

# VALUATION NEWS

NEWS FROM QUIST VALUATION  
Volume 3, Number 2

## Welcome

In this issue of Quist Valuation News you will find our latest thinking and commentary on several issues affecting public and private companies alike. Our first article explores the impact of embedded derivatives on fair market value accounting. We continue our article series on rules of thumb associated with transaction multiples in our second article. Our final article examines the numerous advantages of creating and maintaining an accurate waterfall analysis. As always, we hope that you find value in this edition of Quist Valuation News.

Sincerely,

M. Brett Suchor, CFA, ASA  
President

Quist Valuation

[suchor@quistvaluation.com](mailto:suchor@quistvaluation.com)

## FMV Accounting & Embedded Derivatives

In the wake of fair value accounting, auditors are leaving no stone unturned. The latest topic, embedded derivatives, has presented a confounding exercise of bifurcating (splitting into two separate portions) any and every variable future cash flow, often resulting in seemingly unreasonable conclusions.

By definition, an embedded derivative is a financial instrument that is embedded in another contract, or a host contract. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract. A typical embedded derivative occurs with the issuance of debt in that the instrument is convertible to common stock at some future time and at the decision of the debt holders. This is essentially a call on the underlying security. Additionally, the holders of the debt may have received warrants on the common (or preferred) at a strike price at or above the current stock price. Again, this is consistent with owning a call on the underlying security for the debt holders. To further complicate matters, the debt instrument may include an anti-dilution clause, thereby allowing debt holders to restate the terms of their agreement in the event of a down round. In essence, this is equivalent to the debt holders owning a put on the overall enterprise value of the company.

Under FAS 133 (and in some instances 140), these embedded derivatives are to be bifurcated and accounted for separately. As we noted in the above examples, each embedded derivative created benefits that accrued to the holders of the host contract; a call option in the form of a conversion feature; a call option in the form of a warrant; and a put option in the form of an anti-dilution feature. Each of these is essentially an asset to the holders

of the debt instrument. Balancing the accounting equation, results in a liability to the issuing company in that they are "short" a call in the first two scenarios and "short" a put in the third. As a result, the issuing company not only took on a liability equal to the face amount of the debt, but also incurred additional liabilities in the form of these embedded derivatives.

The unfortunate result of this process is that most companies are required to establish the fair value of these embedded derivatives and then recognize them as liabilities. If the volatility of the underlying asset (such as common stock) is substantial, the value of the derivative (i.e. liability) increases. In some cases, the value of the embedded derivatives can exceed the face value of the host contract, resulting in a seemingly unreasonable conclusion.

The fact of the matter is that it is not all that reasonable. While fair value accounting has given us a more meaningful window into the balance sheet, it must include a finance perspective, in addition to black and white accounting guidelines. The above scenarios may result in an overstated liability, for several reasons, but most likely because the volatility used in calculating the value of the derivatives was overstated. In other words, the historical volatility may not be the best indication of future volatility.

The second and probably more important reason this result may be unreasonable is because not all assets and liabilities are properly matched, or even identified. In order to gain a better understanding of this, it may help to focus on the terms of the agreement, from a finance perspective. Most likely, the buyers of the debt required these embedded derivatives because the risk of the issuer justified additional incentives. The most common scenario would be the issuance of a debt instrument at a favorable interest rate, one that would allow the company to make

CONTINUED ON PAGE 2

interest payments commensurate with a “market” rate. The reality is that this rate would be two, three, maybe four times as high if this were a conventional debt item with no embedded derivatives. Turning back to an accounting perspective, one could begin to recognize this as an asset to the issuer and a liability to the holders of the debt. Much like a favorable lease rate, a favorable interest rate is an asset to the party making payments. Therefore, the increase in liabilities is correct, provided that the increase in the asset is also considered. When fully analyzed, it may be reasonable for the liability side of the embedded derivatives to exceed the face value of the host contract. However, the financial reality is that the benefit, or asset side, of the agreement should approximate the adjustment.

While the recognition of this asset may be a sensitive subject for both the auditor and the SEC, there is

no disputing that an arms length transaction occurred. It appears that the FASB shares in this thought process. In February of 2006, the Board released FAS 155 - Accounting for Certain Hybrid Financial Instruments—an amendment of FASB Statements No. 133 and 140. This Statement, among other things, permits fair value re-measurement for any hybrid financial instrument that contains an embedded derivative that otherwise would require bifurcation. The effective date of FAS 155 is September 15, 2006. While the breadth of this new statement is unclear, it clearly will not eliminate the valuation of embedded derivatives entirely. However, it will allow for the valuation of many embedded derivatives in conjunction with the host contract. For those embedded derivatives that still must be fair valued, it is important to consider the factors that a buyer of the derivative would use, which are often not consistent with those of past performance.

(“M&A transactions”). We detailed how multiples are dependent on deal terms and risk moves between buyers and sellers as transactions are negotiated.

While determining the appropriate purchase price is a critical component of an M&A multiple, establishing which type of multiple to use is equally as important. Some of the most commonly used multiples are price to earnings (“P/E”), price to revenues, price to book value, and enterprise value to earnings before interest, taxes, depreciation and amortization (“EBITDA”). Often business owners and investors make critical mistakes regarding the value of their company by relying on multiples that are either incorrectly calculated or inappropriately applied.

The most common culprit is a multiple of revenues. In general, revenue multiples are simple to compute and easy to understand. However, for most companies a multiple of revenue will establish poor indications of value. The most apparent reason is that revenue multiples have very little to do with the earning capacity of the company. Investors buy because of expected future cash flows. Even Google is priced based on the expected cash flow over the life of the investment. We begin with a very simple mathematical perspective on revenue multiples and then focus on finance. Revenue multiples are most often derived based on medians, averages or specific comparable companies. Consider the set of data points on the next page, which are based on publicly traded companies in the software industry, an industry in which revenue multiples are commonly used.

As you can see from the data set, the revenue multiples reflect a wide range of results from 1.0 to

CONTINUED ON PAGE 3

## Quist Presents!

Members of the Quist team frequently present on a variety of valuation topics, such as IRC 409A. If you are interested in having Quist present on a valuation topic to your organization, please contact Kyle Covell, ext. 116.

### Quist Valuation Presentation Calendar

- GE Access - GE Access Distribution - CFO Conference: May 17, 2006  
A Valuation Discussion
- WBE - Women Business Executive: May 18, 2006  
Building Your Business for Value
- Colorado Society of CPAs: May 24, 2006  
COCPA Presentation FASB 123R
- National Center for Employee Ownership Webinar: June 14, 2006
- Charles Schwab Webinar: June 21, 2006



## Rules of Thumb Based on Transaction Multiples – Part II

This is the second in a series of articles focused on the difficulties in determining reasonable, defensible, and most importantly, simple valuation metrics. This series explores how commonly used, yet seemingly straightforward, inputs can lead to critical mistakes by business owners, employees and investors in calculating value. In our last issue we introduced some of the difficulties associated with establishing simple valuation metrics by focusing on the purchase price derived in comparable arm’s length sales of similar businesses

6.6 times revenue. Most business owners, analysts and investors focus on the median multiple and/or a comfortable round number (e.g. these companies are trading between 2 and 3 times revenue). Applying a ‘loosely’ derived multiple to a high value fundamental such as revenues leads to wide swings in value. Two times revenues versus three times revenues produces a range of 50%. The answer is simple, yet often overlooked in practice. Ask yourself how often, when discussing a transaction multiple or a range from the public market, do you actually carryout the discussion beyond one decimal place (think 2.25 times revenue > 2.2 times revenues). When calculating a multiple based on revenues, basic multiplication demonstrates that precision is important.

Unfortunately, it often does not matter how precise the calculation of a revenue multiple is as multiples of revenue are often difficult to determine. The issue is not that they are difficult to calculate, but rather that without an understanding of the risk profile, growth prospects and earning capacity a multiple

of revenue is unreliable. What if a multiple of revenue is the only available metric? Can you use it as a benchmark? The answer is yes, but here a few tips to consider.

The first issue to consider is the relative profitability of the companies to which you are comparing. Often, a simple correlation analysis can help you identify whether returns in recent periods are an indication of current multiples. In other words, establish whether those comparable companies with higher margins have higher multiples. Secondly, growth is often an important driver of revenue multiples, both historic and prospective. What are the growth prospects for the business both in terms of future revenues and earning capacity? It is critical to understand the growth metrics for the subject company you are trying to value as well as for the companies that you are using as a comparison. The third issue is to avoid self selection. Given a set of multiples, it is often easy to quickly discount those multiples that do not appear reasonable (e.g. 15 times or 0.5 times) based on our

CONTINUED ON PAGE 4

### XYZ Company Price to Revenue

Company	Revenue			3-Year compound Growth	3-Year coefficient of variation	Price to Revenue 2005
	2003	2004	2005			
Comp 1	16,058	24,352	29,722	36.0%	29.4%	6.6
Comp 2	7,216	13,316	20,258	67.6%	48.0%	6.4
Comp 3	14,433	19,983	24,100	29.2%	24.9%	2.4
Comp 4	12,841	19,317	22,765	33.1%	27.5%	2.1
Comp 5	17,272	18,899	22,337	13.7%	13.3%	1.5
Comp 6	17,712	19,335	21,512	10.2%	9.8%	1.0
Comp 7	21,006	22,297	21,483	1.1%	3.0%	4.5
		Mean		27.3%	22.3%	3.5
		Median		29.2%	24.9%	2.4
		Standard Deviation		22.0%	15.0%	2.3
		Coefficient of Variation		80.5%	67.5%	0.7
		Correlation w/ Growth				0.6
		Correlation w/ Variance				0.6

## IRC 409A Tips

We asked Dan Meehan, a partner at Cooley Godward LLP in Broomfield, CO for some of the tips that he offers his clients when thinking about complying with IRC 409A. Dan suggests the following:

- IRC 409A and the “ISO” rules require that the exercise price of stock options be set at FMV.
- A consistent and well-documented valuation methodology is key when determining FMV for this purpose.
- An outside appraisal is the most definite way to ensure that the IRS bears the burden of proof when scrutinizing your stock valuation. Under the 409A proposed regulations, an outside appraisal generally can be relied on for up to one year, but must be updated when the company experiences a value-changing event.
- When planning for a sale of your company during 2006, review your historical stock option ledger. Do the exercise prices reflect the FMV of the company as it changed over time? If not, there may be a need to take action to comply with IRC 409A. Consider doing so before it becomes a last minute item. Many buyers will require evidence that you have complied with IRC 409A.
- There are ways to fix non-complying stock options — at least through 12/31/06. Consult a qualified tax practitioner for more information.
- Additional IRS guidance on IRC 409A is due out this summer. Stay tuned!

basic rules of thumb. While these multiples may very well not be reflective of value, understanding why companies paid multiples outside the range will often help determine the primary drivers of value. Depending on the nature of the business being analyzed, when working with a large enough set of multiples you will often find a common ground for what is or may drive the change in multiples. In the software industry for example, growth in new users, as well as maintenance contracts can be excellent indicators of value. An increase in the number of new users often results in an expanding base of maintenance contracts, which in many software companies are the primary profit centers.

All told, it is important to be wary of that free advice you hear at a cocktail party or read about in the Wall Street Journal. Especially when it comes to the most often abused “indication of value” the multiple of revenues. While we have highlighted these common mistakes as they relate to revenue multiples, similar difficulties arise when you consider other fundamental multiples, as well such as EBIT, EBITDA and book value. Watch for future issues of Quist Valuation News as we tackle earning capacity multiples and how simple rules of thumb can lead to costly mistakes.



## The Importance of Waterfall Analysis

With the recently issued proposed regulations under IRC 409A, appropriately pricing equity compensation has become a critical and often difficult process for emerging growth companies. Boards of directors have tasked their

management teams to provide option-pricing analysis that is reasonable, consistent, and most importantly compliant with IRC 409A. Pricing equity compensation is not a new need for emerging growth companies; however, the acceptable methodologies in today’s regulatory environment go well beyond a simple discount from the prior funding round or a multiple of revenues. Quantifying the actual expected future returns available to option holders and assessing the risk associated with realizing those returns is critical to the valuation process.

For emerging growth companies with complex capital structures (e.g. multiple rounds of preferred stock, warrants, convertible debt), quantifying the returns available to common shareholders can be a complicated process. The difficulties arise due to the numerous rights and powers held by the other classes of debt and equity. Most emerging companies have a clear knowledge of per share value on a fully diluted basis, which is generally relevant in the event of a very successful exit. Beyond the most optimistic of scenarios companies often have a limited understanding of to whom the proceeds of a liquidation event will be paid based on priority in the capital structure. This is especially true when you begin to examine multiple prospective events at various dates (e.g. an IPO in 2008 @ \$100MM or an M&A transaction in 2009 at \$85MM). Defining the returns available to each class of stock at different dates in time under multiple value scenarios is often referred to as a waterfall analysis.

A properly built waterfall analysis takes into consideration all rounds of preferred stock, their respective liquidation preferences, preferred

dividends, as well as the outstanding options and warrants. Once created, a waterfall analysis can quickly and easily determine the hypothetical value of a common share based on any potential exit scenario. A waterfall analysis becomes an important tool when determining the price of options. Conversely, if the analysis is improperly built, a significant over or undervaluing of options and potentially increased tax exposure to the company and its employees can result.

When building a waterfall analysis, first carefully review all of the provisions related to each class of stock and sequentially list all of the pertinent details. Gather your company’s capitalization table, the articles of incorporation, including all amendments, shareholder agreements and any documentation relating to supplementary rounds of preferred equity investment. Then, for each class of stock, find any and all provisions that relate to rights, dividends, and conversion. The details needed for the waterfall include liquidation preferences, anti-dilution provisions, preferred distribution rights, company events that affect the rights of shareholders, provisions concerning the election of board members, exit provisions, and mandatory conversion clauses. Carefully listing all of the details concerning each respective class of preferred stock will prove invaluable.

Using liquidation preferences as an example, the chart on the next page details how to lay out each of the respective class of shares’ rights from a liquidation event. This table lists the number of shares of each class of preferred stock (on a pre-conversion basis), the consideration each contributed to the company, any built in multiplier effect on that

CONTINUED ON PAGE 5

consideration at liquidation, any preferred dividends owed to each class of shareholders and whether those dividends are cumulative, then finally sums the total amount due to each class of preferred stock. Having this table built allows management to look at possible exit scenarios to see where the proceeds will go, and what funds will be left over for common shareholders. And while each of the columns are useful in understanding the rights of each respective class of shares, the total liquidation value on the far right side will become an integral figure in the final waterfall analysis.

One of the most important issues that is often overlooked during the preparation of a waterfall is the time sensitivity of liquidation preferences for preferred series of stock. Often times, waterfall tables fail to include a function of time. While this addition usually adds some complexity to the waterfall, taking the time to properly account for time sensitive changes in the capital structure and liquidation rights when setting up your waterfall will save a lot of time and heartache during future use. A familiar example of this is cumulative dividends accruing to preferred shares, such as in the table above. Usually these dividends are left unpaid to preferred shareholders, especially if the company is in an early stage of development. While the chart above clarifies which classes of shares are owed dividends as of the date at the top of the chart, the amount of dividends accrued to those classes of shares will likely change in the future, thereby making the total liquidation preferences due to all preferred shareholders different today than at some other future date. When looking at a waterfall's breakdown of considerations for future hypothetical liquidation events,

**Liquidation Preferences** as of 5/13/2006

Share Type	Shares	Consideration	Liquidation Preferences	Dividends Declared (12/31/2005)	Cumulative/Compounding	Liquidation Value
Series A Preferred	400,000	3,333,332	1.0x	NA	NA	\$3,333,332
Series B Preferred	200,000	20,000,000	3.0x	NA	NA	\$60,000,000
Series C Preferred	426,814	19,526,741	1.0x	7,073,259	Yes	\$26,600,000
Series C Warrants	72,157	3,301,183	1.0x	NA	NA	\$3,301,183
Series D Preferred	122,093	10,500,000	1.0x	1,900,000	Yes	\$12,400,000
Series E Preferred	161,092	15,000,000	1.0x	2,000,000	Yes	\$17,000,000
<b>Total</b>	<b>1,382,156</b>					<b>\$122,634,515</b>

failure to address those accumulated dividends to preferred shareholders will overstate the value falling to common shareholders. Additionally, oversight of capital injections coming from the exercise of outstanding options or warrants can lead to drastic understatement of value to common shareholders, as well as misrepresenting which of those options and warrants will actually exercise, thus altering the number of fully diluted shares outstanding in certain hypothetical situations.

Parallel to failing to account for changes in your company's waterfall due to the timing of the liquidation events is failing to fully qualify all of the clauses attached to preferred shareholder agreements. These can be as simple as mandatory conversion into common shares in the event of an IPO to more complicated caveats involving strategic sales or additional rounds of financing. While quantifying these clauses in a waterfall can be both exceedingly difficult and time consuming, it is important to remember that the purpose of performing a waterfall analysis is to fully understand where the money will go in any liquidation event. Improperly compiling a simple waterfall in order to save time and resources may very well cost you

a good deal of both when board members ask you how things change in other hypothetical situations that you had not accounted for in your simple model. Additionally, having a comprehensive waterfall analysis done prior to any independent 409A valuation project can save you time, and your company money, when going through the common options pricing process.

The overall importance of developing a waterfall to a company is a very individual decision. While it is an invaluable and necessary tool for common option pricing, it can also be useful to management when considering additional rounds of financing or analyzing an unexpected purchase offer. Regardless of its intended level of use, it is important to note that as a capital structure becomes more complicated the development of an initial waterfall becomes exponentially more time consuming. It is always easier to add to an existing waterfall than to start from scratch. Thus, the earlier a company's management chooses to invest in completing their waterfall, either with their own time or through the services of a valuation firm, the costs and time involved can be minimized.



# VALUATION NEWS

## In this issue:

- **Embedded Derivatives and Fair Market Value Accounting**
- **Rules of Thumb and Transaction Multiples Part II**
- **The Value of Waterfall Analysis**

## IN THE NEWS:

---

- Quist Valuation is proud to announce the addition of Marty Wisott CFA, ASA to the Quist team. Marty is responsible for leading one of Quist's analyst teams and ensuring that our clients receive superior business valuation support. Marty joins Quist from Chicago, IL where he was the Director of BDO Seidman's regional valuation practice from 1999 to 2006. Prior to his work with BDO Seidman, Marty served as an Assistant Vice President at Bank One/American National Bank & Trust. Marty brings a wealth of valuation expertise and management experience to our team. Welcome Marty!
- Quist is growing to meet our client's needs. In addition to growing our staff, we recently opened a satellite office in Denver. Our headquarters and all essential client functions remain in Broomfield.

## In our next issue:

---

- **Cash Flow Multiples: Beware!**
- **IRC 409A: Managing the Update**