas are weighed equally in terms of importance, skill is required to determine how much to credit each area. Second, the method ignores some areas that the more detailed methods consider.

Scorecard valuation method. The scorecard valuation method, which is similar to the Berkus method, is another option that may be employed for pre-revenue businesses, but with added criteria. This method compares the subject start-up to typical angel-funded start-ups and adjusts the average valuation of these companies to establish a pre-money valuation of the subject.

First, find the average pre-money valuation of comparable companies. There are several sources available to identify these companies and valuations, such as Crunchbase, PitchBook, and Mergr (more of these sources are listed below).

Next, consider how the start-up compares based on the following qualities:

- Strength of the management team: 0–30 percent
- Size of the opportunity: 0–25 percent
- Product or service: 0–5 percent
- Competitive environment: 0–10 percent
- Marketing, sales channels, and partnerships: 0–10 percent
- Need for additional funding or investment: 0–5 percent
- Other: 0–5 percent

Then, assign each of these qualities a comparison percentage. These percentages identify each quality as equal (100 percent), below average (less than 100 percent), or above average (greater than 100 percent) in comparison to the benchmark companies. An example of this method is set forth in Table 2.

Table 2: Scorecard Valuation Method

Comparison Factor	Weight %	Comparison %	Factor = (WxC)
Strength of entrepreneur and team	30%	110%	0.3300
Size of the opportunity	25%	125%	0.3125
Product/technology	15%	150%	0.2250
Competitive environment	10%	70%	0.0700
Marketing/sales/partnerships	10%	100%	0.1000
Need for additional investment	5%	100%	0.0500
Other factors (great location)	5%	125%	0.0625
Sum	100%		1.1500
Benchmark start-up company valuation			\$3,000,000
Subject start-up valuation			\$3,450,000

In the example, the value of the subject start-up was determined to be 15 percent (or 1.15 times) greater than that of the industry benchmark start-up.

The scorecard valuation method can be advantageous because it covers more areas than the Berkus method and does not weigh all areas the same since each industry may have different value drivers. On the other hand, it ignores some areas that the more detailed methods (discussed below) consider. As with the employment of any valuation methodology, the scorecard valuation method requires experience and skill to quantify each area, and is dependent on having a solid understanding of the average (and range) of pre-money valuation of pre-revenue companies in the region/market.

Risk factor summation method. This method is more complex than both the Berkus and scorecard valuation methods. It typically involves performing an initial valuation based on one of the other valuation methods or selecting a proxy base value of a comparable start-up that is deemed appropriate. That initial valuation result is then increased or decreased by multiples of \$250,000, based on the following risks affecting the subject start-up:

- Management risk
- Stage of the business
- Political risk
- Supply chain or manufacturing risk
- Sales and marketing risk
- Capital raising risk
- Competition risk
- Technology risk
- Litigation risk
- International risk
- Reputation risk
- Exit value risk

Factors that are determined to be low-risk are graded double (+2), which means \$500,000 is added to the initial valuation result. Factors that are determined to be high-risk are reduced double (-2), and \$500,000 is subtracted from the initial valuation result. An example of this method is set forth in Table 3.

Table 3: Risk Factor Summation Method

Risk Factor	Rating	Pre-Money Valuation Adjustment
Risk of management	-1	-\$250,000
Stage of the business	-1	-\$250,000
Supply chain/ manufacturing risk	0	0
Political risk	+2	+\$500,000
Sales and marketing risk	+1	+\$250,000
Capital raising risk	0	0
Completion risk	+2	+\$500,000
Risk of technology	0	0
Risk of litigation	0	0
International risk	0	0
Risk of reputation	-1	-\$250,000
Exit value risk	0	0
Risk score adjustment	+2	+\$500,000
Pre-money valuation		\$250,000
Valuation Result		\$750,000

In the example, the initial value of the subject start-up was increased by \$500,000 based on the risk factors considered.

The risk factor summation method is as simple as the Berkus and scorecard valuation methods, and considers additional factors that those methods overlook. Additionally, if the start-up belongs to a popular industry, notably healthcare, the risk factor summation method tends to result in higher valuations than those not belonging to it; conversely, start-ups belonging to a less popular industry tend to be penalized (serving as both an advantage and disadvantage, depending on the specific start-up). Despite these advantages, the risk factor summation method is largely pessimistic and assumes that all the risk factors weigh equally—that is, the “glass is half empty.”

Venture capital method. As its name suggests, this method is often used by venture capital firms to value pre-revenue start-ups where it is easier to estimate a potential exit value once certain milestones are reached. It reflects the process of similar investors, who typically look for exit opportunities within three, five, or even seven years. The venture capital

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Venture Capital Method

A start-up company is seeking to raise \$5 million for its Series A investment round.

Step 1: Estimate the Investment Needed

Insert the estimated investment needed for the start-up:

Series A: **\$5 million**

In terms of the expected exit date, the investment firm (e.g., venture capital firm, PE) wants to exit by Year 5 to return the funds to its investors.

Step 2: Determine the Timing of Exit

Select the year the company will be sold or will go public:

Exit Year: **5**

For the financial forecast, the start-up is expected to grow to \$100 million in revenue and \$10 million in profit by Year 5.

Step 3: Forecast Start-Up Financials

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	\$1,000,000	\$10,000,000	\$25,000,000	\$50,000,000	\$100,000,000
EBITDA	\$0	\$2,000,000	\$5,000,000	\$10,000,000	\$20,000,000
Net Income	\$0	\$1,000,000	\$3,000,000	\$5,000,000	\$10,000,000

The company's "comps"—companies comparable to it—are trading for 10x earnings, implying an expected exit value of \$100 million (year 5 net income of \$10 million x 10).

Step 4: Calculate Multiple at Exit

Select the projected multiple in the exit year to calculate the exit value:

Denominator: **Net Income**

Multiple: **10.0x**

Exit Value: **\$100 million**

The discount rate will be the venture capital firm's desired rate of return of 40 percent. The discount rate is usually just the cost of equity since there will be zero (or very minimal) debt in the capital structure of the start-up company. Furthermore, it will be very high relative to the discount rates valuers are used to seeing in mature public companies when performing a discounted cash flow (DCF) analysis (i.e., to compensate the investors for the risk).

Step 5: Discount to Present Value at the Desired Rate of Return

Insert the venture capital firm's desired rate of return:

Rate of Return: **40 percent**

This 40 percent discount rate would then be applied to the DCF formula:

$$\text{\$100 million} / 1.40^5 = \text{\$18,593,000}$$

This \$18,593,000 valuation is known as the post-money value. Subtract the initial investment amount, \$5 million, to get to the pre-money value of \$13,593,000.

After dividing the initial investment of \$5 million by the post-money valuation of \$18,593,000, the quotient is an ownership percentage of approximately 26.9 percent.



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method involves estimating the expected exit price for the investment and then discounting that exit price back to post-money present value by accounting for the time and risk of investment. An example of the venture capital method is set forth on page 27.

The advantage of the venture capital method is that it is useful for calculating required or expected valuations for pre-revenue businesses and is computationally simple and well understood by the investment community. However, the method does not look at aspects of the business (e.g., team, product, traction, risks) in determining a valuation; it only considers the start-up's required rate of return. Additionally, the method requires the valuator to select representative start-ups to estimate future potential terminal values. As a result, it can be difficult to establish exit values and the discount rates are guesswork to some extent.

Cost approach. This approach, familiar to business valuation professionals, simply looks at the cost to replicate, or recreate, the start-up elsewhere. The value emanates from the sum of the fair market value of the company's physical and intangible assets, the latter of which is often quantified by the costs incurred to create those assets. Common costs related to intangible assets incurred by start-up healthcare businesses include the following:

- Research and development costs
- Product prototype costs
- Patent costs
- Other costs

The cost approach is commonly used when the subject business does not have any assets other than intellectual property (IP) and there is no other data available. Therefore, the advantages of this technique are that it is intuitive and straightforward to calculate. However, it can be problematic because it does not inherently capture the full value of a business, particularly if the business is generating revenue.

Comparable transaction method (market approach).

This method estimates value by comparing the value of similar start-up businesses in transactions on the open market. A significant challenge in using methods based on the market approach is the difficulty in obtaining reliable transaction data from a sufficient number of reliably reported transactions involving start-ups. In addition, even when such data does exist, the reported valuation metrics for comparison may not be applicable (for example, if the subject start-up is pre-revenue).

The advantage of the venture capital method is that it is useful for calculating required or expected valuations for pre-revenue businesses and is computationally simple and well understood by the investment community.

Several other factors for consideration of comparability include

- The relative size of the start-up;
- The industry in which the subject operates;
- The stage of investment; and
- The length of time the start-up has been in existence.

There are several sources that valuers may access to find market transactions:

- Crunchbase Pro
- CapitalIQ
- PitchBook
- Levin
- DoneDeals
- Mergr

The comparable transaction method can be beneficial because it is based on the market value of similar start-ups and does not rely on founder projections. Also, the method is commonly used and understood. It can provide a quick approximation of value if the valuator is familiar with the valuation multiple (e.g., revenue multiple) for a certain group of start-ups. However, this method assumes that the subject start-up business will have a similar outcome to other start-ups. Further, knowing which metric to use when identifying and selecting the market comparable transactions can be critical; it may be difficult to find transactions with targets in the same niche or size or with the same volume of market transactions. Lastly, the method ignores the experience of the management team or product, which as indicated in the discussion of some of the other methods, may have a significant impact on value.

Discounted cash flow method. Another well-known business valuation method, the income-approach-based discounted cash flow (DCF) method, approximates the subject

start-up's value as the present value of anticipated future economic benefits, measured in net free cash flow, that will accrue to the owner(s). The anticipated cash flows are typically discounted to present value at a higher rate of return to reflect the fact that investing in start-ups is a higher-risk proposition than investing in businesses that are already operating and earning consistent revenue. The DCF method, like all income-approach-based methods, returns a value of all of a start-up's assets (both tangible and intangible). The method assumes that the assets are sold in an assemblage of assets and as part of a going-concern, income-producing business.

The principal benefit of the DCF method is that it provides an intrinsic value of a business based on estimated future cash flow and can be very detailed to capture all future expansion plans. The challenge with this method, however, is that it depends on the analyst's or financial advisor's ability to predict how the company will perform in market conditions over the forecast period and to provide assumptions about a start-up's long-term growth since the majority of a start-up's value comes from the terminal period (i.e., five to 15-plus years out). As a result, the DCF method is most appropriate for more mature businesses with predictable growth.

First Chicago method. The First Chicago method is a combination of the comparable transaction method (market approach) and the DCF method (income approach) that also takes into account different forecast scenarios for the subject start-up. This method, which is complicated and time-consuming, is often used by PE investors and venture capitalists to value early-stage companies. Application of the First Chicago method involves constructing valuation estimations for multiple scenarios (which may include the best case, the worst case, and one or more in between) and assigning a probability to each forecasted scenario.

The method requires data, such as the earnings, cash flows, exit-horizon, revenue, and financial forecast for each case scenario, as well as a detailed analysis of the market trends of the industry to arrive at a sound estimate for each scenario. Typically, the

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First Chicago Method

Step 1: Project the cash flows and EBITDA for each scenario.

Step 2: Estimate the exit price for each scenario. For this example, it was determined from information about transactions of similar start-ups used for the market approach that 8x EBITDA is an appropriate valuation multiple for the subject start-up at exit.

Step 3: Sum the present value of the forecasted cash flows. For this example, it was determined that the required rate of return (discount rate) was 35 percent and the forecasted cash flows were discounted to present value (mid-year convention) and summed.

Step 4: Determine the present value of the exit price. The exit price at the end of Year 3 estimated for each scenario in Step 2 is discounted to present value at the 35 percent discount rate assumed in Step 3.

Step 5: Determine the value of the start-up under each scenario. The sum of the exit price (discounted to present value as calculated for each scenario in Step 4) and the discounted cash flows (as calculated for each scenario in Step 3), results in the value of the subject start-up in each assumed scenario.

Step 6: Assign probabilities to each scenario and estimate subject start-up value. The probability for each case scenario is determined (correlated to the number of scenarios and your definition of them). Then, depending on the scenario, calculate the weighted sum of the valuations to derive the value of the subject start-up. In this example, the value of the subject start-up from the employment of the First Chicago method is \$247,130,812.

Step 1

Scenario	Year 1 Cash Flow	Year 2 Cash Flow	Year 3 Cash Flow	Year 3 EBITDA
Best Case	\$2,000,000	\$20,000,000	\$100,000,000	\$150,000,000
Base Case	\$1,000,000	\$10,000,000	\$50,000,000	\$75,000,000
Worst Case	\$1,000,000	\$0	(\$3,000,000)	(\$5,000,000)

Step 2

Scenario	Year 3 EBITDA	Exit Price Multiple	Exit Price
Best Case	\$150,000,000	8X	\$1,200,000,000
Base Case	\$75,000,000	8X	\$600,000,000
Worst Case	(\$5,000,000)	8X	\$0

Step 3

Scenario	Year 1 Cash Flow	Year 2 Cash Flow	Year 3 Cash Flow	Sum of Cash Flows (Discounted at 35%)
Best Case	\$2,000,000	\$20,000,000	\$100,000,000	\$105,000,882
Base Case	\$1,000,000	\$10,000,000	\$50,000,000	\$52,500,441
Worst Case	\$1,000,000	\$0	(\$3,000,000)	(\$1,721,326)

Step 4

Scenario	Exit Price at End of Year 3	Exit Price (Discounted to PV at 35%)
Best Case	\$1,200,000,000	\$487,730,529
Base Case	\$600,000,000	\$243,865,264
Worst Case	\$0	\$0

Step 5

Scenario	Exit Price (Discounted in Step 4)	Sum of Cash Flows (Discounted in Step 3)	Indicated Value of the Subject Start-up
Best Case	\$487,730,529	\$61,696,194	\$549,426,723
Base Case	\$243,865,264	\$30,848,097	\$274,713,361
Worst Case	\$0	(\$556,066)	(\$556,066)

Step 6

Scenario	Indicated Value of the Subject Start-up	Scenario Probability	Probability Adjusted Value of the Subject Start-up
Best Case	\$549,426,723	10%	\$54,942,672
Base Case	\$274,713,361	70%	\$192,299,353
Worst Case	(\$556,066)	20%	(\$111,213)
Estimated Value of Subject Start-up		100%	\$247,130,812

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base-case scenario is the most likely outcome expected by the valuator, while the worst-case scenario is a total loss. An example of the First Chicago method is set forth on page 30.

The main advantages of the First Chicago method are that it is very detailed and thorough, and that it is based on concrete estimates of future exit values and cash flows. This method also provides a range of potential outcomes and accounts for unlikely but high-impact scenarios. On the other hand, this method is very complex and time-consuming and requires a lot of knowledge about the business and future estimates in order to produce accurate results; consequently, it is not useful for pre-revenue start-ups.

Benchmarking

Benchmarking is an important part of any valuation assignment. Benchmarks serve as guidance for investors and companies themselves and may be used for many purposes, including a check and balance against forecasts and comparison of a start-up's actual performance to its competition. Most of the valuation approaches, methods, and techniques discussed in this article require some form of benchmarking.

Industry benchmark metrics used for start-ups include:

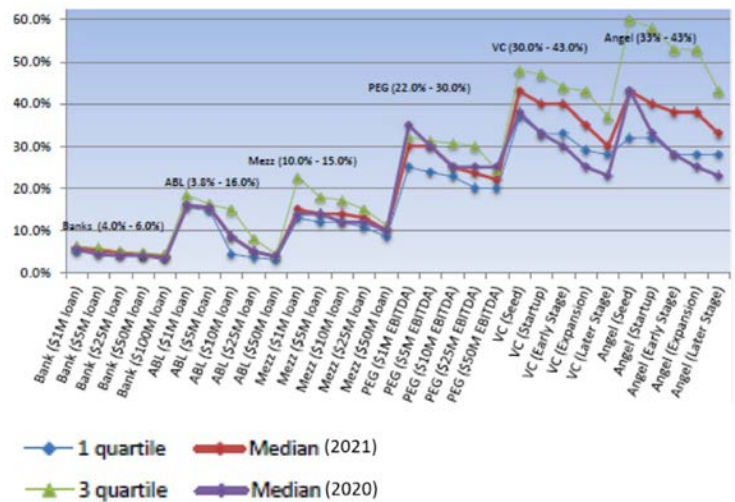
- Financial metrics, such as gross margin, net profit margin, and customer acquisition cost
- Operational metrics, such as churn rate, conversion rates, and returns and cancellations (e-commerce)

Industry benchmarks can be used to make forecasts in those methods that require it. Following are some tips to best leverage benchmarks to make better forecasts:

- Define the metric(s) to be examined
- Pinpoint the applicable industry
- Beware of, and appropriately deal with, outliers
- Use industry averages to build projections

Benchmarks may also be used as a check for the subject start-up's discount rate/investment rate in comparison to returns sought by the capital markets. A valuable resource for benchmarking required rates of return, given various levels of risk, is the Pepperdine Private Capital Markets report, an annual survey produced by Pepperdine Graziadio Business School. As shown in Figure 3, the report provides cost of capital data for private businesses from various sources (PE, banks, venture capital, angels, etc.).

Figure 3: Private Capital Market Required Rates of Return⁷



Sources of Funding for Start-Ups

As identified by the Pepperdine Study, there are several sources of funding for start-ups, each with their own risk tolerance and funding mechanism:

- **Asset-based lending.** The primary difference between traditional bank lending and asset-based lending is that a traditional lender looks first to the business's earnings or cash flow then to collateral when underwriting a loan, whereas an asset-based lender looks to collateral first.
- **Mezzanine financing.** This is a hybrid of debt and equity that ranks below senior debt but above common stock in a capital structure. Due to the risk profile of mezzanine financing, lenders require higher returns than senior lenders and a lower return than equity investors. Lenders achieve this through a combination of interest payments and equity participation.
- **PE.** This involves a group of investors that makes a direct investment in a company. PE investors typically focus on mature companies that are past the growth stage; however, they may provide funds to a business in distress. PE investment has taken a larger role in healthcare in recent years with the intention of acquiring a business (majority interest to complete buyout), improving its operations, and selling it for a profit in three to seven years. A PE investor's goal is always to make the company worth more than it was in order to generate a return on investment.

7 Craig R. Everett, 2022 Private Capital Markets Report (Malibu, CA: Pepperdine University, 2022).

While securing IP rights takes money, time, and other resources, it is vitally important to protect IP because the driving force behind a start-up is almost always a novel idea.

- Venture capital.** This is a form of PE; the main difference is that while PE investors prefer stable companies, venture capital investors usually invest in start-ups and businesses in the introduction phase and are willing to take a minority stake in the business. Venture capital is usually given to small companies with incredible growth potential. This type of investment is not easily obtained and tends to be riskier, but venture capital investors get involved because of the potential for very high returns. If you are familiar with the television show *Shark Tank*, the “sharks” may be considered venture capitalists. While PE investors look to improve a business and then flip/exit the business for a profit, venture capital investors are interested in the long-term growth of the company.
- Angel investors.** These are wealthy private investors focused on financing small business ventures in exchange

for equity. Unlike a venture capital firm, which uses an investment fund, angels use their own net worth, which typically comes with a higher required rate of return.

Regulatory Considerations

As noted above, there are several legal considerations involved in start-ups. Chief among these is the protection of IP. IP is defined as mental creations—such as inventions, symbols, artistic and literary works, and images used in commerce—for which start-ups seek protection. While securing IP rights takes money, time, and other resources, it is vitally important to protect IP because the driving force behind a start-up is almost always a novel idea. An in-depth discussion of IP legal protections is beyond the scope of this article. However, Table 4 provides a summary of the different types of IP protection.

Table 4: Types of IP Protection⁸

IP Protection	Definition
Patent	Gives the owner of an invention exclusive property rights for that invention for 20 years, during which others cannot claim IP on the invention. The U.S. patent system currently works on a first-to-file basis. In other words, it does not matter if your start-up thought of the invention first. What matters is who files the patent first. ⁹
Trademark	A word, design, or symbol that identifies a product or service as coming from a certain source. Start-ups can save money by trademarking their name and logo together instead of protecting each element separately.
Copyright	An exclusive right to use and copy a creative work in a fixed form, such as a book, article, software program, or song.
Trade secret	Processes, devices, or techniques used by a company and not known to the public. Examples can include a recipe, a list of customers, or a search algorithm used by a certain search engine. There is no legal filing required to claim an item as a trade secret.

⁸ Sterling Miller, “Modern General Counsel: Four types of intellectual property,” Thomson Reuters, November 12, 2021, <https://legal.thomsonreuters.com/en/insights/articles/four-types-of-intellectual-property>.

⁹ “First-to-File Rule for Patent Applications,” Justia, last reviewed October 2022, <https://www.justia.com/intellectual-property/patents/first-to-file-rule/#:~:text=While%20the%20inventor%20who%20first,their%20patent%20application%20receives%20priority>.



Conclusion

Performing valuations of start-up businesses presents many challenges. Given the nature of businesses, there is some probability that a subject business will be worth a lot, but a much greater probability that it will be worth a very small amount. As valuers and appraisers, our training and experience has taught us (and professional standards require us) to look to multiple methods to estimate the value of a business; and start-ups are no exception. It is important to balance the advantages and disadvantages of each of the available methods.

Another challenge in valuing start-ups is that the information and due diligence documents provided by a start-up or client

often are subjective or presented through a rose-colored lens. Therefore, the level of industry research required is typically greater with start-up engagements. The more one is able to identify appropriate benchmarks to compare and apply to the subject start-up, the less subjective the valuation opinion becomes.

Finally, it may also be helpful to explain to your clients what they need to do to make the start-up business more valuable. It can serve as both a value-added element to the valuation engagement and an opportunity to provide additional context to help the client understand the valuation conclusion. **VE**



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