Venture Capital Valuation: Case Studies and Methodology
By Lorenzo Carver

What You Don't Know About Valuation Will Cost You Money

How would you feel if you sold $2 million "worth" of Google stock and received $50 in cash instead of $2 million? This happens to venture-backed companies everyday and that's why understanding valuation is critical.

The terms "value" and "valuation" are used a lot for high-growth private companies and that's a bad thing. It's bad because when founders, VCs, angels, attorneys, CFOs, CEOs, and employees use these words and don't truly understand what they mean, those same people end up losing lots of money as a result.

Imagine you log in to your brokerage account. You see your 2,000 shares of Google valued at $2,000,000, place a market order to sell all 2,000 shares, and wait for it to clear. A few minutes later you get a confirmation that you sold 2,000 shares, received $0 in proceeds, and owe the brokerage firm $50.00 in commissions. A transaction you expected to put $2,000,000 in your pocket has instead effectively taken $2,000,050 out of your pocket. How would that make you feel? What would your spouse's reaction be? Most of us would experience a rapid increase in heart rate and an unpleasant feeling in our stomachs. The culmination of this fight-or-flight response would at least be a call to our broker to find out what happened to the other $2,000,000 (yours) and get it back.

Yet this same scenario plays out for real every day for VCs, founders, angels, limited partners, strategic investors, CEOs, CFOs and employees of high-growth companies and most people don't panic and don't feel the need to make a phone call. Why? Because they don't know what's happening to them until it's too late to do anything about it. This book represents an opportunity for those parties to stop losing money before it's too late to do anything about it, by understanding how "value" changes their rights to cash flow at every stage of a company's evolution.

WHAT THIS BOOK IS ABOUT AND WHOM IT IS FOR

In a broad sense, this book is for anyone who's involved with a venture capital- or angel-backed private company who wants to maximize his or her investment by controlling one of the few things you can when dealing with high-velocity, risky investments after you've committed: your understanding of valuation.

In many ways, valuing an early-stage venture-backed company (one that's received financing) is a lot easier than valuing a traditional privately held company. You would never know that by reading a 409A valuation report, looking at a certificate of incorporation, or viewing an investor rights agreement for a venture-funded company, though. While those venture deal complexities, which relate to rights and preferences for various securities and holders, are absent in the vast majority of traditional private companies, access to capital, networks, and long runways to the first meaningful customer are also absent in most traditional businesses. The result is that venture capital- and angel-backed company value is better measured in terms of volatility, as opposed to traditional private companies, which are generally more easily valued in terms of cash flow, or operating income benefit streams, in their early lives.

From a valuation perspective, this allows you to focus on the existing investors and capital structure (the known variables) more so than you could ever do with a traditional business. As these angel- and venture-backed companies evolve, faster and often more dramatically than would ever be acceptable for a traditional business, the one constant, in most cases, is the investors and, ideally, parts of the founding management team. These elements, and this pattern, can be reduced to simple math, and that simple math can produce useful indications and conclusions of value.

However, none of those conclusions, or indications of value, are of any use unless you understand how they were arrived at and what the limiting conditions and assumptions are. This book uses real-life cases where stakeholders in a given startup or high-growth company could have made out better simply by having better information about valuation. In other words, if the company had performed exactly as it did using misunderstood valuation inputs, parties in the know would have increased their profits without changing how the company operated in any way.

MY PERSPECTIVE ON VALUATION AND THIS BOOK'S SETUP

I've spent the better part of my adult life making it easier for those who want to understand high-growth company valuation to do so, primarily by

creating software. But before I released my first valuation software in the late 1990s, I had spoken with hundreds of entrepreneurs, attorneys, investors, and other parties, who would always ask questions like:

- "What's this company worth?"
- "Is this a fair valuation?"
- "Are we leaving too much money on the table?"

The entrepreneurs I had the conversations with were some of the smartest people I've ever known, including award-winning PhDs, with patents to their name for products that have literally either saved or vastly improved the lives of millions around the world. Yet, explaining valuation to these sophisticated parties verbally or even with an interactive spreadsheet still didn't make it intuitive enough that they felt comfortable when the ink dried on their deals. That's when I decided to take six months off from consulting and write a software application that made it intuitive for almost anyone. I realized that software allowed people to get instant satisfaction and experiment with "what if" inputs that were hard to do on a scratch pad or on a spreadsheet. That software application, BallPark Business Valuation, focused on the discounted cash flow (DCF) and capitalization of earnings methods, which are both methods within the income approach to valuation mentioned in Chapters 3 and 4.

In the late 1990s, I created several hundred valuations as part of strategic planning for high-growth companies. These valuations were used to explain to management what a reasonable range of returns would be based on the capital they were seeking, the types of businesses they were starting (IT, Internet related, biotech, medical device, and so forth), and the time horizon to a liquidity event. In 1996 and 1997, the value indications I generated, both with respect to pre-money/post-money values and in terms of true "enterprise" values, tended to be close to what clients actually ended up realizing when raising funds. But when 1998 rolled around, almost all founders I built a valuation analysis for in conjunction with their finance strategy were quick to let me know that they were getting twice, or even four times, the "pre-money" valuations I suggested would be reasonable before they closed their financing. This trend increased, month after month, and by the time Red Herring had written an article on my strategic planning services, half the entrepreneurs I worked with would balk at the valuation estimates as being way too low. So who was right, me or my clients?

As you will see in the very first chapter of this book, "Using Facebook, Twitter, and LinkedIn to Explain VC Valuation Gains and Losses," my clients could be right with their higher assumed "valuations," and I could be right with my lower assumed "value indications," depending on what "standard" of value was used. Financial buyers, as discussed in Chapters 1,

3, 5, 6, 7, 8, and 9, are willing to pay for the cash flow, or benefits, a business is capable of producing as of the date of the transaction. If VCs and angels priced deals this way, they would effectively own almost 100% of each company they invested in, not including options reserved for future issuance. Instead, the expectation is that a series of subsequent financing rounds, ideally at increasing prices, should bring a venture-backed company closer to the point where financial buyers could foreseeably participate in either a financing of the company or an acquisition of the company.

Early in the process of building a valuation analysis as part of strategy engagements, I used to begin by trying to solve for the value of a client company to a financial buyer. I knew both experientially and from auditing VC funds before starting my consulting practice, BulletProof Business Plans, that most VCs, angels, and early-stage investors in general were not financial buyers. However, I also believed that once investment values and speculative values became "market values," there would be an opportunity to acquire any residual intellectual property once it was clear that little or no future cash flows would ever be realized for the vast majority of "overvalued" Internet companies, in the absence of restructuring. Based on that hypothesis, BulletProof Business Plans founded a publicly traded company to value and "harvest" the intellectual property from these companies as they went out of business. In exchange for investor rights to the IP, which a lot of parties were more or less walking away from at the time, investors in overpriced private companies about to fail would receive interests in a publicly traded, but restricted, stock, and the publicly traded company would redeploy the IP in new ventures or otherwise sell it.

That exercise taught me a lot about the concept of "fair value," which was just gaining more steam in the world of accounting, as well as emerging concepts concerning equity issued as compensation and transactions done using a company's own securities as currency, effectively. One of the biggest takeaways from that experience was that financial, strategic, investment, and even speculative "value" had everything to do with "who" was involved. Without analyzing and appreciating who, the most financially attractive opportunity could be destroyed by a single individual acting in concert with a small group. Examples of this include Enron, which we mention on page 35 of Chapter 1, "Facebook at $80 Billion Valuation versus Enron at $80 Billion Valuation," MCI Worldcom, and even the private mortgage securities that are impacting everyone's valuation today (ironically, in a positive manner at this time).

As you'll learn in Chapter 2, "Should Venture-Backed Companies Even Consider a DCF Model?" and Chapter 3, "Valuation Methods versus Allocation Methods," traditional income approaches to valuation do not generally work particularly well for most early-stage venture-backed companies without substantial modification, partly because market inputs are often

better indications. Perhaps more importantly, how many VCs or angels do you suppose are pulling out a true DCF model when making a Series A investment?

Yet every investor, founder, and employee in these companies generally shares an expectation of future cash flow. They don't generally expect that cash flow to come from operations, although occasionally companies like Microsoft and Zynga will in fact produce enough free cash flow to theoretically be able to pay a dividend before going public (see Chapter 4, Exhibit 4.6 "Dividend History of Leading Venture-Backed Companies"). Instead, the majority of these companies will give a benefit stream to investors that is not directly from their operating cash flow but instead in the form of capital appreciation.

But after the VCs, or angels, purchase an interest in a company, how does that market input (supply and demand for the company's potential reduced to a preferred security) impact the founders? How does it impact the employees? How does it impact the limited partners of the venture funds? These may seem like complex questions to answer—and sometimes they are—but in other cases simply breaking down the motivations of the parties (generally their return requirements) within the context of a high-growth company's capital structure can produce superior results if, and only if, you understand the proper inputs. You can't get accurate value indications from a company's capital structure without creating an accurate waterfall of every likely scenario and time period.

Having personally looked at over 5,000 waterfalls in the past 10 years, I can assure you that 90% of the waterfalls you will ever see contain material errors. A lot of times very-early-stage investors assume that "a waterfall's a waterfall" for Series A investors, and doesn't really matter until Series B or later. It's true that it doesn't really matter, for certain investors. But it's also true that understanding it impacts value for every investor that plans to maximize return, as discussed in Chapter 6, "Why You Should D.O.W.T. (Doubt) Venture Capital Returns—Option Pool Reserve." In Chapter 6 we look at one of the simplest cap tables you'll probably ever see for a highly successful, venture-backed company, Microsoft. As simple as Microsoft's cap table was, when we apply the real techniques being used by VCs, analysts and CFOs, valuation professionals, and auditors you'll see how the varying methods used by these parties produce widely differing conclusions.

Before writing this book, I spent nearly a decade creating systems to enable financial information to be converted into actionable business intelligence for venture capital investors. The system was first released as a mobile application for Windows Smartphone (before the iPhone existed), then as a desktop application, and shortly thereafter as a Windows Server product. The first purchasers of the desktop system, to my surprise, were not VCs but

valuation practices that needed to run waterfalls for 409A valuations that were expected to be required that year for venture-backed companies.

After around five months of sales, enough valuations (perhaps a few hundred) had been done with the system that we started to get requests from valuation professionals, CFAs, AVAs, ASAs, and so forth, to help them respond to auditor inquiries related to FAS123R (which is now known as Topic 718) and relates to accounting for employee stock options and equity compensation. Although this was very early in the life of 409A valuations being used for "dual purposes," I was, quite honestly, shocked at the conclusions audit teams from the leading (Big 4) accounting firms were drawing. This inspired me to create a course and webinar for the National Association of Certified Valuation Analysts entitled "Five Mistakes Your Auditor Made." Note, the title was not "Five Mistakes Your Auditor May Have Made" because, at that time, the firms were consistently generating payout calculations that materially overstated or materially understated the value of certain securities. Since the option grant prices effectively determined whether employees were being issued securities that had "zero value" or negative value, the auditor feedback influences people's lives in ways I'm guessing few personnel doing the calculations probably considered (and you'll read an example of this early on in Chapter 5's section "Did Auditors Drive Valuators to Overvalue Employee Stock Options?").

We address this topic of auditors, management, investors, and valuation professionals coming up with different conclusions throughout the book, but particularly in Chapter 5, "Enterprise Value + "Allocation Methods" = Value Destruction" and Chapters 8 and 9. A key thing I realized when teaching the course to valuation professionals is that, as with the auditors and VCs, there were techniques they were applying rather consistently that also had the impact of routinely changing value conclusions in ways that they may not have anticipated. In Chapter 9, "Don't Blame the Auditors (Blame the Practice Aid Instead)," I interview three valuation experts who have each done hundreds of 409A valuations and a number of Topic 820 valuations for venture funds. These interviews were conducted with a collection of CFOs and finance teams from venture funds listening in. As a group, these listeners represented well over $40 billion in capital. A few of the listeners sent me notes of appreciation for the session but told me "that was a lot of information and although I'm sure it's useful and accurate, I didn't understand most of what they [the valuation experts] were talking about." That's when I decided that the format of this book, which was originally intended to be a collection of cases analyzing payoff diagrams, such as the ones I have published on Sharespost over the past several years, had to be adjusted to focus on the most important pieces that these CFOs didn't seem to fully appreciate in the way it was being explained by top valuation professionals.

To address this, I started sending out analogies to both financial professionals and entrepreneurs with no financial backgrounds to see if I could find a way to communicate with examples the elements that would likely have the biggest impact on a venture-capital valuation. The most significant elements accounting for gaps in value conclusions were, of course, standards of value, discounts related to differences in standards (such as those for marketability and control), volatility, and the option pricing model as applied to venture-backed companies using Black-Scholes.

Using real-world examples such as Facebook and Twitter (Chapter 1) Yahoo! (Chapter 5), Microsoft (Chapter 6), Kayak.com (Chapter 7), and others, anyone with a true desire to understand valuation to maximize returns, as an employee, founder, VC, angel, or even a vendor, should be able to do so, or at least, that's the objective of this book.

And finally, because valuation is worth nothing to you if you can't make more money with it, Chapter 9 walks you through one of several cases I've created from popular venture-capital and angel-backed social media and Internet-related companies that went public. Using the techniques we explain, using cases from Chapters 1 through 8, Chapter 9 gives you the opportunity to see if you can reach a valuation conclusion that would make you more money as a founder, a VC, an angel, an advisor, or another party simply by having better tools to appraise rights to investment cash flows.

DID YOU KNOW EMPLOYEES LOSE $1 BILLION EACH MONTH DUE TO OVERVALUED (UNDERWATER) OPTIONS?

In 2003, 2004, 2005, and 2006 nearly one million employees at angel- and venture-backed companies were holding stock options they knew had a small possibility of increasing their personal wealth. In 2000 and 2001, a comparable number of employees were holding options they previously thought might be worth millions, but quickly realized might actually be worth absolutely nothing. During each of those periods, market movements, from booms to bubbles to busts, impacted not only those employees but anyone holding stock of public companies or companies with prospects of one day becoming public companies. No VC, angel, or employee associated with these high-growth public companies can escape this market, or systematic, risk. That, of course, is why "risk-free" securities, such as those issued by the U.S. Treasury, command a substantially lower rate of return than equity securities. This systematic risk is priced into every security, including options on privately held equities and employee options by publicly traded companies. However, this risk is more important to publicly traded

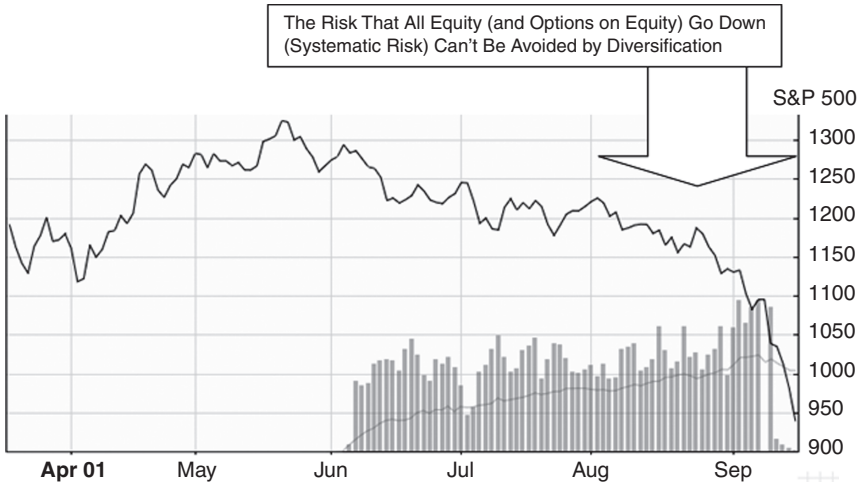

EXHIBIT I.1 Risk That Can't Be Avoided by Diversification (Systematic)
Source: Chart Liquid Scenarios, Inc. – Data Downloaded from Yahoo.com/Finance

companies and private companies in traditional industries than it is to angel- and venture-backed companies for reasons we'll describe later in this book. As a result, although the systematic risk of the public equity markets impacts the stock options in venture-backed private companies to some degree, it has very little to do with why employees today are losing tens of millions every day due to mispriced employee options. (See Exhibit I.1.)

In 1996, 1997, 1998, and even 1999, tens of thousands of employees were granted options that were underpriced, or issued below their fair market value. Most of those employees lost 100% of the value once inherent in those options due to risks that were unique to their founders, their management teams, their key investors, their technologies, and other "idiosyncratic" risks. Those are not the kind of daily losses we are focused on in this book. (See Exhibits I.2 and I.3.)

VCs protect against idiosyncratic risks by having:

1. Portfolios of multiple investments.
2. Deal terms with embedded options that hedge company-specific risks.
3. A mechanism to allow investment decisions to be deferred as certain kinds of uncertainty dissipate.

Most employees, of course, don't share these advantages. Still, the mere existence of company-specific risks, which most employees recognize prior

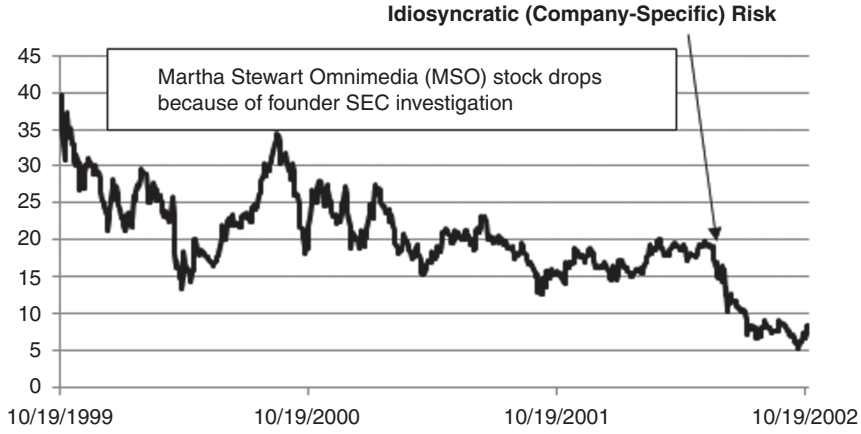

EXHIBIT I.2 Company-Specific (Idiosyncratic) Risk
Source: Chart Liquid Scenarios, Inc. – Data Downloaded from Finance.Yahoo.com

to accepting a job with a startup, does not account for the $1 billion per month being lost by employees at VC- and angel-backed companies due to mispriced options. The reason for the losses is due, in part, to a lack of access to information. But as we discuss more extensively in Chapter 5, the more significant reason for the losses is a lack of understanding about what to do with that information. Indeed, the only barrier to getting information

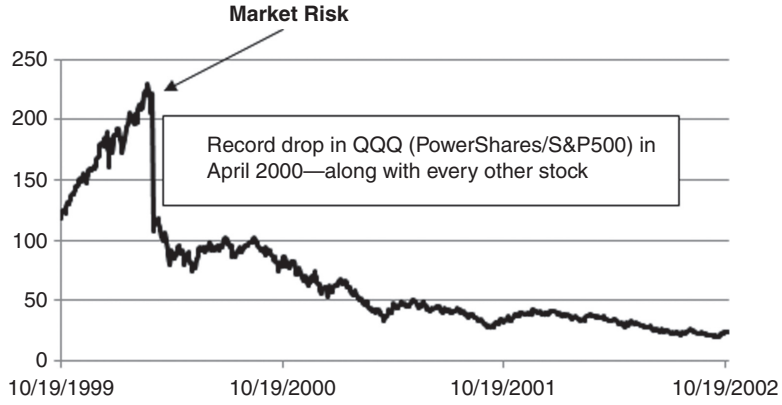

EXHIBIT I.3 Market Risk Compared to Martha Stewart Specific (Idiosyncratic) Risk
Source: Chart Liquid Scenarios, Inc. – Data Downloaded from Finance.Yahoo.com

from the company for certain venture-capital investors and other key parties with specific rights is asking for it.

As an analogy, think of an airplane dashboard. There are countless dials and meters all telling pilots the reality, terms, and logistics of the plane's machinery and workings. When the dials and meters start to signal the plane is about to go out of control, what do the pilots do? Well, with their basic training and knowledge of what the dashboard information is telling them, pilots should be able to recover from the situation quickly—at least, in relatively good weather with good visibility. However, a pilot with no training, or even the wrong training, will probably suffer a permanent loss.

Although the stakes are not as high with most venture investments, the relationship between what information is available versus what information is used to increase returns and offset losses is analogous. If access to information were the only barrier to losing money daily due to valuation, major investors in venture-backed companies who asked for the necessary information would never need to lose money for this purpose. The market risks and idiosyncratic risks would still be a very real threat, but knowing what you own on a given date and what its value is on that date would no longer be an issue. Naturally, both what a fund truly owns and what it is worth is not definitive to most VCs on any given date, even at the end of the year when estimates of value for the fund ultimately get sent to the limited partners who will make investment decisions and budgets as a result of those estimates.

As we discuss in Chapter 5, employees, VCs, angels, pension funds, and other LPs share this difficulty in quickly getting a reliable indication of value prior to something very good or something very bad happening. For anyone who's ever seen a VC or LP report, this reality can easily be proven without the use of a case study or a graph. If you've seen the term "market value," "residual value," or "net asset value" in an LP report, it was probably accompanied by a caveat disclosure noting the variety of ways funds come up with the residual values. In a world where most of the returns to venture fund investors are "unrealized" gains and many of the losses on any given date are offset by those estimates of unrealized appreciation in value, the need to know the proper inputs into a valuation is essential.

From the outset of this book, we will review three cases, in concert, to show examples where investors, employees, and other parties with a claim on equity in rapidly appreciating venture-backed companies lost rights to massive gains in value that could have been realized by applying basic math. In each of the three brief cases presented, all parties, with the exception of the employees, had access to all of the information needed to value the alternatives differently. Moreover, each of these companies represents some of the best-performing venture investments of the decade. Also, each of the

cases involves extraordinarily competent and successful individuals. But as you will see, industry conventions they may have relied on in their decision-making processes may have created a lack of visibility into what they truly owned on a given date and what its value was. As a result, each may have transferred their rights to hundreds of millions in investment cash flow to other parties unintentionally.

ABOUT THE COMPANION WEB SITE

Please note, there is a companion Web site to this book featuring additional case study material as well as different valuation materials that will help you understand and use the techniques offered in this book. Please visit www.wiley.com/go/venturecapitalvaluation to access all of the materials mentioned throughout as available there for download.