

CHAPTER 7

If Valuation Can't Make You Money, Do You Really Need It?

Learning Practical Applications from Kayak.com

For many people, truly understanding a complex topic is best achieved by experiencing it first-hand. With the previous cases and methods presented thus far, you should be able to do the following:

1. Make more money *as an investor* by recognizing potential valuation conclusions that create opportunities for arbitrage and “abnormal” profits.
2. Make more money *as a practitioner* by better appreciating the perspectives of the market participants, both hypothetical ones and actual ones, and adjusting valuation inputs and methods to enlighten the parties that depend on your insights and expertise.
3. Make more money *as a founder, employee, or executive* by ensuring that you and your team (be it your managers, your family, your advisors, or others who influence your decisions) have several ways of comparing the “fairness” of compensation awards based on the way known risks and expected benefits have been distilled into an exercise price, or value that determines the grant price of your options.

As discussed, the vast majority of VCs, CFOs, founders, attorneys, angels, and other parties that come into contact with a 409A valuation, the most popular form of an independent venture-backed company appraisal, believe they've received a compliance-driven commodity. Most have indicated that they essentially see 409A valuations as a prophylactic against severe tax penalties and, to a lesser degree, against financial statement auditor irritability.

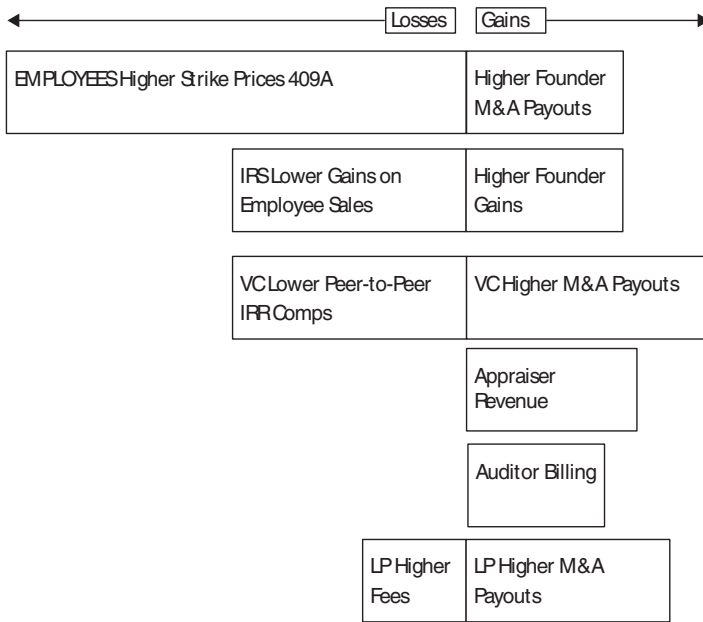


EXHIBIT 7.1 The Economic Impact of 409A Is Not the Valuation and Audit Fees
Source: Liquid Scenarios, Inc.

Interestingly enough, each of those parties has made and lost at least \$10 billion in each of the four years since 409A became effective. During that same period, valuation professionals may have made around \$240MM in fees, while auditors may have billed around 50% of that amount (\$120MM) to review the 409A work and comply with FAS123R and SAS 101. Even after reading this book, the alphabet soup needed to describe these relationships is hard to digest, so Exhibit 7.1 should be helpful in clarifying the winners and losers of 409A and fair value pronouncements.

As you read the venture-backed IPO cases here and apply the techniques covered, it’s important to remember that there’s not necessarily a single “right” answer. However, there is always, in every case, an opportunity to optimize your investment outcomes by better understanding the perceptions of reality implied by using the inputs you’ve come to learn in this book versus those others might apply. If you wield a hammer without any expertise, it’s still a hammer and will likely get you further toward your goal of driving a nail into something than using your hand or a rock for the same task. Similarly, if you use the “financial hammer” described in this book, you will find that converting the promise of future rewards into a cash value today will become a lot easier for you than it will be for those who continue to use their hands or rocks for the same task. Before we introduce the next set

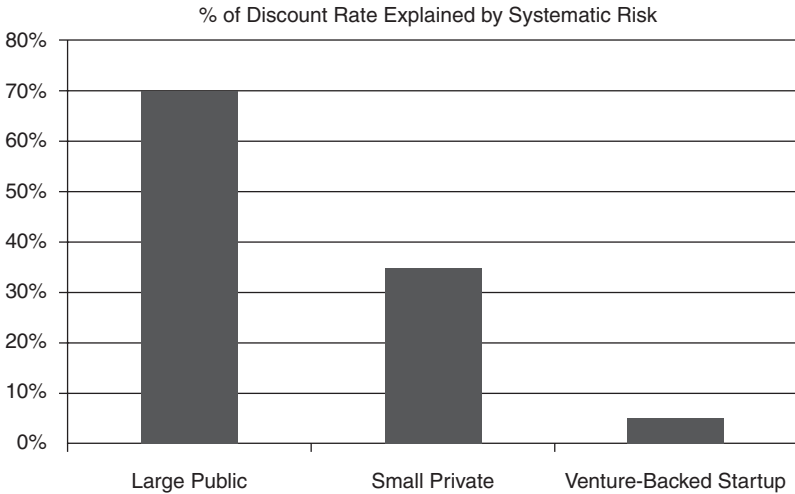


EXHIBIT 7.2 The Equity Risk Premium/Systematic Risk Is Less Important Than Volatility
 Source: Liquid Scenarios, Inc.

of cases, you should take a look at the “financial hammer” again in light of what we’ve discussed concerning two small and simple variables that we’ve shown to have very large impacts on value indications and conclusions.

You will recall that the two elements of the hammer are r , the required or expected return, and t , time or the term. You may also recall that I said if $1.r^t$ is the “financial hammer,” then the benefit stream, often cash flows, are the nails. We also discussed how valuation professionals will “build up” a discount rate. For most publicly traded companies, the “market rate of return” component is a substantial portion of that discount rate. For most non-venture-backed private companies, the highest single component of risk is still the ERP (equity risk premium), industry risk premium, and size premium, although company-specific risks tend to be much higher than they would be for small publicly traded companies. For venture-backed companies, the highest single component of risk is rarely systematic risk, unless the company is on the eve of an IPO. Looking at the three bars in the chart of Exhibit 7.2, you see the following:

- Public company: Most risk (50%+) is systematic/ERP
- Non VC private company: Substantial risk (35%+) is ERP
- VC backed company: Highest risk is not ERP but driven by volatility and based on t

In order to apply this same methodology to venture-backed companies, using traditional approaches, the company-specific risk component would

have to become the largest component of risk. This substantial difference reflects the failure of publicly traded securities to match the volatility and return requirements of venture investments. One of the easy solutions to this problem that I proposed is to “build up” volatility and time by focusing on round-to-round dynamics versus attempting to capture the entire investing cycle, from cradle to grave, with a single formula or valuation approach. Therein lies most of the adjustments to conventional valuation approaches and industry practices that we have laid out in this book. Now it’s time to apply these new techniques to the real-world cases that follow and identify how you could have used basic math and valuation to make millions in each of these cases without changing the enterprise value that was ultimately realized.

APPLYING STUDIES TO REAL-WORLD CASES

The following cases include one extended case, Kayak.com, and a number of quick cases that simply include the “rapid models.” Cases other than Kayak.com are available at www.wiley.com/go/venturecapitalvaluation for additional review. The Kayak.com case allows you to apply the techniques shared in this book as follows:

1. Kayak.com Eyeball/Napkin Models: Just looking at pricing information draw some conclusions about who lost and made money based on valuation errors.
 - a. Here, we simply array price history for each security to the extent it is available.
 - b. If you’ve read more than one of the previous chapters, you should be able to draw meaningful, actionable conclusions without getting a calculator out.
 - c. After presenting the raw data, we review how you could have applied the techniques and insights shared in this book in your analysis of the pricing patterns.
2. Kayak.com Rapid Models/Carver Deal Term Test—Certificate Plus Press Releases: For use when you have access/rights to little or no detailed company information.
 - a. Using the Certificate of Incorporation and data from press releases, Crunchbase, and secondary marketplaces, such as SecondMarket and Sharespost, we demonstrate how to very quickly generate value indications that will be either equal to or superior to those discussed in the registration statements of Kayak.com and the other case companies in this chapter.

- b. First, we present the unmarked source document (the certificate of incorporation) so you can identify the key characteristics needed to run the Carver Deal Term Test (which we mentioned in Chapter 1 and demonstrated for Facebook) and determine relative value under an M&A scenario.
 - c. After that, we review a version of the certificate that I've marked up, which highlights the key attributes you should have captured to create a quick and accurate Deal Term Test.
 - d. Finally, we run a full set of venture-capital valuation calculations (OPMs, PWERMES, and CWERMES) to compare the outcomes to those presented in the company's MD&A section.
3. In this case, we generate the same models (OPM, PWERM, CWERM) we used in the rapid models, but using the more detailed (and accurate) information that major investors and valuation professionals generally have access to.

This involves using the official sources of “who, what, when, why and how much” for Kayak.com as opposed to just the certificate and publicly released or crowd sourced data, including Kayak's...

- i. Shareholder rights agreement
- ii. Audited financial statements (balance sheets, income statements, etc.) and related notes
- iii. Option plans
- iv. Options grants
- v. Employment agreements
- vi. Founder repurchase agreements
- vii. Restricted stock purchase agreements
- viii. Specific secondary sales
- ix. Debt schedules
- x. Other information as needed

The readily observable inputs to Portfolio Company (PCo.) values were given in Chapter 5, but here they are again to refresh your memory as we use them in the following cases:

- Who (existing VCs were, new investors are, IRRs/stages, GPs)
- What (security/rights they purchased, how does that mix impact their target future returns and present returns/residual value?)
- When (timing of prior financing transactions versus expected timing of future transactions, expected burn rate/runway)
- Why (pro-rata with outside lead? secondary sale?)
- How much (size of the rounds, magnitude of the required returns, implications on future volatility)?

EXHIBIT 7.3 Kayak.com per Share Transaction History Implies Its Own Volatility

Date(s)	Common Stock	Options	Preferred
1/14/2004	\$0.001		
3/14/2004	N/A	\$1.00	\$1.00
11/14/2004		\$1.40	\$2.00
2/14/2005		\$1.40	\$1.40
4/14/2006		\$1.40	\$1.40
5/14/2006		\$2.98	\$2.98
5/14/2007		\$5.00–\$16.50	\$20.73
4/2008	\$15.50		

Source: Liquid Scenarios, Inc.

Kayak.com Eyeball/Napkin Model—Price History

Combining some of the techniques discussed previously, and using nothing more than the history of option, common, and preferred stock pricing below, you should be able to rather quickly see how parties may have lost or made millions as a result of not understanding valuation.

Where do you see opportunities to make (or lose) money based on the pricing in Exhibit 7.3?

Two-Minute Analysis Let's make a quick analysis of the pricing patterns in Exhibit 7.3. Options were grossly overpriced in Q1 2004, by at least 900% based on conventional practices at the time of issuance (which means probably overpriced by 200% to 300% based on prevailing 409A practices today). This is accretive to venture investors and founders, although neither party wants to make money that way, in the vast majority of cases.

Further, the \$2.00 per share February 2005 preferred financing round was price dilutive (a down round) to the November 2004 preferred financing round. Whereas the preferred stockholders would have protection against the dilutive issuance, any option grants would have no official price protection. I say no "official" protection for two reasons. One, the simple fact that investors are participating at the lower price (continuing to fund the company) is a great sign with respect to investment prospects.¹ Similarly, in cases where the impact on grantees is substantial, repricing grants is not uncommon.

¹See the article "Down Rounds + Cramdowns = 2009 Top VC Exits?" at <http://vator.tv/news/2009-08-13-downrounds-cramdowns-2009-s-top-vc-exits>.

Ultimately, the options issued in early 2004 were in the money by at least 15X, which makes it easy for a grantee to forget (or not recognize) that they were overpriced to begin with. That being said, had they been priced in a manner consistent with most other venture-backed companies at the time, they would have been in the money by 150X, that's a 15,000% unrealized gain (think Facebook Series A investment returns) versus a 1500% unrealized gain (think Zynga Series A investment returns). See Exhibit 7.4.

In this particular case, simply looking at the price pattern is enough to draw meaningful and actionable valuation-related conclusions, without answering the question of “Who” or drilling down further into the deal terms. In the next analysis, we go further into the deal terms, which, as we have emphasized in the book, are critical.

As previously demonstrated, there are some conclusions/benefits that can be obtained with little more than pricing history, including:

- Identified opportunity for optionees to earn 15,000% versus 1,500%
- Identified multiple instances of options being grossly overvalued
- Noting the potential impact of a dilutive round on optionees, without protection, versus preferred shareholders, with price protection

From a valuation perspective, a key question would remain as to whether the sophisticated, independent, third-party purchaser of 626,664 shares of Kayak's common stock (the \$15.50 per share paid on 4/2008, as shown in Exhibit 7.3) made the purchase based on “fair market value” versus “investment value.” Although the terminology can be confusing, the semantics can have very real impact on whether that same price should apply to employee stock options or not, as we discussed in Chapters 1 and 5, and discuss further in this chapter.

Kayak.com Rapid Model/Carver Deal Term Test—Certificate Plus Press Releases

The rapid model approach relies on a combination of crowdsourced records of amounts raised (Crunchbase) and certificates of incorporation (via SecondMarket and Sharespost) to apply slightly more refined analysis to the company, such as the Carver Deal Term Test. The Crunchbase data is of course not always accurate. However, it is accessible for free, and if you use its API, you can literally run a year's worth of analysis in several hours.

With that kind of power, you can use its API to build templates and then refine those templates using other data sources, either manually or programmatically depending on what kind of resources are available. For our purpose, this example does it both ways, initially using just the raw

	January 2004	March 2004	November 2004	February 2005
Typical Grant Price	Founders Granted Shares @ Par (\$0.001)	Employees/ Early Hires Granted Options \$0.10/ Sh.	Employees Granted Options \$0.20/ Sh.	Employees Granted Options \$0.28/ Sh.
Value Event	Company Founded	Series A @ \$1.00/ Sh.	Series A-1 @ \$2.00/ Sh.	Series B @ \$1.403/ Sh.
Actual Grant Price	Founders Granted Shares @ Par (\$0.001)	Employees/ Early Hires Granted Options \$1.00/ Sh.	Employees Granted Options \$1.40*/ Sh.	Employees Granted Options \$1.40/ Sh.
Higher Cost (Lower Value) to Employees as a Result of 409A				
	0%	900% Higher	600% Higher	500% Higher

	April 2006	May 2006	December 2007	April 2008
Typical Grant Price	Founders Granted Shares @ Par (\$0.001)	Employees/ Early Hires Granted Options \$0.10/ Sh.	Employees Granted Options \$0.20/ Sh.	Employees Granted Options \$0.28/ Sh.
Value Event	Series B-1 @ \$1.403/ Sh	Series C @ \$2.98/ Sh	Series D @ \$20.00/ Sh.	Common Sold @ \$15.50/ Sh.
Actual Grant Price	Founders Granted Shares @ Par (\$0.001)	Employees/ Early Hires Granted Options \$1.00/ Sh.	Employees Granted Options \$1.40*/ Sh.	Employees Granted Options \$15.50/ Sh.
Higher Cost (Lower Value) to Employees as a Result of 409A				
	0%	900% Higher	600% Higher	500% Higher

EXHIBIT 7.4 Fairness Grid for Kayak.com Option Grants

Source: Liquid Scenarios, Inc.

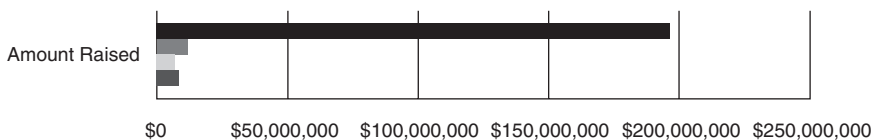
Crunchbase data, a certificate, and a handheld calculator. Then we use a program to see what additional insights we might gain, still recognizing the limitations of the data quality.

Manual Analysis Using Crunchbase Data Academics are skeptical of even premium databases, much less free databases and crowdsourced records like Crunchbase. However, you may recall that to apply the Carver Deal Term Test, the most important variable is the amount raised, in most cases. This tends to be the most accessible variable also, since many companies issue press releases after a round has closed.

With Crunchbase, those releases are put into a structured format that allows good use or comparison, listing amounts raised and the estimated dates the rounds closed. While SEC filings of Form Ds are sometimes useful also, simply getting an approximate amount raised is often enough for someone trying to get a quick but meaningful feel for the valuation dynamics of a given venture-backed company. In addition, as we've demonstrated before, Crunchbase is a quick and easy way to get an answers to the critical question of "Who?"—who financed the company, founded it, competes against it, and works for it are obtainable with pretty good reliability. So, here are the amounts raised generated by Crunchbase for Kayak.com (see Exhibit 7.5).

Without further information, we would generally assume that the company has to sell for at least \$223 million before the common stockholders and optionees participate, as of the December 2007 round based on the information from Crunchbase. That compares to a hurdle rate of

Kayak.com Amounts Raised per Crunchbase



	Amount Raised
■ Dec-07	\$196,000,000
■ May-06	\$11,500,000
■ Dec-04	\$7,000,000
■ Jan-04	\$8,500,000

EXHIBIT 7.5 Crunchbase Amounts Raised per Crunchbase for Kayak.com Valuation

Source: Liquid Scenarios, Inc. via Crunchbase API.

\$27 million prior to the December 2007 round, meaning the company has to sell for at least eight times more than it would have the day before the round in order for common stock to get \$0.01. Crunchbase doesn't track liquidation preferences, but we can easily get those for free from the certificate on SecondMarket or Sharespost or, in some cases, for free from other sites.

Included on the companion Web site to this book at www.wiley.com/go/venturecapitalvaluation is Kayak.com's Certificate of Incorporation in PDF format with a few notes from me. When you consider it alongside the following questions, you will see you can find the answers to the questions accurately and quickly in order to complete the Carver Deal Term Test on the data. It shows that the actual liquidation preference is substantially greater than 1X. The key questions to consider alongside the certificate include:

- What date was the company founded?
- What series of preferred stock are outstanding and what's their liquidation preference?
- Do any of the series have dividend rights?
- What's important to know about those rights?
- Are any of the series "Participating Preferred"?
- Which ones?
- What's the original issue price for each series?
- What's the conversion price for each series?

Finding these elements can be difficult, even for experienced finance executives at venture funds who may see more of these than a typical CFO and certainly more than the typical founder. Here are some more tips about how to find these items and where to look, using the actual Kayak.com certificate that's available on the companion Web site just mentioned.

1. Date company was founded: You can generally find this on the first page of the certificate (although not always). It often references "the original certificate" and a filing date. So, for instance, here's an excerpt of the reference from which we derived the date that Kayak.com was founded from page one of the Certificate of Incorporation:

That the name of this corporation is Kayak Software Corporation, and that this corporation was originally incorporated pursuant to the General Corporation Law on January 14, 2004 under the name Travel Search Company, Inc.;

2. Series of Preferred outstanding: This is almost always found on pages one or two right after the certificate notes the “Classes” of stock (preferred and common, in most cases). All you have to look for are key words like “Series” and “Designated” or “Designation” as we did here with Kayak.com’s certificate:

The Corporation is authorized to have two classes of shares, designated as Common Stock and Preferred Stock. The total number of shares of Common Stock which the Corporation is authorized to issue is 40,000,000 shares, and the par value of each of the shares of Common Stock is one tenth of one cent (\$.001) (the “Common Stock”). The total number of shares of Preferred Stock which the Corporation is authorized to issue is 26,876,384 shares, and the par value of each of the shares of Preferred Stock is one tenth of one cent (\$.001) (the “Preferred Stock”). A total of 6,600,000 shares of Preferred Stock shall be designated the “Series A Convertible Preferred Stock”, a total of 1,176,051 shares of Preferred Stock shall be designated “Series A-1 Convertible Preferred Stock”, a total of 4,989,308 shares of Preferred Stock shall be designated “Series B Convertible Preferred Stock”, a total of 2,138,275 shares of Preferred Stock shall be designated “Series B-1 Convertible Preferred Stock”, a total of 3,897,084 shares of Preferred Stock shall be designated “Series C Convertible Preferred Stock” and a total of 8,075,666 shares of Preferred Stock shall be designated “Series D Convertible Preferred Stock”. The Series A Convertible Preferred Stock and the Series A-1 Convertible Preferred Stock are sometimes referred to herein, collectively, as the “Series A Stock”, the Series B Convertible Preferred Stock and the Series B-1 Convertible Preferred Stock are sometimes referred to herein, collectively, as the “Series B Stock”, the Series A Stock, the Series B Stock, the Series C Convertible Preferred Stock and the Series D Convertible Preferred Stock are sometimes referred to herein, collectively, as the “Convertible Preferred Stock”, and the Convertible Preferred Stock and any other series of Preferred Stock hereinafter authorized are sometimes referred to herein, collectively, as the “Preferred Stock”.

3. What’s their (preferred series) liquidation preference? This usually comes after the dividends are described in a certificate, but all you have to look or search for are keywords like “liquidation,” “liquidation preference,” “original issue.” The words you want to be on the lookout for are “multiplied by,” “plus,” and “the remaining.” Here’s the example from Kayak.com. You’ll notice the word “multiplied by” followed by

“1.5,” which means that preferred shareholders will get at least 1.5X their money back before common shareholders, including optionees, start to participate. In addition, the preferred shareholders get their cumulative dividends. Fortunately for common holders and optionees, the liquidation preference multiple (1.5) is not applied to the dividends also, which you will sometimes see in certain transactions particularly in some regions and industries. From a preferred investor’s valuation standpoint, you can also see that each of these securities rank equally with respect to its liquidation preference based on the proportion of capital (cash) it provided (*pari passu*). This, of course, is not always the case. From a pure liquidation standpoint, the impact on common stock proceeds in a liquidity event is often the same regardless of where the seniority, or rank, of various classes of preferred. However, from a value perspective there can be differences, since the optionality and breakpoints are different if all preferred series are *pari passu* with respect to liquidation preference versus if certain series are junior to others in the order of their claims. Here’s an excerpt from that portion of the Kayak.com certificate.

Upon any liquidation, dissolution or winding up of the Corporation (a “Liquidation Event”), whether voluntary or involuntary, the holders of the shares of Convertible Preferred Stock shall first be entitled, before any distribution or payment is made upon any stock ranking on liquidation junior to the Convertible Preferred Stock (including, without limitation, the Common Stock), to be paid (a) an amount per share of Series A Convertible Preferred Stock equal to (i) \$1.00 per share of Series A Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse stock split or similar event affecting the Series A Convertible Preferred Stock, the “Series A Original Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series A Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series A Convertible Preferred Stock being sometimes referred to as the “Series A Liquidation Preference Payment” and with respect to all shares of Series A Convertible Preferred Stock being sometimes referred to as the “Series A Liquidation Preference Payments”), (b) an amount per share of Series A-1 Convertible Preferred Stock equal to (i) \$1.403 per share of Series A-1 Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse

stock split or similar event affecting the Series A-1 Convertible Preferred Stock, the “Series A-1 Original Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series A-1 Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series A-1 Convertible Preferred Stock being sometimes referred to as the “Series A-1 Liquidation Preference Payment” and with respect to all shares of Series A-1 Convertible Preferred Stock being sometimes referred to as the “Series A-1 Liquidation Preference Payments”), (c) an amount per share of Series B Convertible Preferred Stock equal to (i) \$1.403 per share of Series B Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse stock split or similar event affecting the Series B Convertible Preferred Stock, the “Series B Original Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series B Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series B Convertible Preferred Stock being sometimes referred to as the “Series B Liquidation Preference Payment” and with respect to all shares of Series B Convertible Preferred Stock being sometimes referred to as the “Series B Liquidation Preference Payments”), (d) an amount per share of Series B-1 Convertible Preferred Stock equal to (i) \$1.403 per share of Series B-1 Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse stock split or similar event affecting the Series B-1 Convertible Preferred Stock, the “Series B-1 Original Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series B-1 Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series B-1 Convertible Preferred Stock being sometimes referred to as the “Series B-1 Liquidation Preference Payment” and with respect to all shares of Series B-1 Convertible Preferred Stock being sometimes referred to as the “Series B-1 Liquidation Preference Payments”), (e) an amount per share of Series C Convertible Preferred Stock equal to (i) \$2.983 per share of Series C Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse stock split or similar event affecting the Series C Convertible Preferred Stock, the “Series C Original

Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series C Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series C Convertible Preferred Stock being sometimes referred to as the “Series C Liquidation Preference Payment” and with respect to all shares of Series C Convertible Preferred Stock being sometimes referred to as the “Series C Liquidation Preference Payments”) and (f) an amount per share of Series D Convertible Preferred Stock equal to (i) \$20.727 per share of Series D Convertible Preferred Stock (as adjusted from time to time to reflect any stock split, stock dividend, reverse stock split or similar event affecting the Series D Convertible Preferred Stock, the “Series D Original Issue Price”) multiplied by 1.5, plus (ii) an amount equal to all Series D Accruing Dividends per share unpaid thereon (whether or not declared) and any other dividends per share declared but unpaid thereon (such aggregate amount described in clauses (i) and (ii) payable with respect to one share of Series D Convertible Preferred Stock being sometimes referred to as the “Series D Liquidation Preference Payment” and with respect to all shares of Series D Convertible Preferred Stock being sometimes referred to as the “Series D Liquidation Preference Payments”). The Series A Liquidation Preference Payments, the Series A-1 Liquidation Preference Payments, the Series B Liquidation Preference Payments, the Series B-1 Liquidation Preference Payments, the Series C.

Liquidation Preference Payments and the Series D Liquidation Preference Payments are sometimes referred to collectively herein as the “Liquidation Preference Payments”. If upon such Liquidation Event, whether voluntary or involuntary, the assets to be distributed among the holders of Convertible Preferred Stock shall be insufficient to permit payment in full to the holders of Convertible Preferred Stock of the Liquidation Preference Payments, then the entire assets of the Corporation to be so distributed shall be distributed ratably among the holders of Convertible Preferred Stock in proportion to the portion of the aggregate Liquidation Preference Payments which each such holder would have received on the date of such Liquidation Event had the Liquidation Preference Payments been paid in full.

4. Do any of the series have dividend rights? In many cases, the answer to this is found on the second or third page of the certificate, right after authorized classes of stock and the series designations are noted. In addition to the obvious key word to look for, “dividends,” the more

important ones to look for, for all investors, are the words “cumulative,” “accrue,” “accruing,” and “accrued.” It’s also worth noting if cumulative dividends, when applicable, are to be paid in cash or “in kind.” Dividends paid in kind, or “PIK” dividends, can seem rather innocuous in the world of venture finance compared to their impact in the world of private equity finance. However, I’ve personally seen many cases where parties entitled to PIK dividends were not clear on how those accrued benefits (or claims on equity) were to convert into shares of the company’s stock. If a company has had a large run up in value and has an offer on the table, the difference between converting at the Original Issue Price of the underlying security versus converting based on the proceeds per share payable to the underlying security can make a big difference to every investor and employee. A portion of Kayak.com’s dividend clause is below.

In addition to the dividends required to be paid to the holders of Convertible Preferred Stock pursuant to subparagraph 2A, (i) from and after the date of the issuance of any shares of Series A Convertible Preferred Stock, the holders of such shares of the Series A Convertible Preferred Stock shall be entitled to receive, out of funds legally available therefore, dividends at the rate per annum equal to 6% of the Series A Original Issue Price (as defined subparagraph 3A) per share (the “Series A Accruing Dividends”), (ii) from and after the date of the issuance of any shares of Series A-1 Convertible Preferred Stock, the holders of such shares of the Series A-1 Convertible Preferred Stock shall be entitled to receive, out of funds legally available therefore, dividends at the rate per annum equal to 6% of the Series A-1 Original Issue Price (as defined subparagraph 3A) per share (the “Series A-1 Accruing Dividends”), (iii) from and after the date of the issuance of any shares of Series B Convertible Preferred Stock, the holders of such shares of the Series B Convertible Preferred Stock shall be entitled to receive, out of funds legally available therefore, dividends at the rate per annum equal to 6% of the Series B Original Issue Price (as defined subparagraph 3A) per share (the “Series B Accruing Dividends”), (iv) from and after the date of the issuance of any shares of Series B-1 Convertible Preferred Stock, the holders of such shares of the Series B-1 Convertible Preferred Stock shall be entitled to receive, out of funds legally available therefore, dividends at the rate per annum equal to 6% of the Series B-1 Original Issue Price . . .

5. Are any of the series “Participating Preferred”? This is usually found at the end of the liquidation preference clause. You will note that you

won't necessarily see it explicitly stated as "participating preferred" in the certificate, although you will generally see it referred to such in a term sheet. For that reason, the keyword combination to look for is "remaining" or "remaining assets," since that generally precedes the explanation of what happens to proceeds after liquidation preferences are paid. If "remaining assets" are said to be distributed to common stock, with no mention of preferred stock, then the preferred is probably not participating preferred. If remaining assets are said to be distributed to both common stock and preferred stock, then it's some variety of participating preferred (either capped or uncapped). Examples of certificates that have capped and uncapped participating preferred are at the companion Web site referred to earlier. The excerpt that follows from Kayak.com's certificate shows its preferred to be non-participating preferred.

Upon any Liquidation Event, immediately after the holders of Convertible Preferred Stock shall have been paid in full the Liquidation Preference Payments, the remaining net assets of the Corporation available for distribution shall be distributed ratably among the holders of the then outstanding shares of Common Stock in proportion to the number of shares of Common Stock held by each holder on the date of such Liquidation Event.

6. What's the original issue price for each series? As you've seen from the preceding items, the original issue price per share plays a key role in how dividends are accrued, if applicable, how much is paid out per share as a liquidation preference, and perhaps most important, in many cases, how many shares of common stock will be reserved to enable conversion of the preferred stock to satisfy the conversion ratio in effect at the time of a liquidity event. To better understand how this relates to any given company, one has to look at the adjusted price per share, conversion price per share, and anti-dilution-related clauses.
7. What's the conversion price for each series? The important thing to remember with respect to conversion price for each series is that $\text{deemed original issue price} / \text{adjusted conversion price} = \text{conversion ratio}$ (in most cases). The lower the conversion price, as a percentage of the original issue price, the higher the conversion ratio and therefore the greater dilution to owners of other series or classes not benefiting from the adjustment. The primary reason for an adjustment to the conversion price is a dilutive issuance, such as a "down round." A dilutive issuance is an issuance of securities at a price per share less than the adjusted conversion price in effect at that time (in most cases). The clause below relates to the mechanics of adjusting the price (weighted average broad

anti-dilution), whereas additional clauses in the copy at the companion website reference how and when the adjustment is triggered.

Adjustment of Applicable Conversion Price Upon Issuance of Common Stock. Except as provided in subparagraphs 5E and 5F, if and whenever the Corporation shall issue or sell, or is, in accordance with subparagraphs 5D(1) through 5D(7), deemed to have issued or sold, any shares of Common Stock for a consideration per share less than an Applicable Conversion Price in effect immediately prior to the time of such issue or sale, then, forthwith upon such issue or sale, such Applicable Conversion Price shall be reduced to the price determined by dividing (a) an amount equal to the sum of (i) the number of shares of Common Stock outstanding immediately prior to such issue or sale (including, for this purpose, (i) shares of Common Stock issuable upon conversion of the Convertible Preferred Stock and (ii) shares of Common Stock issuable upon the exercise of outstanding Options (excluding unvested Options)) multiplied by such Applicable Conversion Price in effect immediately prior to such adjustment and (ii) the consideration, if any, received by the Corporation upon such issue or sale, by (b) an amount equal to the sum of (i) the total number of shares of Common Stock outstanding immediately prior to such issue or sale (including, for this purpose, (i) shares of Common Stock issuable upon conversion of the Convertible Preferred Stock and (ii) shares of Common Stock issuable upon the exercise of outstanding Options (excluding unvested Options)) and (ii) the total number of shares of Common Stock issuable in such issue or sale. For purposes of this subparagraph 5D, the following subparagraphs 5D(1) through 5D(7) shall also be applicable:

Finding Profit Opportunities without a Formal Cap Table At the beginning of this case, you were able to estimate that the earliest optionees received grants that were overvalued by as much as 900%. You were able to do this without a capitalization table, without access to the company's income statement, and, for the most part, without even using a calculator. If the parties receiving the overvalued, or in this case overpriced, grants applied the same very basic techniques, would they have made different decisions? That's not clear; every situation is different and different parties have varying degrees of bargaining power as an enterprise moves from startup to a thriving concern. One thing is clear already, simply from our analysis of the pricing activity. Had those parties been granted options at a fair price, they would have gains of millions more.

The next parts of our analysis of this case apply more specific measurements to turn the “millions” into amounts per share. After that, the analysis goes even further and compares the conclusions reached by investors and valuation professionals to those you were able to reach by applying the techniques previously covered in this book.

Applying the Carver Deal Term Test to Kayak.com You can quickly get a more specific idea of relative values for the different securities a venture-backed company has issued by applying the Carver Deal Term Test. As part of the name implies, you have to have some knowledge of the deal terms in order to draw meaningful conclusions from the test. However, one of the most important valuation variables for venture-backed companies, as we’ve mentioned time and time again, is the amount raised, or size of each financing round. The analysis that follows verifies this point again by applying the Deal Term Test to Kayak using the raw Crunchbase data without using the inputs from the Kayak Certificate of Incorporation. Then it compares those outcomes to the Carver Deal Term Test results we generate after getting the Kayak certificate. If you’re skeptical of the potential results, which you should be, keep in mind that this test has uncovered millions in value without even looking at the company’s Certificate of Incorporation.

The defaults used in the deal term test based solely on Crunchbase reported data were that the most recent round of financing was senior to the prior, and so forth (no *pari passu* liquidation preferences). The defaults here also assume 1.0X liquidation preferences and no cumulative dividends. These are the West Coast defaults, but for many East Coast deals in the Internet space they tend to be close. See Exhibit 7.6.

The 1.5X multiple liquidation preference, which is not the typical deal term, results in a sizable difference in the claims to Kayak’s proceeds under an M&A scenario. Similarly, Kayak’s Certificate of Incorporation indicated cumulative dividends at a rate of 6% per year for the Series A, A-1, B, B-1, C, and D. This means that a portion of the preferred claim grows each and every year, meaning that the hurdle rate for common stock to participate in any sale proceeds also grows. If the hurdle rate for common stock participation grows, the relative value of common stock decreases a bit from what it would have otherwise been if the company were acquired or merged, as opposed to going public.

To get a feel for the relative values of the different classes of stock under an M&A scenario, we put those variables into the Carver Deal Term Test for both the raw Crunchbase data and the data we got from Kayak.com’s certificate and built some charts to allow further comparisons of the respective conclusions. Exhibit 7.7 shows the raw Crunchbase data with the amount raised and date closed only; no certificate data from 12/31/2010.

EXHIBIT 7.6 Crunchbase Default Assumptions versus Details from Kayak.com Articles

My Defaults with Crunchbase Data (Not Incorporating Actual Certificate)

	Amount Raised	Rank/Seniority	Liquidation Preference	Participation	Participation Cap	Dividends
Series A	\$8,500,000	4th	x1.00	No	N/A	No
Series B	\$7,000,000	3rd	x1.00	No	N/A	No
Series C	\$11,500,000	2nd	x1.00	No	N/A	No
Series D	\$196,000,000	1st	x1.00	No	N/A	No

Terms from Actual Certificate of Incorporation

	Amount Raised	Rank/Seniority	Liquidation Preference	Participation	Participation Cap	Dividends
Series A	\$6,600,000	6th	x1.50	No	N/A	6.00%
Series A-1	\$1,650,000	5th	x1.50	No	N/A	6.00%
Series B	\$6,999,999	4th	x1.50	No	N/A	6.00%
Series B-1	\$3,000,000	3rd	x1.50	No	N/A	6.00%
Series C	\$11,625,002	2nd	x1.50	No	N/A	6.00%
Series D	\$167,384,329	1st	x1.50	No	N/A	6.00%

Source: Liquid Scenarios, Inc., Crunchbase API, SEC Filings.

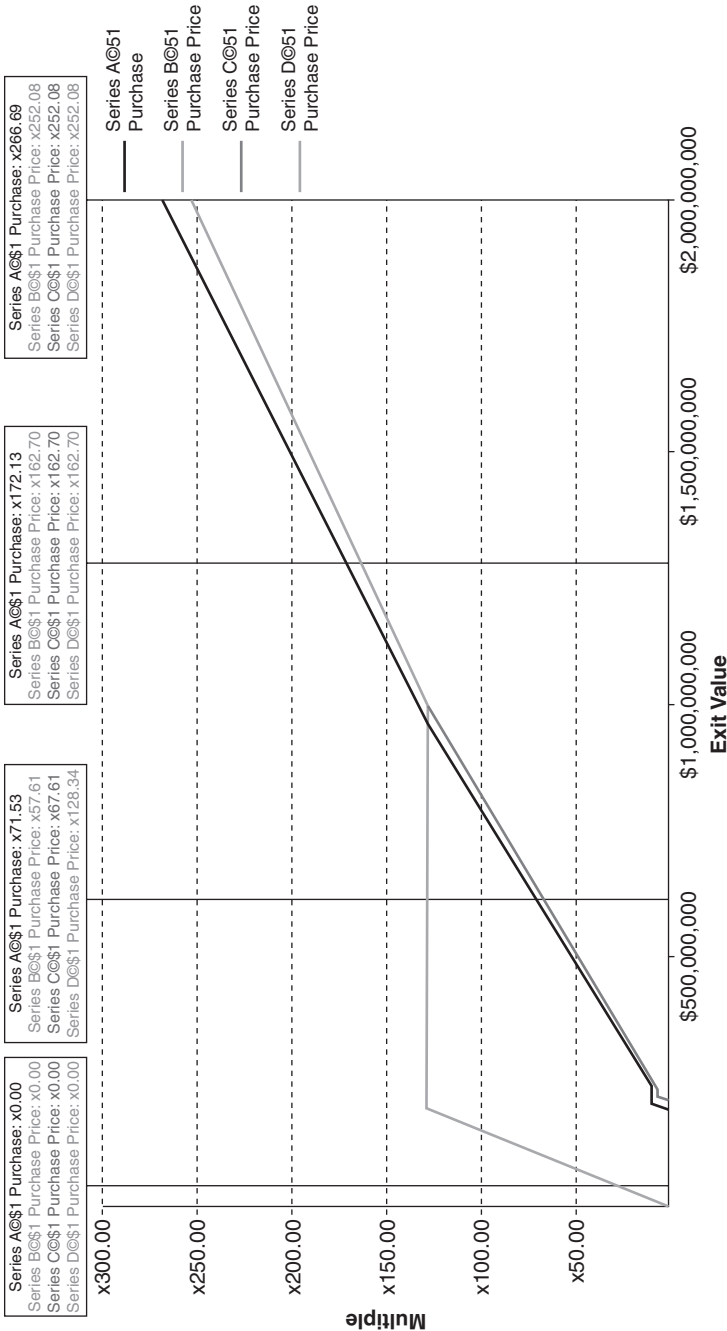


EXHIBIT 7.7 Carver Deal Term Test Using Raw Crunchbase Data
 Source: Liquid Scenarios, Inc.

As you might expect with a \$196 million dollar round of financing, which of course is rare for venture-funded companies, the last round is the most valuable to a purchaser that can acquire any series at a price of \$1 per share, which is an assumption of the Carver Deal Term Test. The more surprising outcome here is that the Series A financing is the second most valuable security under an M&A scenario. Based on amounts raised, our default formula assumed a down round occurred, based on relative round sizes somewhere between Series A and Series C, and triggered anti-dilution provisions. The adjusted conversion price that accompanies the anti-dilution protection means that additional proceeds, on a per share basis, would be realized at amounts above the liquidation preference, which here we assumed to be 1X as a default. Exhibit 7.8 shows adjusted Crunchbase data, improved with certificate data from December 31, 2010.

Adding data from the certificate of incorporation on the companion Web site gives us the payout diagram in Exhibit 7.8 for each of our \$1 per share purchases of Series A, Series B, Series C, Series D, assuming we don't adjust the series names to match the certificate.

Using Blind (No Capitalization Table, No Detailed Information) Deal Term Test Results Despite the obvious benefit of being able to tell how different classes of securities fare at different exit values, as a return multiple on an equal investment at an equal purchase price per share, there are additional questions that remain. These questions include:

1. What additional information did we get from deal term test versus the list of transaction prices over time?
2. What additional information did we get from the certificate versus the list of prices?
3. How does this put us in a better position to increase gains/minimize losses?

In order to address the first question, we need to go back to our financial hammer metaphor of the discount formula. Assume that we built a perfect discount rate that was matched exactly to the risks of Kayak at the point of our analysis, based on future period expected benefits. Our financial hammer only works if we have nails, the benefit stream, which are most often some kind of future expected cash flows of course. Were there any explicit benefit streams in the list of transaction prices we presented in Exhibit 7.3?

So, if we assume that each of the transaction prices represents an increase in at least some security's value and most likely an increase in the total equity value of the company, then yes, this is a benefit stream we could apply a discount rate to and get a result. The better question, however, is

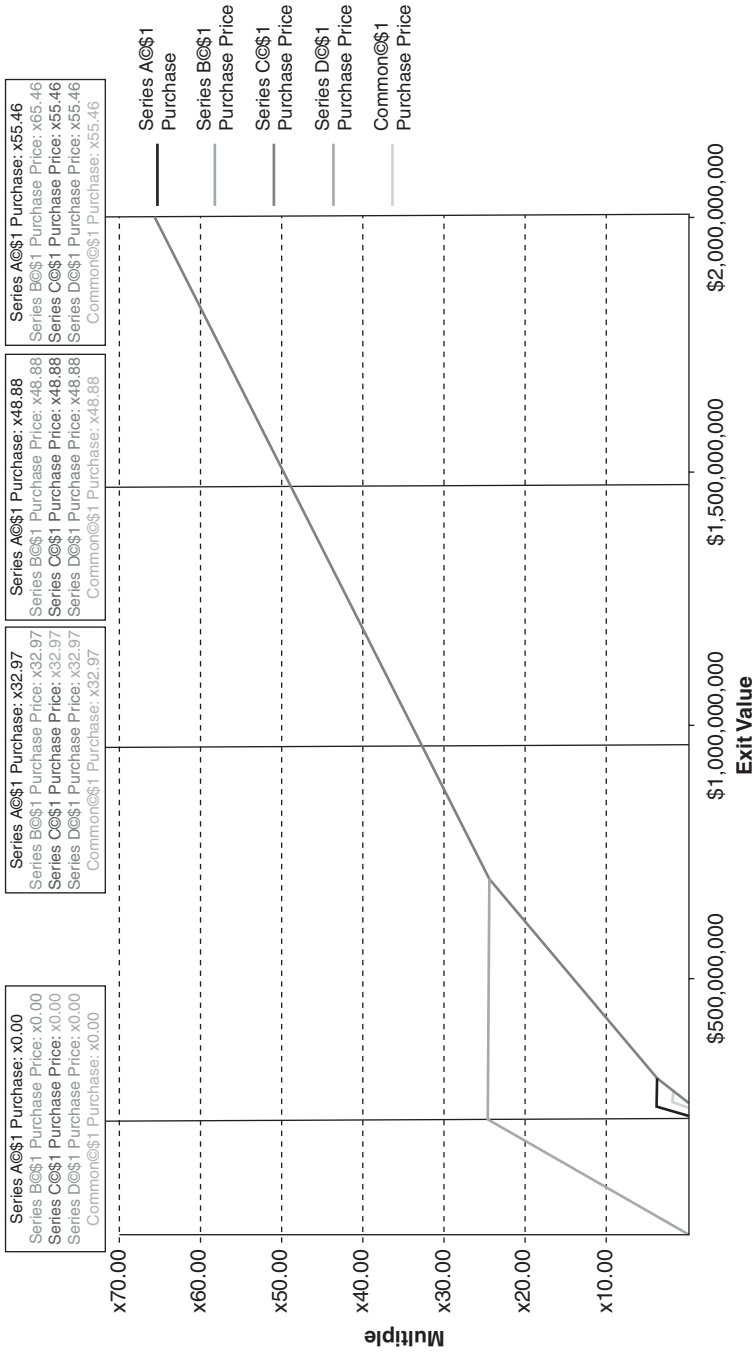


EXHIBIT 7.8 Carver Deal Term Test Using Adjusted Crunchbase Data
 Source: Liquid Scenarios, Inc.

the quality of the results we get. Let's assume that you receive the options at \$1.00 per share that we identified as being overpriced even without applying the Carver Deal Term Test. We could simply ignore the grant price for a moment and apply our financial hammer to one of the future transaction prices, for instance the May 2006 Series C original issue price of \$2.98 per share (the assumed benefit stream), discounting back to the date the options were granted (March 2004, so about 2.167 years) to give us a present value. Assume that the perfect discount rate of 40% has been determined, taking into account the risk-free rate, equity risk premium, industry risk premium, size premium, and company-specific risk premiums. This gives us a present value of approximately \$1.44 per share, calculated as follows:

$$(1 + r)^{-t}C = PV$$

$$(1 + 40\%)^{-2.167} * \$2.98 = \$1.44$$

Now, if we instead apply the same "perfect" discount rate to actual cash flow per share the common stock would get if the preferred stock, any of the preferred stock, was entitled to \$2.98 per share in proceeds, we end up with zero, or \$0.

If Series X Preferred Stock Proceeds = \$2.98, Then Common Proceeds = \$0

We can't get this information from a simple list of pricing from period to period across different classes of stock. We need some kind of a waterfall. Even an approximate waterfall will give us a better value indication.

Generating a Waterfall and the Black-Scholes Model So if we could have seen the future perfectly on March 2004 and envisioned a scenario where Kayak.com would sell for a price that generated \$2.98 per share for preferred stockholders, no "rational" or reasonable investor, other than a preferred stockholder, would pay \$0.00001 for Kayak.com common. If, instead, we agreed that \$2.98 was one potential value per share the preferred stockholders could realize by May 2006, \$6.00 per share was another potential value, and \$1.00 per share was yet another, it's possible that at \$6.00 per share common stock gets some proceeds. If there's a possibility that the common stock will get some of the proceeds in an acquisition generating \$6.00 per share in proceeds, then it's also possible (depending on the option strike price) that the options will get some of the proceeds.

With the Carver Deal Term Test, which is a simplified way of generating an easy-to-use waterfall, we can get answers to some of these questions. Simply looking at the list of prices doesn't give us specific information about

relative cash flow rights for different classes of stock, largely because we don't know the amounts that were raised and other details about the different series. Without information about the range of possibilities for each security we want to value, it's impossible to make a credible estimate as to what those possibilities are worth today. The same basic information we end up with, which is a pretty good approximation of breakpoints, or company sale/proceed values at which the slope or behavior of a security's payout line changes, can be used to measure the cost or value of uncertainty. One way of doing this, as we've mentioned before, is using an option-pricing method, as we've done with the Black-Scholes models throughout this book, including in Chapters 1, 4, 5, and 6.

The Black-Scholes formula, like other approaches that assume a standard normal (symmetrical) distribution of prices, has been criticized by many in favor of skewed (asymmetrical) distributions. However, it's important to keep in mind that inputs to the formula begin with a lognormal distribution of returns, which reflect the reality that in most venture investments, the amount at risk is limited to the amount that's investment. Other perceived shortcomings of using Black-Scholes include the failure to account for a greater frequency of extreme observations (kurtosis) as noted earlier.

Despite these challenges, Black-Scholes represents a simple, verifiable, and relatively objective way to reflect uncertainty while looking for clues, or indications, of today's value for a venture-backed company security. Since reality is that in almost every case the exact price a company will fetch in an acquisition is unknown until the date it sells, you can attempt to reflect that risk with a higher discount rate, an option-pricing model (with an appropriate input for volatility) or a combination of those (as done with the CWERM models previously). In fact, in some cases the exact proceeds sellers will realize remain unknown even after the company has been sold, due to earnouts or contingent consideration. These same techniques are appropriate when tempering expectations by modeling uncertainty for earnouts.

Since these relationships are a lot for us to think about simultaneously, and only intuitive for statisticians or others that deal with the calculations regularly, Exhibits 7.9 and 7.10 show a few of the illustrations used to convey these concepts.

Keeping in mind that volatility, for our purposes, is equal to sigma, then the higher our volatility input, the more possible values we can expect in the future for our shares, enterprise value, or other underlying "asset" we are trying to get a value indication for. Since the first breakpoint is almost always \$0 to some number less than the first liquidation preference, or debt obligation, the value we end up with for $N(d1)$ and $N(d2)$ should

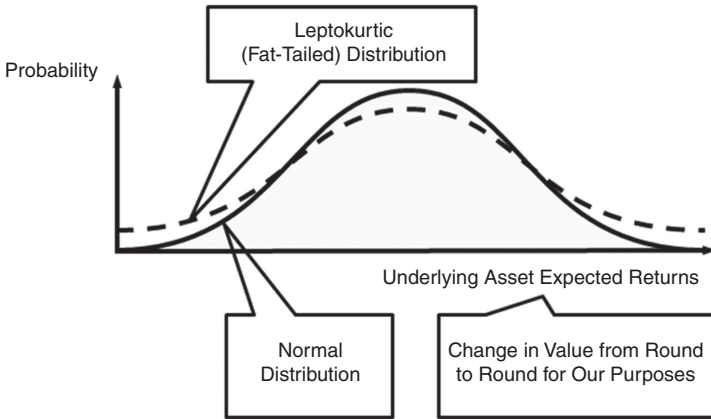


EXHIBIT 7.9 Fat-Tailed Distributions versus Standard Normal Distributions

Source: Liquid Scenarios, Inc.

almost always be one (1). I say almost because if the time horizon, t , is equal to zero we will of course get a value of 0.50 for both $N(d1)$ and $N(d2)$, since we have a standard normal distribution with absolutely no time value.

This characteristic, $N(d1)$ and $N(d2)$ being equal to one (1) for the first breakpoint, \$0, should occur whether we use the ubiquitously low volatilities you see in most 409A valuations and MD&A disclosures, or

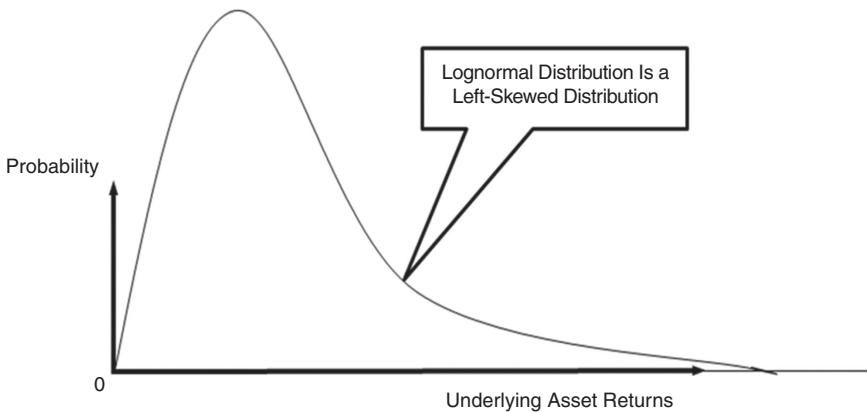


EXHIBIT 7.10 Lognormal Distribution

Source: Liquid Scenarios, Inc.

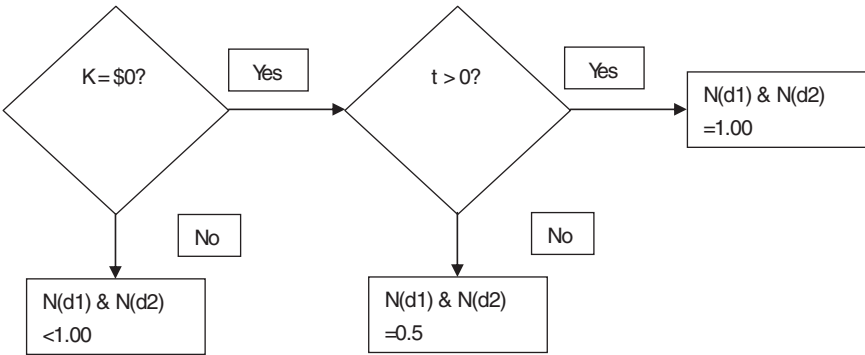


EXHIBIT 7.11 Kayak.com N(d1) N(d2) OPM Characteristics
 Source: Liquid Scenarios, Inc.

if we use volatilities that are more consistent with actual venture-funded companies, either using historical averages (as Cochrane 2005, Michael Ewing 2010, and others have) of around 109% or improved observations of venture-funded companies (which is closer to some of the ranges we’ve proposed in other cases in this book). Exhibit 7.11 shows key N(d1) and N(d2) characteristics for the first breakpoint where the strike price is \$0.

This relationship is illustrated by doing a backsolve for the \$2.98 Series C price. Another way to explain the backsolve method is as matching the Series C price paid on May 2006 for Kayak.com preferred to an equal OPM value for Kayak.com that implies an overall enterprise value (that our formulas solve for) composed of the sum of each securities value based on rights to proceeds, adjusted for uncertainty using an option pricing model, Black-Scholes in this case. We begin by using a volatility in the range of what companies were disclosing around 2006, then the 110% volatility observed by others in the studies we mentioned, followed by the 2X disclosed volatility shortcut mentioned and finally a volatility buildup is also suggested as an alternative means of objectively building up an appropriate volatility in the absence of data or time. Initially, we assume a time horizon (τ) of five (5) years for each of the volatilities and apply a capitalization date as of December 31, 2010, assuming no future rounds of financing. The least influential variable, the risk-free rate, has been set at 3%.

In addition to N(d1) and N(d2) always being equal to 1, assuming the backsolve method is used, the following characteristics should generally be present in the first breakpoint call value:

$$K * e^{-rt} = \$0$$

This makes sense, since the strike price of the first breakpoint is almost always \$0. Also, it's important to recall that $K * e^{-rt}$ can be thought of in the following ways if it helps you remember the role it plays in helping us take uncertainty into account when generating a value indication. $K * e^{-rt}$ is effectively getting the present value of a zero coupon bond with a face value equal to the first breakpoint (the strike price, K).

The constant e (approximately 2.1775) to the r (risk-free rate in this case) * t (time or term, in years for this example) should bear similarity to the financial hammer mentioned throughout the book, since that's what it is. This term discounts the cash needed to exercise the option (an option on the first breakpoint for Kayak.com with a strike price of \$0) at the continuously compounded risk-free rate. Although it's obvious to almost everyone that regardless of what rate we discount at, if the strike price is \$0, the present value of the \$0 we will need to exercise is also \$0. However, if you use this formula in practice, or someone that works with or for you uses it, you can easily check whether the model is internally consistent by plugging different EV, volatility, or other values into the first breakpoint. The other reason this is of importance is because it speaks to the assumptions concerning return and price distributions and how they relate to the implied probabilities that will determine value indications this technique generates.

We care about $N(d_2)$ because it tells us the chance, or probability based on the formula, that C (the call option, in this case, the \$0 call on the first breakpoint of Kayak.com) will be in the money and, therefore, exercised. If we don't have to pay a penny to exercise the option on the first call option on Kayak's equity, we will of course exercise, so there's a 100% chance that option is in the money, since the underlying asset (the first breakpoint) can't be worth anything less than zero. If we've included some straight debt in our Kayak.com model, then we might be looking at a call on both the equity and the debt, with the debt generally representing the first breakpoint. The important elements of $N(d_2)$, again, are as follows (see Exhibit 7.12):

1. We can't solve for (d_2) until we've solved for (d_1) .
2. Once we've solved for (d_1) , solving for (d_2) is easy:
 - a. Just multiply the square root of t (our time horizon) by volatility (sigma or standard deviation)
 - b. Subtract the result (a) from d_1 to get d_2 . That's it.
 - c. Since we're subtracting the square root of $t * \text{volatility}$, we will end up with negative outcomes for some of our breakpoints, or call options. This is fine, since when we apply a standard normal distribution (N) to (d_2) we end up with a positive number less than 1, of course.

In this iteration, we used the same backsolved total equity value, approximately \$60.2 million. This total equity value indication was arrived at

EXHIBIT 7.12 Kayak.com OPM Model Version One

	Series C Liq. Pref.	Series C Liq. Pref.	Series C Liq. Pref.	Series C Liq. Pref.
	@60%	@120%	@109%	@ 1.81X 60%
Breakpoints	Breakpoint 1	Breakpoint 1	Breakpoint 1	Breakpoint 1
Strike Price (K)	\$0	\$0	\$0	\$0
BEV Estimate (S)	\$60,231,839	\$60,231,839	\$60,231,839	\$60,231,839
Breakpoint Call Value	\$12,321,154	\$4,983,471	\$6,107,971	\$6,107,971
Call Value at Floor	\$60,231,839	\$60,231,839	\$60,231,839	\$60,231,839
Term in Years (t)	5.00	5.00	5.00	5.00
Risk-Free Rate (r)	3.00%	3.00%	3.00%	3.00%
Volatility	60.00%	120.00%	109.00%	109.00%
d1	21.00	11.51	12.41	12.41
d2	19.66	8.82	9.97	9.97
N(d1)	1.00	1.00	1.00	1.00
N(d2)	1.00	1.00	1.00	1.00
S * N(d1)	\$60,231,839	\$60,231,839	\$60,231,839	\$60,231,839
K * e ^{-rt}	\$0	\$0	\$0	\$0
Times N(d2)	\$0	\$0	\$0	\$0
C Value at Ceiling	\$47,910,685	\$55,248,368	\$54,123,868	\$54,123,868

Source: Liquid Scenarios, Inc.

by using the \$2.98 Series C price with a volatility factor of 120%. As you can see in Exhibit 7.12, with the same assumed total equity value, N(d1) and N(d2) both equal one (1), suggesting a 100% risk-adjusted probability that the present value (discounted at the risk-free, or risk-neutral, rate) of S, with S equal to the total equity value of \$60.2MM in this case, will be greater than the strike price K (\$0) for this breakpoint between now and the time horizon t (5 years) or expiration of the option.

However, notice that despite equal N(d1) and N(d2) for each scenario above, the differences in volatility result in a different value for the same breakpoint. At the lowest volatility input in Exhibit 7.12, 60%, we end up with the highest value for the first breakpoint, approximately \$12.5 million, or around 20% of the total indicated equity value. At the highest volatility input in the table, 120% volatility, we end up with the lowest value for the first breakpoint at just under \$5 million, or about 8% of total equity value we input. Finally, the middle value of the three volatilities, 109% volatility, coincidentally matches the risk-adjusted volatility from our volatility build up. It allocated around 10% of the \$60.2 million, or approximately \$6.1 million, to Kayak's first breakpoint. This exercise would appear to suggest that the

higher the volatility input, the lower the value of the first breakpoint for a venture-backed company. Before getting into that further, we can easily test that theory by backsolving for the Series C price of \$2.98 for each of the respective volatilities, as opposed to just using the same backsolved indicated value we generated with the 60% volatility that was often cited by similar companies in 2006.

So naturally, the ability of our discount rate to indicate a present value is only as good as the quality of our projected benefit stream, or future cash flows to investors. In most of our cases, the most important future cash flows are in the form of capital appreciation, as opposed to periodic earnings that could be distributed to holders as a cash dividend, which you can see if you look back at Exhibit 7.3.

The likelihood, risk, or probability of realizing those future cash flows can be reflected in our discount rate, with a higher discount rate for a lower probability of realizing the cash flow and a lower discount rate for a higher perceived likelihood of realizing the cash flows. As previously mentioned, the relationship between higher perceived risk and higher required return is intuitive not only to business people but to anyone who's tried to accomplish something, such as trying to break a record in a long-distance race or investing heavily in an ad campaign or capital outlay for a small business. The risk increases the moment you decide you want better results or returns.

We can also assign, or otherwise generate, probability estimates for a limited number of scenarios and weight each potential outcome to arrive at a future benefit stream to discount back to today. Variations of this approach are referred to as the probability weighted return method (PWERM), risk-adjusted net present value (rNPV or eNPV). Even the Chicago or so-called VC methods of valuation involve applying probabilities to scenarios and weighting the outcome to arrive at a present value.

But going back to the reality that we don't know exactly what price a company will sell at, or even the exact price a company's next round of financing will command without a means of quickly and verifiably distributing the potential outcomes around some kind of an average, we would have to create a large number of discrete scenarios in order to reflect every possible future benefit stream around a mean. The option-pricing method is an efficient means to acquire this perspective and insight, without the cost (and additional subjectivity) of modeling hundreds or thousands of DCF scenarios explicitly or applying a Monte Carlo analysis that's better suited for other finance problems than venture payoff scenarios.

Reconciling with the Mandelbaum Factors Now that we've briefly examined the calculation of a discount for lack of marketability, DLOM, based

on the protective put, we should reconcile that with the Mandelbaum factors if we are going to use the results for a 409A valuation. The criteria are the following:

- Private versus public sales of the company's stock (public sales decrease discount)
- Financial statement analysis (stronger the position, lower the marketability discount rate, in general)
- Dividend policy (if there is one, then you would end up with a lower marketability discount)
- Nature of the company, history, position in the industry, and its economic outlook (better it is, the lower the marketability discount should be, in theory)
- Management team (stronger it is, the lower the marketability discount should be, relatively)
- Amount of control in the transferred shares (shareholder rights agreements giving little if any rights to common holders, for instance, would justify an increased marketability discount)
- Restrictions on transferability of stock (more restrictive, higher discount for lack of marketability)

Unless you include Christopher Columbus backers, King Ferdinand and Queen Isabella of Spain, the theory regarding discounts for lack of control predates the first real venture-capital fund in the United States, which would be ARD, founded after World War II, as we discussed earlier in this book. The *Cravens v. Welch* 1935 case most cited to explain why a minority discount, or “discount for lack of control” (or DLOC, for short), is applicable, includes the following wisdom: “Minority stock interests in a ‘closed’ corporation are usually worth much less than the proportionate share of the assets which they attract.”

Like Mandelbaum, this case and quote are often cited in valuations of privately held companies. However, often in valuation reports for venture-backed companies (either for 409A/FAS123R [Topic 820] or for FAS 157 [Topic 820]), it's rarely encountered. This firsthand experience is reinforced by both the venture-backed IPO cases in this book and the overwhelming majority of venture-backed IPOs that have occurred since stock-based compensation MD&A disclosures concerning 409A/FAS123R valuations started. There's a variety of explanations for why DLOCs are absent from the venture-backed company valuation analysis, but before discussing some of those with valuation experts in Chapter 8 and 9, be forewarned that they can easily become internally inconsistent and complicated.

IMPORTANT QUESTIONS TO ASK

For readers who are skipping around in this book, or readers who simply need a refresher on certain topics, some of my notes follow regarding the first case in this section, which was pulled from Kayak.com’s MD&A section. As noted before, without a detailed capitalization table, it can be difficult to get an exact breakdown of “who.” As in previous examples, let’s use three free sources where this data can be gathered:

1. Crunchbase
2. Press releases and RSS feeds
3. Web sites of investors/funds

Asking “Who?”

Exhibit 7.13 illustrates the strong background of Kayak.com’s founding management team. For a traditional business, these advantages would most often be reflected in a lower company-specific risk premium. As discussed previously, if we were to build a volatility rate, similar to the way a traditional valuation analysis would call for building a discount rate, we would actually increase the volatility based on the strength of management, since that would likely result in subsequent increases in round-to-round pricing.

<i>Daniel Stephen Hafner Co-Founder – CEO (January 2004)</i>	<i>Paul M. English Co-Founder – CTO (January 2004)</i>	<i>Terrell B. Jones – Chairman of The Board (March 2004)</i>
Co-Founder Orbitz, Former VP Consumer	Former VP Technology Intuit	Former CEO Travelocity
Consultant, Boston Consulting Group	Cofounded Boston Light Software Corp. – it was acquired by Intuit Inc.	SABRE

Public: Shareholder Rights Agreement

Private: Certificate of Incorporation

Vintage							
General Catalyst Group II, L.P.	2001	25,000,000	23,375,000	16,349,957	33,168,188	6.8%	1.40x
General Catalyst Group, LLC	2000	3,975,000	3,875,625	3,875,609	4,001,038	0.6%	1.00x

EXHIBIT 7.13 Kayak.com Management Team Highlights and Volatility Buildup

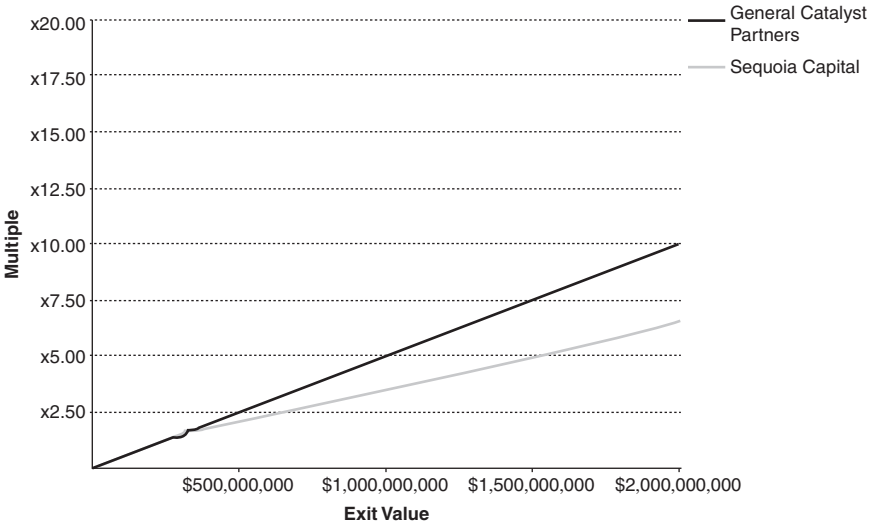


EXHIBIT 7.14 Kayak.com Estimated Payouts to GCP and Sequoia Assuming M&A

Source: Liquid Scenarios, Inc.

General Catalyst co-founding partner George Bell, who, in addition to being an Emmy award winner was the CEO of Excite@Home, at one point had an opportunity to purchase Google. Recalling the impact of “who” in these transactions, Vinod Khosla, as you may recall from the Google and Excite cases on the Wiley Web site, was responsible for the initial funding (directly and indirectly) of Excite. According to press reports, it was Mr. Khosla, at the time a partner with Kleiner, who proposed that Excite acquire Google transaction to Excite@Home.

General Catalyst co-founder and Kayak.com Board member Joel E. Cutler was also on the board of General Catalyst portfolio company ITA Software, sold to Google in June 2010 for \$700MM. Sequoia also invested in ITA’s \$100MM.

Exhibit 7.14 illustrates the power of a first-round investment when things go well. The dark gray line is the payout multiple, under a variety of M&A scenarios, for General Catalyst and the light gray line is the payout multiple, under a variety of M&A scenarios, for Sequoia Capital. In the range of \$1 billion to \$2 billion, you can see how there’s a substantial difference in the slope of General Catalyst’s payout line and Sequoia’s, with General Catalyst getting a 10X return at \$2 billion and while Sequoia Capital gets a 6.6X multiple at the same exit value of \$2 billion. Why is this important to know as a current or prospective investor in a venture-backed company? If an M&A scenario is a possibility (it almost always is), then

knowing the relative return possibilities of the key investors is critical to understanding the “takeover value” of the company.

The extracts that follow are from the Kayak.com Web site and show how the investors in Kayak.com describe themselves.

Battery Ventures is a leading venture capital firm with \$4 billion under management, and focuses on investing in technology companies at all stages of growth.

With \$4 billion under management, this is a fund that has the bandwidth (management fees to compensate personnel and, ideally, investable funds), to follow through on investments.

General Catalyst Partners is a venture capital firm that invests in exceptional entrepreneurs who are building the technology-based companies that will lead innovation and transform industries. The firm has approximately \$1.8 billion under management.

PAR Investment Partners, a private partnership with a focus on companies related to and operating in the travel industry, has over \$2 billion in assets.

Sequoia Capital provides venture capital funding to founders of startups who want to turn business ideas into enduring companies. As the “Entrepreneurs behind the Entrepreneurs”, Sequoia Capital’s Partners have worked with accomplished innovators who build great franchises such as Apple, Cisco, Google, Oracle, Yahoo, and YouTube.

If you had never heard the name “Sequoia” before, simply seeing the list of companies it has listed in this brief excerpt tells you it has been a successful investor. Successful investors have successful networks that can, generally, act faster than and more efficiently than their competitors. From a valuation perspective, consider two companies that are identical in almost every way and close a Series A financing round for \$5 million, at the same pre-money valuation. The only difference is that one company receives the \$5 million from Sequoia and the other receives the \$5 million from Lorenzo Partners, and it’s Lorenzo Partners first investment ever. You don’t need a calculator to conclude that the total company equity value for Sequoia investment is worth more on that day than the Lorenzo Partners portfolio company’s total equity value, even though both were for \$5 million and both were at the same pre-money and post-money valuations. Obviously, you can’t simply write down the investment by Lorenzo Partners on day one. However, you can make adjustments to the inputs to valuation methods so that the value given to the common shares and options is lower than if Sequoia was the lead investor. The easiest way to do this is to decrease the term (modeling to the next round of financing, not the ultimate liquidity event) and adjusting the volatility used in an OPM backsolve, for example.

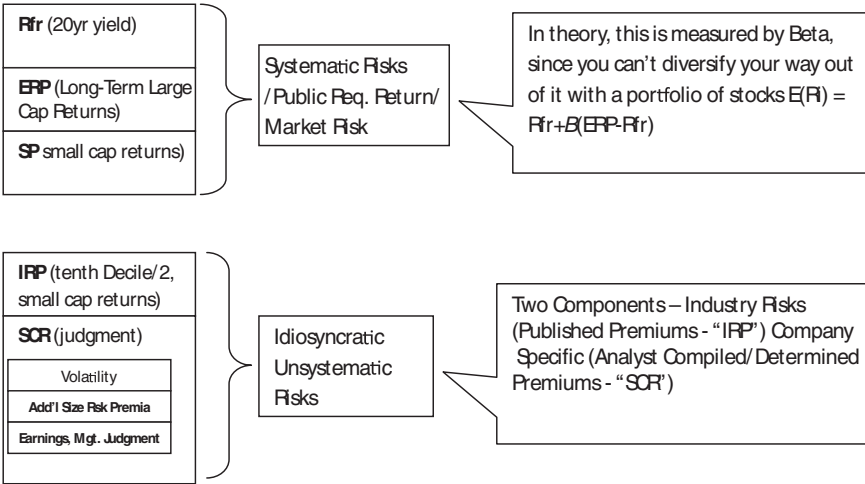


EXHIBIT 7.15 How Volatility and Who Investors Are (Track Record) Can Fit into Traditional Discount Rate Build Ups.

Note: Rfr is risk free rate, ERP is equity risk premium, and SP is size premium. Unfortunately, Betas for private companies are sometimes taken from public “peers” that have linear earnings prospects. In theory, an analyst could increase the company specific risk (SCR) to account for differences in expected volatility based on capital structure and who the investors are (track records).

Spectrum Equity Investors manages approximately \$4 billion in equity capital and invests exclusively in established, profitable companies in the information services, media, and communications industries.

Asking “Why?”

If the MD&A section of a prospectus, notes to financial statements for a fund or LP, 409A valuation report, or any other documents says that a “discount rate of X%” was used, multiplying X% or its discount factor by the future rewards indicated in the report will rarely put you in a better position of understanding that valuation, other than being comfortable that a math check was performed. Instead, remembering that for publicly traded companies, most of the discount rate used is set by an active market for three items. Treasuries (the Rfr or risk-free rate), long-term stock yields, such as the S&P 500 (Rm, or market risk), and the dispersion (volatility) of a stock’s prices over a given period of time compared to the dispersion (volatility) of the market’s prices over that same period of time (B, or Beta). In this book we’ve taken a much closer look at idiosyncratic risk, also referred

to as company-specific risk, which accounts for the lion share of expected returns (and losses) for venture-backed companies. One way to quickly and accurately model this risk, or uncertainty, is by using an appropriate assumption concerning expected volatility of the company's value and the value of the company's securities.

In the case of a private company, not just a venture-funded private company but any privately held company that's not about to be liquidated, the percentage of systematic risk (risk you can't run away from simply by diversifying holdings in the same investment class) should be the same as what's used in the discount rate. If that's the case, then you know that the discount rate should almost always be higher for the private company than the discount rate used for the public equity market. If it's a venture-backed private company, the discount rate should be substantially higher than that.

Before concluding this chapter, an examination of some of the disclosures in Kayak.com's registration statement as it relates to valuation, compared to the analysis we just did, allows you to reflect on the differences we've highlighted throughout this book.

Common Stock Valuations per Kayak.com MD&A

From Kayak.com MD&A:

To make our estimates, we utilize guidance set forth in the 2004 AICPA Practice Aid, Valuation of Privately-Held Company Equity Securities Issued as Compensation, or the AICPA Guide. We recognize that the value of our stock changes between valuations and, as such, consider other factors when determining the fair value of our stock for the purposes of determining stock compensation expense, such as:

- Sales of our Common Stock: *Sales of our common stock can be a strong indicator of the value of our stock, but do not necessarily determine the value. We consider the volume of shares sold in the transaction, the circumstances of the sale and the sophistication and independence of the buyer in order to determine whether or not the sale indicates a new fair value of our common stock.*
- Sales of our Convertible Preferred Stock. *Sales of our convertible preferred stock can assist in estimating the fair value of our common stock. In order to determine the fair value of common stock after a sale of convertible preferred stock, we consider the volume of shares sold, circumstances of the sale, independence of*

the buyers and the value of the preferential rights associated with the class of convertible preferred stock sold.

- *Specific Events at KAYAK: In addition to the above factors, we consider significant events at KAYAK that may have impacted our value, such as launch of a new product, signing a significant new customer, significant change in management team, etc.*

Observations based on the above disclosures by Kayak.com in its MD&A include:

1. **Emphasis of Market Approach:** Kayak points out reliance on recent sales of both common stock (secondary sales) and preferred stock (original issue securities)
2. This MD&A disclosure is closer to how valuations are actually performed for these companies, versus strictly and simply acknowledging the use of AICPA Practice Aid *Valuation of Privately-Held Company Equity Securities Issued as Compensation*. As a result, it's also more closely aligned with the disclosure recommended in Chapter 5 of this book.

Exhibit 7.16 set forth the option grants over the last two years and discuss the methodology to determine the fair value of our common stock at each grant date. In 2009, options to purchase shares of common stock at the following exercise prices were issued.

From Kayak.com MD&A Disclosure:

In February 2009, the board of directors determined the fair value of our common stock to be \$15.50 based on the last sale of 626,664 shares of our common stock to an independent third party in April 2008. The purchaser of the stock was a sophisticated investor with no previous ownership in our company and which performed

EXHIBIT 7.16 Equity Grants, Fair Values, and Intrinsic Values—Kayak.com

Grant Date	Options Granted	Exercise Price	Fair Value of Common Stock	Intrinsic Value
February 26, 2009	265,000	\$15.50	\$7.50	\$—
May 19, 2009	535,000	\$7.50	\$7.50	\$—
July 7, 2009	2,044,000	\$7.50	\$7.50	\$—
July 22, 2009	170,000	\$7.50	\$7.50	\$—
November 13, 2009	255,000	\$7.50	\$11.29	\$3.79

Source: Kayak.com SEC Filings.

adequate due diligence to determine a fair value of \$15.50 per share. There were no other significant transactions in our stock from April 2008 to February 2009 and as a result, the board of directors believed that this sale best represented the fair value of our common stock on that date. There was no significant change in our operating results or forecasts during this time period.

Note that this is an example of a market approach in which 100% of the fair value conclusion (essentially the fair market value in accordance with tax law, or Revenue Ruling 59-60) was determined to be the price paid by the independent third party on April 2008. Based on what you've read in this book, even if you only glanced at the first couple of chapters, does that seem reasonable? In addition to the largest financial crisis in recent history, or more accurately as a result of it, the vast majority of guideline public companies (comps) had their price to revenue multiples cut by double digits, with Expedia seeing its multiple cut by 90% and even Google trading at a fraction of its 2007 multiple. While I don't believe that private company values vary one to one with their public peers, as I've noted already, we all do live in the same economy. So if \$15.50 per share was in fact fair market value for one share of Kayak.com common stock in April of 2008, it is highly unlikely that it was also the fair market value of one share of Kayak.com common stock on February of 2009, when equity markets around the world rapidly breached new lows.

Thereafter, Kayak.com took a more rigorous look at the fair value at which it was granting options and adjusted the price to \$7.50 share, or less than 50% of the \$15.50 the February options were granted at. These adjustments were said to be based on weighting (a) 50% of the value indications arrived at through the income approach (DFC) and (b) 50% of the value indications arrived at using the market approach (comps). Those amounts were allocated using the OPM (like we did earlier in this chapter several times), with volatility of 80% and a marketability discount of 20% (far less than what we derived in our rough calculations earlier).

On a positive note, it did use market multiples based on revenue, but naturally those multiples would have been substantially less during December 31, 2008, which explains part of the reduction in the fair value conclusion per share Kayak.com came up with. Here's an excerpt from the portion of the Kayak.com MD&A section that references those valuations:

In early 2009, we estimated the fair value of our common stock as of December 31, 2008 using the market approach and the income approach, in order to assist the board of directors in assigning an exercise price to future stock grants. We believe both of these approaches were appropriate methodologies given our stage of

development at that time. For the market approach, we utilized the guideline company method by analyzing a population of comparable companies and selected those technology companies that we considered to be the most comparable to us in terms of product offerings, revenues, margins and growth. We then used these guideline companies to develop relevant market multiples and ratios, which were applied to our corresponding financial metrics to estimate our total enterprise value. We relied on the following key assumptions for the market approach:

- *our projected revenues determined as of the valuation date based on our estimates; and*
- *multiples of market value to expected future revenues, determined as of the valuation date, based on a group of comparable public companies.*

For the income approach, we performed discounted cash flow analyses which utilized projected cash flows as well as a residual value, which were then discounted to the present value in order to arrive at our current equity value to arrive at an enterprise value. We relied on the following key assumptions for the income approach in addition to the management projections discussed above:

- *discount rate applied to forecasted future cash flows to calculate the present value of those cash flows; and*
- *terminal value multiple applied to our last year of forecasted cash flows to calculate the residual value of our future cash flows.*

In determining our enterprise value, we applied equal weighting to market and income approaches, as the indicated equity value under the scenarios was reasonably similar. In allocating the total enterprise value between preferred and common stock, we considered the liquidation preferences of the preferred stockholders and utilized the option-pricing method, or OPM, for calculating a range of values for the common stock, based on the likelihood of various liquidity scenarios. The OPM utilized a volatility factor of 80% based on the peer group above and applied a lack of marketability discount of 20%. We assumed a 30% likelihood of an initial public offering within one year, 10% likelihood of a strategic sale and 60% likelihood of remaining as a private company, which produced an indicated value of our common stock of \$6.50–\$8.48. We then chose the midpoint of the range to arrive at a common stock value of \$7.50. This value was significantly lower than our last indicated value due to an overall decrease in public company

comparable multiples of 50%, as well as to our lowered forecasted revenues and cash flows as a result of the poor econ.

Based on the results of the appraisal, the board of directors determined that the fair value of our common stock was \$7.50 per share. There were no significant transactions involving our common stock or convertible preferred stock during 2009.

During the fourth quarter of 2009, we increased our forecasted revenue and cash flows due to a strengthening in our results. Accordingly, we performed an updated valuation of our company as of October 31, 2009. This valuation again calculated an overall enterprise value, but relied on the income approach to calculate the value, as we believed that it best considered our expected high growth and profitability. The market approach was used to validate the results of the income approach, but no weight was assigned to it. In performing our calculations, we relied upon the methodologies described above as of October 31, 2009, however, with respect to our application of the market approach we used a multiple of projected EBITDA instead of revenues due to our recent demonstration of profitability.

The enterprise value was then allocated to the various classes of our stock using the OPM and applying a 70% volatility factor and 40% likelihood of an initial public offering within 12 months. We then applied a 20% discount to the value due to lack of marketability to arrive at an estimated fair value of our common stock of \$11.29, which the board used to determine the exercise price of future stock option grants.

In 2010, we issued options to purchase shares of our common stock at the following exercise prices (see Exhibit 7.17).

EXHIBIT 7.17 Kayak.com Detail Option Grants from SEC Filing

<i>Grant Date</i>	<i>Options Granted</i>	<i>Exercise Price</i>	<i>Fair Value of Common Stock</i>	<i>Intrinsic Value</i>
February 11, 2010	315,000	\$11.29	\$11.29	\$—
April 29, 2010	1,075,000	\$13.00	\$13.00	\$—
July 22, 2010	205,000	\$13.00	\$14.82	\$1.82
October 7, 2010	140,000	\$14.82	\$17.60	\$2.78
October 20, 2010	2,079,590	\$14.82	\$17.60	\$2.78
October 21, 2010	40,000	\$15.50	\$17.60	\$2.10
November 15, 2010	110,000	\$16.50	\$17.60	\$1.10
December 8, 2010	235,000	\$16.50	\$17.60	\$1.10

Source: Kayak.com SEC filings.

Probability Assigned	40%	30%	30%
DLOM	17%	3%	33%
PV Factor (@22%)	86% (Rounded)	55% (Estimate)	55% (Estimate)
Indicated Value/Sh.	\$18.42 Net of DLOM	\$14.72 Net of DLOM	\$10.11 Net of DLOM
Probability Adjusted	40%* \$18.42 = \$7.37	30%* \$14.72 = \$4.42	30%* \$10.11 = \$3.03
□ Prob. Weighted	\$14.82 per Common Share Value Conclusion @ 7/31/2010		

Year	40%	50%	60%	70%	80%	90%
1	15%	19%	23%	27%	31%	34%
2	21%	27%	32%	37%	42%	46%
3	26%	32%	38%	44%	49%	55%
4	29%	36%	43%	49%	55%	61%
5	32%	40%	49%	54%	60%	65%

EXHIBIT 7.18 Volatility Card

On March 22, 2010, an independent third-party investor purchased 769,230 shares of common stock (2.32% of outstanding common equivalents at that time) from existing investors at a price of \$13.00 per share. The investor is an institutional investor who previously had no shares in Kayak and who conducted appropriate due diligence. There were no other significant transactions involving common stock or convertible preferred stock or significant changes to our business between March 22, 2010, and July 22, 2010. The board of directors concluded that this transaction established the fair value of common stock which was the best representation of common stock value at April 29, 2010. See Exhibit 7.18.

The volatility card in Exhibit 7.18 shows 33% discount (rounded) at 50% volatility in three years, which is pretty close to the 48.68% volatility and 33% discount disclosed in Kayak's MD&A for the July 31, 2010, valuation. As a result, we assume a discount factor based on a three-year forecast.

SUMMARY

Note that without doing very rigorous calculations, you can now determine the reasonableness of many value conclusions regarding venture-backed companies, such as Kayak.com. As a result, you can also see how many parties could have made more money as a result of understanding these basic concepts, as we illustrated in the Facebook case and every other case in this book.

In Chapter 8, you get the first of several perspectives from actual valuation parties that have to not only judge the reasonableness of value indications and conclusions but must do so in accordance with the value standards we've discussed, the auditor demands, the client demands, and the investor demands. Based on those firsthand accounts, you should get a better appreciation for the environment both causing and curing the issues we discussed concerning venture-backed company valuations such as those related to Kayak.com.