Guest Article

Quantifying Company-Specific Risk: A New, Empirical Framework With Practical Applications

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Editor's note: In this article, the authors have refined their earlier work[1] by providing a detailed example of how to select a company-specific risk premium (CSRP) for a privately held company using benchmark CSRPs derived from guideline publicly traded companies.

Contrary to widely held beliefs, business valuation analysts can quantify company-specific risk for publicly traded comparables, and then use these reference points to select a more appropriate, less subjective company-specific risk premium for a privately held company. The technique is similar to selecting a multiple for a private company by using publicly traded stock multiples. As stated in our prior work:

> Even though, according to traditional financial theory, public markets do not price company-specific risk, it does not mean that it does not exist or is not quantifiable for public comparables. In all instances, the company specific risk premium for publicly traded companies is greater than 0%—yet appraisers start their benchmark analysis at 0% to determine an appropriate company-specific risk premium for privately held companies. Is this a flaw in our collective thinking?

The short answer is yes: In our prior work, we showed that company-specific risk can be quantified using observable, market-derived (empirical) data, and that 0% is an incorrect and low starting point to use for a privately held company.

A framework to quantify CSRP

In general, prior research has suggested that there is no framework, no data, and no model to empirically quantify company-specific risk. With the introduction of this technique, we believe this criticism is no longer valid.

We start with a well-accepted formula to help calculate company-specific risk for publicly traded companies[2]:

$$T\beta = \beta / R = \phi_s / \phi_m$$

Where:
$T\beta$ is a stock's total beta,
β is a stock's beta,
R is the correlation coefficient between a stock and the market (S&P 500),
ϕ_s is a stock's standard deviation, and
ϕ_m is the market's standard deviation.

Note: the standard deviation of a stock's return is the appropriate measure of total risk if the particular stock is the only asset in a portfolio. Similarly, while a private company probably is not the only asset in a business owner's portfolio, it most likely represents a significant portion of his/her net-worth, as most private business owners are not properly diversified.

Total Beta, which measures a stock's riskiness relative to the market (which has a $T\beta$ equal to 1.0), captures total risk, including systematic risk as well as size and company-specific risk. Thus, it makes intuitive sense to use the Total Beta of publicly traded stocks to assist in benchmarking company-specific risk for a privately held company. One can then use the following formula to solve for the only unknown in the equation—company-specific risk:

R_f + Tβ * ERP = TCOE =

R_f + β * ERP + SP + CSRP

Where:
R_f is the risk-free rate,
ERP is the equity risk premium,
TCOE is the total cost of equity,
SP is the size premium and
CSRP is the company-specific risk premium.

Company-specific risk can never be less than 0%

If the largest companies in the world have company-specific risk greater than 0%, then it is likely that all companies exhibit company-specific risk greater than 0%. For example, applying the above formula to Exxon Mobil (ticker: XOM)[3]:

5.00% + 1.45 * (6.28%) = 13.96% = TCOE =
5.00% + (0.85) * (6.28%) - 0.37% + CSRP

Solving for only unknown: XOM's company-specific risk equals 4.13%.

Note that we used a supply side equity risk premium of approximately 6.3%. If we had used the long-term historical equity risk premium of 7.1% as published

by Ibbotson, then we would have calculated XOM's company-specific risk equal to 4.6%.

Performing this same analysis for General Electric (ticker: GE)—the world's most valuable company based on market value of invested capital, and an excellent proxy for the market given its product line diversification—we calculated GE's company-specific risk equal to 3.4%.

We also calculated the company-specific risk for Emerson Electric, a company Ibbotson refers to as having a remarkably stable Beta over time, meaning it had a relatively high correlation coefficient with the market and potentially little company-specific risk. Nonetheless, we calculated a company-specific risk premium for Emerson Electric equal to approximately 4%.

Now, if XOM and GE have company-specific risk greater than 3%[4], then why do appraisers start their benchmark at 0% for privately held companies?

Moreover, Rick Sias, Professor at Washington State University, recently made these observations[5]:

> • A 50-stock portfolio has a one in three chance of a firm-specific return (+ or -) of at least 8.8%; and
> • An investor needs to hold 15,647 securities to have a 95% chance that his/her portfolio will experience firm-specific shock of less than 1%.

Finally, when discussing large portfolios, a noted finance text states, "the weighted average of the unsystematic risk approaches zero as the number of equally weighted securities in a portfolio approaches infinity."[6] The key words: *approaches* and *infinity*.

These observations obviously refute any presumption that appraisers should start their reference point at 0%; or that a negative (less than 0%) company-specific risk premium is ever appropriate. That traditional financial theory [7] claims this risk is diversifiable makes no difference. Analysts universally value private companies under this total risk or Total Beta concept, so we should also use this technique to value private companies under the income approach.

Practical application

In the practical example which follows, we develop multiple empirically-derived reference points to select an appropriate company-specific risk premium for a privately held company. The elegance of the approach arises from quantifying risk based on specific comparables, rather than starting at one reference point equal to 0% (mistake #1) and then guessing at adding or subtracting points

without specific comparison to benchmarks (mistake #2). These common mistakes have been noted recently by courts and BV commentators[8], making our technique particularly timely.

Our subject company. Assume Boise Brewery (BB) has $20 million in sales and brews six different "craft" beers. It owns one brewery in Idaho and uses twenty distributors to sell its beer in the Pacific Northwest.   BB only has one supplier of malt but uses multiple sources for hops, and believes that adequate sources of malt exist. BB is also highly dependent upon its founder and president.

Guideline Companies. We selected the Boston Beer Company, Inc. (ticker: SAM); Red Hook Ale Brewery, Inc. (ticker: HOOK); and Pyramid Breweries, Inc. (ticker: PMID) as BB's publicly traded comparables. In Table 1, we calculated the company-specific risk for the guideline companies.

Table 1. Guideline Companies

Cost of Capital Assumptions

R_f	4.84%	As of 9/29/06: 20-year treasury bond
$R_m - R_f$	6.29%	Supply side equity risk premium (ERP) per Oct. 2006 BVU

Size Premium	6.36%	6.36%	2.76%
	PMID	HOOK	SAM

Note: We used the Ibbotson supply-side ERP in this analysis. If we had used Ibbotson's ERP as of 12/31/05 equal to 7.1%, we would have calculated higher CSRPs. Had we used Duff and Phelps' recommended ERP equal to 3.5% - 6.0%, we would have calculated lower CSRPs. Since we use a supply side ERP with Ibbotson's size premiums, the possibility exists that we are mismatching returns. However, since we are projecting the future (which is unknowable), we are comfortable with this analysis.

Comparable Companies	Ticker	12/31/2005 Net Sales[A]	BETA[B]	Debt[A]	Equity[A]	Unlevered BETA[C]	R-square[D]	R[D]	T-Stat[D]	Total Beta[D]	Cost of Equity[E]	Company-Specific Risk[F]
Boston Beer Company	SAM	$208,304,000	0.73	$0	$468,000,000	0.73	0.29	0.31	5.03	2.38	19.8%	7.6%
Red Hook Ale Brewery	HOOK	$31,098,907	0.38	$4,999,000	$31,880,000	0.33	0.01	0.10	1.32	3.55	27.1%	13.7%
Pyramid Breweries	PMID	$40,358,000	0.19	$9,234,000	$22,930,000	0.16	0.01	0.10	1.53	1.99	17.3%	4.9%
Average												8.7%
Subject Company												
Boise Brewery	N/A	$20,000,000	0.51			0.41					25.4%	11.0%[G]

[A] Sales per relevant Forms 10-K as of 12/31/05. Debt as of 6/30/06 = book value per relevant Forms 10-Q. Market value of equity per Yahoo! Finance as of October 10, 2006.

[B] Using 250 weeks of trading data from 12/24/01 - 10/2/06 and the S&P 500 as the market index. These numbers are levered beta. HOOK and PMID were statistically significant at greater than 80% confidence. SAM was statistically significant at greater than 99% confidence.

[C] $B_u = B_l/(1+(1-t)(w_d/w_e))$ where t=.4. Assume subject company's unlevered beta = average of guideline companies. Assume 30% debt, 70% equity for subject company.

Note: since we separately analyze size and company-specific risk, we believe the most appropriate conclusion for a subject company's beta to be some measure of central tendency given the subjectivity in determining how a private company will react to systematic risks. For example, according to Standard & Poor's, Anheuser Busch's beta is greater than Pyramid Breweries', contrary to one's intuition.

[D] Total beta = Beta/R

[E] Total cost of equity = risk-free rate + total beta * (equity risk premium)

[F] Company-specific risk = Total cost of equity - risk-free rate - beta * (equity risk premium) - size premium

[G] See Table 2 and 3 and article for explanation of this result.

Table 2 compares and contrasts the three guideline companies and our subject company across identifiable company-specific risk factors. For these, we reviewed the companies' Forms 10-K for year-end 12/31/05 for company-specific risk factors.[9] With the introduction of Sarbanes-Oxley in 2002, we believe public companies' disclosures regarding risks, for the most part, are comprehensive.

Table 2. Boise Brewery (BB) v. Guideline Companies				
Analysis of Company-specific Risk Factors				
	Boise Brewery	PMID	SAM	HOOK
Benchmark Co. Specific Risk[1]	?	4.93%	7.62%	13.65%
Factors affecting risk premium:				
Product line diversification	6 beers	Craft beer (57% of sales in 2005) Full-flavored batch brewed soda (11% of sales) 5 alehouse restaurants (32% of sales)	18 beers 4 flavored malts 1 hard cider	9 beers Markets Widmer Hefewizen 0 malts 0 hard ciders
Brewery location (company owned)	1 - Idaho	1 - California	2 - Ohio (2/3 of volume packaged here; 70 employees with union) Massachusetts	2- Washington State New Hampshire
Brewery location (under contract)	0	1 - Oregon	3 - North Carolina (no renewal of union contract - potential disruption) New York (financial issues - potential disruption) Wisconsin Use of contract brewers lowers fixed costs but increases uncertainty of future costs Able to utilize excess capacity at other brewers - if capacity constrained, operating results uncertain	0 - greater control over product quality
Distributors	20	164 One distributor represents more than 10% of sales	400 Agreements terminable by distributor on short notice	570 Uses A-B's distribution network: Note A-B owns 33.6% of HOOK stock A-B Distribution Agreement terminates 12/31/14, but may be terminated upon certain events. If terminated early, extremely difficult to rebuild network. Additional funds would be required. Moreover, if terminated, would constitute event of default under bank credit agreement. Bank could require entire loan balance immediately due. Distribution agreement with Craft Brands (Joint venture between Craft Brands Alliance and company). If terminated, significant adverse consequences. One distributor is responsible for approximately 13% of sales.
Location of sales	Pacific Northwest	Washington, Oregon and California represented 80% of beer sales 38 states Company believes states above most competitive	Primarily U.S. (99%) Canada Europe Caribbean Pacific Rim	Entire contiguous U.S., however, concentrated in Northwest Company believes Pacific Northwest is most competitive region Faces extreme pressure in Washington State
Supplier	Only 1 supplier of malt Hops - from competitive resources	Fulfills raw material requirements through various sources	Only 1 supplier of malt 2 suppliers of hops 1 year supply of hops on-hand Maintains sufficient supply of yeast	Only 1 supplier of malt Hops - from competitive resources Maintains sufficient supply of yeast Access to multiple competitive sources of glass

Foreign currency exposure	None	Not significant	Does not hedge but significant exposure for raw materials	No need to hedge foreign exposure
Trademarks	Multiple	Multiple	Multiple	Multiple
Litigation	None	Pending claims in the aggregate not expected to be material	Yes - company believes it has meritorious defenses. However, if lose suit, then could harm company's operations	Yes - not likely to have material impact
Management depth	Highly dependent upon founder	Dependent upon key executives	Highly dependent upon founder, who also has significant influence over company (voting rights)	Dependent upon CEO and CFO
Quality and stability of earnings	High level of fixed and semi-variable costs causes gross margins to be especially sensitive to changes in sales volume	Operates restaurants - higher fixed costs Sensitive to changes in volume	Lower level of fixed and semi-variable costs due to partial reliance upon contract brewers	High level of fixed and semi-variable costs causes gross margins to be especially sensitive to changes in sales volume
Access to capital	Private	Negative working capital; but not overly concerned; Relatively short accounts receivable terms	No concerns	A-B Distribution agreement significantly restricts ability to raise capital
Exposure to variable rate debt	No	Yes, but no outstanding principal	No long-term debt, much less variable debt	$5.175 M subject to floating rate: LIBOR plus 1.75% Loan subject to default if A-B Distribution Agreement terminated
Subject to dilution from options	No	Yes, but as of 12/31/05 weighted avg. exercise price approximately equal to stock price.	Yes, weighted avg. exercise price = $16.18; stock price at $25. 1,854,700 shares outstanding	Yes, but as of 12/31/05 weighted avg. exercise price approximately equal to stock price.
Unique Regulation	Recent law change in Washington State eliminating requirement to sell through wholesalers will adversely impact operations.	Federal Alcohol and Tobacco Tax and Trade Bureau (TTB) audit Maximum exposure estimated at $1.5 M. Washington state reg.	None	Recent law change in Washington State eliminating requirement to sell through wholesalers will adversely impact operations the company's most important territory
Subject to paying earn-out	No	Yes, but to date milestones have not been met	No	No
Net operating loss carry forwards	No - S-corporation	Federal $9.6 M: Yes through 2023, starting to expire in 2017 State $2.6 M: Yes through 2024, starting to expire in 2006	Yes, amount not stated	Federal $30.2 M: Yes, expire from 2012 - 2024 State $500,000 tax-effected: Yes, expire from 2006 - 2019

We eliminated factors which might be more highly correlated with the size of the companies, rather than company-specific risk, since the adjusted CAPM captures small company risk[10]. We also ignored macro-economic and industry factors from consideration, as the Beta (systematic risk) captures these items. Thus, we did not consider (among other factors) threats to beer demand (for overall or "craft" beers), commodity costs, and competition from spirits, wine or imported beer.

Further, we decided not to analyze metrics such as coefficient of variation of earnings, given the inability to accurately allocate the variation among macroeconomic, industry, and company-specific risk factors. We have, however, analyzed fixed versus variable costs for the companies.

Other industries will invariably reveal additional factors worthy of consideration. But at least we know cumulatively what the various factors equal for each guideline company—rather than starting at 0% and having no other references from which to add or subtract points. The ability to analyze the factors, with benchmarks, is the beauty to this technique. So let's rank the four companies on each of the factors.

Analysis of risk

Table 3 lists our rankings. Based on the aggregate rankings alone, one might classify SAM as having the least amount of company-specific risk. However, we see that PMID has company-specific risk of only 4.9% compared to SAM's 7.6%. Thus we conclude that the market does not treat all factors affecting company-specific risk the same. In this case, we believe PMID's product-line diversification significantly dominates all other factors and lowers company-specific risk. PMID not only sells beer (57% of sales) but also sells soda pop (11%) and has restaurant operations (32%), which we view as beneficial diversification[11]. We therefore conclude that BB's company-specific risk should be greater than PMID's, since BB only sells beer.

Table 3. Boise Brewery (BB) v. Guideline Companies				
Ranking of Company-specific Risk Factors				
	Most Risk	Moderate Risk	Less risk	Least Risk
Factors affecting risk premium:				
Product line diversification	BB	HOOK	SAM	PMID
Brewery location (company owned)	BB	HOOK	PMID	SAM
Brewery location (under contract)	BB/HOOK		PMID	SAM
Distributors	HOOK	BB	PMID	SAM
Location of sales	BB	PMID	HOOK	SAM
Supplier	No meaningful differences			
Foreign currency exposure	SAM	PMID		BB/HOOK
Trademarks	No meaningful differences			
Litigation	SAM	HOOK/PMID		BB
Management depth	BB	SAM		PMID/ HOOK
Quality and stability of earnings	BB	HOOK	PMID	SAM
Access to capital	BB	HOOK	PMID	SAM
Exposure to variable rate debt	HOOK	PMID	BB	SAM
Subject to dilution from options	SAM	HOOK/PMID		BB
Unique Regulation	HOOK	PMID	BB	SAM
Subject to paying earn-out	PMID			BB/SAM/ HOOK
Net operating loss carry forwards	HOOK	PMID	SAM	BB
Controls and procedures	PMID	BB		SAM/ HOOK
Summary: Distribution of Rankings				
BB	7	2	2	5
HOOK	5	6	1	4
PMID	2	7	5	2
SAM	3	1	2	10

We also conclude that BB's company-specific risk premium should be greater than SAM's because of: 1) the relative distribution of factors between "Most Risk" and "Least Risk" in the aggregate; and 2) the relative distribution of factors between "Most Risk" and "Least Risk" for critical factors such as product line diversification, geographic concentration/location of breweries, and location of sales.

But we also believe that BB's company-specific risk premium should be less than HOOK's premium of 13.7%, which is greatly influenced by its distribution

and marketing agreements with Anheuser-Busch and Craft Brands, respectively. If either agreement terminated early, it would be extremely difficult for HOOK to rebuild its distribution network or re-launch its marketing and advertising activities without severe negative impact on its sales and operational results.

Thus, we now have an observable, market-driven range of company-specific risk premiums for microbreweries between 7.6% and 13.7%. Where does BB fit?

Again, based on the distribution of rankings, BB's company-specific risk premium is closer to HOOK's than SAM's. Thus our range has narrowed to 10.6% (mid-way between SAM and HOOK's company-specific risk premiums) and 13.7%[12]. Given the relative distributions of risk between BB and HOOK (please note that BB had more "Least Risk" factors and more "Less Risk" factors, and HOOK had more "Moderate Risk" factors, not to mention HOOK's exposure to potential cancellation of its distribution contract with Anheuser-Busch), we determined that BB's company-specific risk premium should be closer to 10.6% than 13.7%. We, therefore and somewhat subjectively, conclude that BB's company-specific risk is equal to 11.0%[13], resulting in a discount rate of 25.4% (see Table 1). Note: This conclusion assumes that the underlying cash flow projection has been constructed in a reasonable manner corresponding with the overall risk of the company.

Other appraisers might come to different conclusions; however, we have provided logical and defensible support for our opinion. Arbitrarily adding (or worse) subtracting points no longer seems defensible.

One might ask why we don't just look at the comparables' total cost of equity to determine a total cost of equity for our subject company. The reason: Separating total risk into the various components lowers the inherent subjectivity of the analysis, since we separately account for systematic risk and the small company risk premium, making our conclusion of the company-specific risk premium more "accurate." As a "sanity check," one can compare the total cost of equity conclusion (25.4%) with the guideline companies' total costs of equity.

Also, relative to one of our benchmarks, we applied a "negative" company-specific risk premium (i.e., 11.0% is less than 13.7%). However, since our reference point is no longer 0%, the conclusion is positive 11.0%, as opposed to negative 2.7%.

Finally, we did not find a relationship between market risk and company-specific risk; i.e., the highest beta stock (SAM) did not have the highest company-specific risk (HOOK). Moreover, we did not find a relationship between size and

company-specific risk; i.e., the largest company (SAM) did not have the lowest company-specific risk (PMID). We were not necessarily expecting to find any relationships, but it is important to note that company-specific risk is separate and unrelated from market risk and the size premium.

A quantum leap from traditional methods

While this technique is not perfect and does not completely remove subjectivity from the analysis, it is a quantum improvement over traditional methods to "calculate" company-specific risk.

Previous methods of starting at 0% are simply incorrect: As we've shown, even XOM and GE have company-specific risk! Moreover, if you start at 0% for every guideline company, then you have no framework or guide to properly quantify company-specific risk. Under this approach, appraisers all have a framework. Reiterating from our prior work, and as shown in this microbrewery example:

> [T]he benefits of [our] approach reside in the quantitative approach to the calculation and the ability to specifically compare the comparables with each other and with the subject company—rather than just starting at 0%, an arbitrary and incorrect reference point.

Further, just as risk-free rates, betas, equity risk premiums, and size premiums vary throughout time, so do Total Betas and company-specific risk premiums[14]. This further reinforces the use of our technique. We are now able to use timely data—or at least as timely as our calculation of Total Beta, which is dependent upon historical data, to form our company-specific risk conclusion. (Remember, we could always calculate a forward-looking Total Beta for many publicly traded stocks.) Gone are the days when an appraiser could subjectively add 1% for lack of management depth or 2% for customer concentration risk, or use factor models (including the plus/minus procedure, the numeric procedure and the listing procedure), with little or no analysis of how current conditions might price these risk factors.

Factor models, such as the Black/Green Build-Up Summation Method and Finison/Dailey Model™, among others, while useful in prompting appraisers to look at company-specific risk factors, are not rooted in empirical data and thus are completely subjective. Simply stated, these approaches do not rely upon empirical data, much less timely data, to support their conclusions.

Moreover, if you do not consider any companies as appropriate guidelines, you must still perform some analysis (whether using this technique or the more subjective analyses) in quantifying company-specific risk. At least this method permits an appraiser to retrieve a Form 10-K from companies in the pertinent industry and analyze them for company-specific risk, since by definition, the risk

is just that: company-specific and not incorporated in Beta (systematic risk) or the size premium. With this technique, we have created an empirical approach to benchmark company-specific risk.

Based on prior statistical analysis, this approach may not be applicable for all comparables. However, as we stated in our prior work, this could be an indictment of the CAPM as much as our technique. One possible explanation for the calculation of very high CSRPs (outside our current paradigm) is that some stocks might be more efficiently priced than others; i.e., there might be some unexplained randomness to returns that are not dependent upon systematic or unsystematic risks. Our calculation of company-specific risk assumes either one of the following:

  • There is no unexplained randomness to stock price returns. (This applies better to some stocks than others, and the analyst must determine the quality of this assumption for each guideline company). Or,
  • Unexplained randomness (to the extent that it exists) is part of company-specific risk.

In any event, we believe it is incumbent upon the appraiser at least to explore analyzing the particular comparables in a case, to form credible opinions regarding company-specific risk. This analysis is similar to rejecting a guideline company's multiple as not being useful to determine an appropriate multiple for a private company. If the closest comparables are not statistically relevant or lead to questionable conclusions, then consider broadening your search.

A three-point summary

In sum, we have shown the following:

  1. Yes, you can quantify company-specific risk for publicly traded stock (empirical data), whether or not it is diversified away. This is no different than calculating or relying upon betas, equity risk premiums and size premiums—all commonly accepted measures of risk calculated from publicly traded stock returns. This technique takes the CAPM one step further. If you are comfortable with the CAPM, you should be comfortable with this technique.
  2. If you have reasonable benchmarks (such as we had in the microbrewery industry), then you can analyze the possible sources of unique risk behind each benchmark and appropriately—and less subjectively—fit your subject company inside the framework; and
  3. This technique requires significantly more work than most of us have previously done to determine company-specific risk. However, it eliminates much of the subjectivity in calculating company-specific risk, and thus leads to more accurate and defensible conclusions of

value.

We recognize that people are resistant to change. However, just because this technique is new and contrary to popular belief does not mean that it is not a better way to analyze and quantify company-specific risk. All other methods to date do not quantify it. We highly encourage you to become an early adopter of this technique.

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[1] "Company-Specific Risk—A Different Paradigm: A New Benchmark," *Business Valuation Review* (Spring 2006), abstracted in the Jan. 2007 *BVU*.

[2] A proof of this formula appears in the *Business Valuation Review* article.

[3] We calculated Beta, Total Beta, and R using weekly returns from December 24, 2001 through October 2, 2006 (250 trading weeks) with the S&P 500 as the market benchmark. We used size premiums from *Stocks, Bonds, Bills and Inflation Valuation Edition 2006 Yearbook* (Ibbotson Associates, 2006) ("Ibbotson"), for companies with market capitalization between $16.1 B and $367.5 B. We also used the adjusted closing prices for both the index and XOM as calculated by Yahoo!Finance, which account for dividends as well as any stock splits.

[4] We are not claiming that another company can not have a company-specific risk premium less than 3%-4%, as a company's size premium may mathematically lower a firm's company-specific risk premium, the residual in the equation. To investigate this further, we calculated the CSRP for 4Kids Entertainment (ticker: KDE), which had the highest market capitalization in decile 10, according to Ibbotson. We calculated KDE's CSRP equal to more than 6%. Thus, we feel confident in making the assertion that all companies' CSRPs are greater than 0%.

[5] At his presentation "How Diversifiable is Firm-Specific Risk?" to the CFA Society of Idaho on October 20, 2006.

[6] Ross, Stephen A., Westerfield, Randolph W., and Jaffe, Jeffrey, *Corporate Finance* (3d edition)(Irwin, 1993) p. 325.

[7] Some academic studies have determined that company-specific risk matters a great deal in investment returns.

[8] In *Gesoff v. IIC Industries Inc.* 2006 Del. Ch. LEXIS (May 18, 2006)(abstracted in Sept. 2006 *BVU*) the Delaware Chancery declined to add a CSRP in computing the cost of capital when the expert analysis was "unmoored to any objective financial analysis the court can reasonably evaluate." We also quote Roger Grabowski in the Oct. 2006 *BVU*: "One thing we do recognize is that the valuation profession can use more tools grounded in market observations to help develop discount rates."

[9] There could be a potential mismatch in timing, since we calculated Total Beta based on five years of data but used last year's Form 10-K to analyze company-specific risk. Thus additional analysis for a specific engagement may be warranted. One potential solution is to calculate a forward-looking Total Beta. (Remember, $T\beta = fs/fm$) One could calculate implied volatilities, or forward-looking standard deviations, for individual stocks (assuming they have options) as well as for the market based on the Black-Scholes Option Pricing Model.

[10] Thus we have not ranked market value of equity, book value of equity, market value of invested capital, book value of invested capital, sales, net income, EBITDA or number of employees, etc. We note, however, that some of these factors have embedded elements of company-specific risk.

[11] The market may not view all diversification as beneficial. For example, conglomerate-type diversification into unrelated product lines may actually increase company-specific risk.

[12] We believe BB's company-specific risk premium is less than 13.7%. However, another brewery might display larger company-specific risk than the top-end of this range of guideline public companies. Conversely, another microbrewery might warrant a smaller CSRP than the lower-end of the range. In other words, guideline companies may not always bracket a subject company, making determination of an appropriate CSRP more subjective than this example.

[13] This technique is most appropriate for use with the CAPM, particularly if an appraiser does not incorporate an industry risk premium in the build-up approach. If one uses this technique in the build-up approach and does not use an industry risk premium, then other "company-specific" factors will have to be

analyzed in Table 2. In any event, we agree with Jay Fishman, FASA, who criticized the use of the build-up approach and particularly the industry risk premium (see Editor's column, *Business Valuation Review*, Spring 2006). Because Total Beta is dependent upon Beta (CAPM), we highly encourage appraisers to use this technique in conjunction with the CAPM.

[14] See, Bennett, James A., and Sias, Richard W., "Why Company-Specific Risk Changes over Time," *Financial Analysts Journal* (Volume 62, Number 5).

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Commentary:
None