

Issues in Estimating

QR quickreadbuzz.com/2019/12/11/business-valuation-kirkland-henriquez-issues-in-estimating-2/

National Association of Certified Valuators and Analysts

December 11,
2019

The Cost of Equity Capital (Part II of II)

This is the second of a two-part series article focused on issues that arise estimating the cost of equity capital. In most forensic-related valuation analyses, one procedure that affects most valuations is the measurement of the present value discount rate. This discount rate analysis may affect the forensic-related valuation of private companies, business ownership interests, securities, and intangible assets. This discussion summarizes three models that analysts typically apply to estimate the cost of equity capital component of the present value discount rate: (1) the capital asset pricing model, (2) the modified capital asset pricing model, and (3) the build-up model. This discussion focuses on the cost of equity capital inputs that are often subject to a contrarian review in the forensic-related valuation.



Resources:

[Issues in Estimating the Cost of Equity Capital \(Part I of II\)](#)

Issues in the Cost of Equity Capital

The cost of equity capital may be a controversial issue in valuation-related disputes. This is because professional judgment may be required to select the inputs to the cost of equity capital calculation. The following sections address several issues that affect both the MCAPM and the BUM.

Size Risk Premium

The selection of the appropriate size equity risk premium alpha component is sometimes an issue in valuation-related disputes. Analysts may have differing interpretations regarding the selection of the appropriate size-related equity risk premium.

In general, most analysts apply the size equity premium alpha factor component in the cost of equity calculation. If other market factors have incorporated the risk regarding size differences, then the size premium may not be appropriate. For example, one scenario in which it may be inappropriate to include a size risk premium is if the subject entity is of similar size to its guideline publicly traded companies.

The market capitalizations of companies that comprise the benchmark public company deciles for size risk premiums do not overlap in numerical order. That is, each decile does not start exactly at the end of the previous decile.

For example, in the *2017 Valuation Handbook—Guide to Cost of Capital (Valuation Handbook)*, the seventh decile starts at a market capitalization of \$1,033.341 million, while the eighth decile ranges from a market capitalization of \$569.279 million to \$1,030.426 million, and the 9th decile ends at a market capitalization of \$567.843 million.

Since the deciles are not continuous, one analyst may argue that a subject company with a market capitalization of \$1,032.0 million should have a size risk premium associated with the seventh decile, while another analyst may argue that the size risk premium should be from the eighth decile.

Alternatively, some analysts rely on the decile groups, that is the "Mid-Cap 3&5," "Low-Cap 6&8," and "Micro-Cap 9&10."

The application of the 10th decile size risk premium may be controversial. The companies that comprise the company-specific risk premium (CRSP) 10th decile size category have equity market capitalizations that range from \$2.5 million to \$262.9 million.⁵

As of December 31, 2016, the risk premium related to the companies comprising the 10th decile was 5.59 percent. The companies that comprise the CRSP 10th decile size category are broken down into subcategories 10a and 10b, as presented in the *Valuation Handbook*. The companies that comprise the 10a subdecile include companies with market capitalizations between \$127.3 million and \$262.9 million, and the reported size premium is 4.09 percent.⁶

Within the 10a subdecile and 10b subdecile categories of the 10th decile, the *Valuation Handbook* presents more subcategories. The 10a subdecile is broken into 10w and 10x subdeciles, while the subdecile 10b is disaggregated into 10y and 10z.

According to the *Valuation Handbook*, “The CRSP Deciles Size Premia include all companies with no exclusion of speculative (e.g., start-up) or distressed companies whose market capitalization may be small because they are speculative or distressed.”⁷

If the subject private company is not financially distressed or entering bankruptcy but has the market capitalization fitting the 10th decile, the 10th decile size risk premium may not be appropriate. In situations in which that subject company fits into the 10th decile but is not operating under financial distress or entering bankruptcy, the application of the Micro-Cap 9â10 decile size risk premium may be a more supportable option.

If the subject company is under financial distress or entering bankruptcy, then the application of the 10th decile, or its subcategories, may be the most appropriate measure of size premium risk.

Company-Specific Risk Premium

A typical range for the application of the CSRP is one percent to 10 percent. However, it is not uncommon for an analyst to apply a CSRP of zero percent or even a negative percentage. In a zero percent or negative percent CSRP selection scenario, the implication is that the subject company provides less of an investment risk than an investment in a general equity stock market participant.

It is uncommon for an analyst to apply a CSRP of greater than five percent. However, in certain matters, if the subject entity is in financial distress, an early stage start-up company, subject to private equity or venture capital funding, or other extraneous circumstances, then it may be appropriate to select a CSRP greater than five percent.

There is no one generally accepted model, formula, equation, or method available for the analyst to quantitatively measure the CSRP. Typically, the CSRP is estimated based on the analyst’s informed judgment, with consideration to various recognized factors. Analysts have suggested certain sets of factors that should be considered regarding the CSRP selection process.

The textbook *Understanding Business Valuation* presents factors that analysts often consider in selecting the CSRP.⁸

Analysts may consider each of these quantitative and qualitative factors in selecting the appropriate CSRP. Certain categories of CSRP financial factors to consider include the following list:

1. Economy risk
2. Operating risk
3. Asset risk
4. Market risk
5. Regulatory risk
6. Business risk
7. Financial risk
8. Product risk
9. Technological risk
10. Legal risk

Also presented in *Understanding Business Valuation*, certain categories of nonfinancial CSRP factors include the following list:⁹

1. Economic conditions
2. Location of business
3. Depth of management
4. Barriers to entry into market
5. Industry conditions
6. Competition
7. Quality of management
8. The bottom line

Market-Derived Equity Risk Premium

Many analysts agree that risk premiums seem to vary over time. A variety of different methods exist for estimating an ERP. Three of the ERP measurements include the historical, the supply-side, and the Duff & Phelps recommended ERP.

Duff & Phelps estimates the historical ERP by calculating the difference between actual historical excess returns and the excess return predicted by beta. One issue with this method is that historical returns may not be indicative of future returns. Another issue is that historical average returns tend to be fairly unstable and can vary widely depending on the time period selected by the analyst.¹⁰

To address this issue with the historical ERP, analysts have developed other methods for estimating an ERP. One such method results in the supply-side ERP.

The supply-side ERP shares the same historical data information that is used to calculate the historical equity risk premium. However, the supply-side ERP incorporates an adjustment based on the observation of stock price-to-earnings ratio inflation that is not expected to continue in the future. The supply-side method typically provides a lower ERP than the historical method.

In *Global GT LP v. Golden Telecom, Inc.*,¹¹ the Delaware Court of Chancery concluded that the application of the supply-side ERP was more appropriate than the application of the historical ERP.

In its opinion, the court acknowledged that the historical equity risk premium was more typically applied. However, the court concluded that the academic community accepted the supply-side equity risk premium as the more appropriate ERP section.

Another ERP model in the Duff & Phelps reference literature includes the "recommended" ERP. This ERP is published annually by Duff & Phelps.

The Duff & Phelps "recommended" ERP is based on a variety of economic information and other ERP estimation methodologies. The Duff & Phelps recommended ERP is intended to account for economic changes that affect investor expectations of equity risk and returns on a normalized basis.

The Duff & Phelps "recommended" ERP was first published in 2008 as a response to the economic environment at that time. The Duff & Phelps recommended ERP and normalized risk-free rate are based on the belief that the historical ERP and supply-side ERP overstate equity investors return expectations.¹²

The application of the Duff & Phelps "recommended" ERP and the Duff & Phelps normalized risk-free rate generally result in a cost of equity calculation that is lower than the cost of equity calculation using the historical and supply-side ERPs with a market derived risk-free rate indication.

Build-Up Model Issues

Selecting an Industry Risk Premium

Since industry risk premiums are based on Standard Industrial Classification (SIC) codes, it is important that the analyst has support for the selection of SIC codes for the subject company. Analysts may disagree with the selection of the appropriate SIC code. In certain cases, the analyst may select a very general SIC code because a more specific SIC code could not be identified.

Multiple Industry Risk Premiums or Weighting Industry Risk Premiums

When a private company has operations across several industries, relying on more than one SIC code for the industry risk premium may be appropriate.

For example, some companies (e.g., conglomerates) have complex business operations. Berkshire Hathaway is an example of a company with a complex business structure.

Berkshire Hathaway owns business operations in several industries—such as, the paint and battery industries through their Benjamin Moore and Duracell brands, respectively.

Possible SIC codes for the paint and battery industries are as follows:

- SIC 2851: paints, varnishes, lacquers, enamels, and allied products
- SIC 3691: storage batteries

The long-term supply side industry risk premiums for the closest SIC codes according to the *Valuation Handbook* are 0.39 percent for SIC code 28: chemicals and allied products and 2.8 percent for SIC code 369: miscellaneous electrical machinery.

Prior to deciding how to use this industry data, the analyst should also consider the number and type of companies that are used by Duff & Phelps to calculate the industry risk premium indications. In some cases, Duff & Phelps may rely on five companies, and in other cases, 30 or 40 companies may be used. In certain cases, the data may be unduly influenced by one or two companies—this is more of an issue if there are only a handful of companies that comprise the industry risk premium calculation.

Since there can be substantial differences in the industry risk premiums, analysts may consider using a weighted average of the industry risk premiums. Generally, the analyst will use revenue or earnings before interest, taxes, depreciation, and amortization (EBITDA) as the metric to determine the applicable weight for the industry risk premiums.

It is not uncommon for analysts to disagree on how the weighting system should be determined—or even if a weighted average should be applied as opposed to a simple average.

Modified Capital Asset Pricing Model Issues

Beta is an integral component of the application of the MCAPM. In order to properly address some of the more technical points with the MCAPM, it may be helpful to understand the process of calculating and selecting a beta. The following list provides an overview of the process:

1. Select the guideline publicly traded companies (GPTCs) that are relatively similar to the subject company
2. Calculate the GPTC beta estimates based on different frequencies of observation and observation periods
3. Unlever the GPTC beta estimates based on their respective capital structures
4. Select an appropriate capital structure for the subject company
5. Relever the GPTC beta estimates based on the selected capital structure for the subject company

6. Review and analyze the relevered betas based on their frequency of observation and observation periods
7. Select an appropriate beta for the subject company

Some of the issues in this process include: (1) the selection of the GPTCs, (2) the frequency of observation, (3) the observation periods, (4) relevering based on the capital structure, and (5) the appropriate beta estimate.

Selecting Guideline Publicly Traded Companies for Beta

One analyst may consider that the companies the opposing analyst selected to calculate beta are not truly comparable. In the *Estate of Victor P. Clarke*,¹³ the Tax Court listed the following factors to determine the comparability of GPTCs to the subject company:

1. Products
2. Markets
3. Management
4. Earnings
5. Dividend-paying capacity
6. Book value
7. Position of company in industry

While this is a substantial list of factors, it is not an exhaustive list.

The American Society of Appraisers recommends consideration of the following qualitative and quantitative factors for selecting guideline companies:

1. Industry
2. Multiple lines of business
3. Nature of market
4. Geographic operations
5. Financial performance (including size)
6. Reputation and maturity of the company
7. Management depth and experience
8. Labor force availability, experience, turnover, and so forth

The analyst may select a conglomerate type business in the GPTC group because of a product/service offering that is comparable to the subject business. Or, the analyst may exclude the conglomerate-type business because its size or diversified operations do not compare to the subject business. The inclusion or exclusion of a conglomerate in determining beta may result in large differences in the concluded cost of equity capital.

Ultimately, the analyst is responsible for supporting the selection of GPTCs used to estimate the appropriate beta.

Frequency of Observation for Beta

Since betas are calculated based on observations, the appropriate frequency of the observation can be subject to disagreement. Three typically applied frequencies are daily, weekly, and monthly.

The benefit of employing higher frequency is that, due to the larger number of observations, outliers may have a lesser effect. Because of this, some analysts prefer to use daily or weekly frequencies.

The application of lesser frequency observations—monthly estimates or weekly estimates—may indicate that the GPTCS have a relatively low active trading volume. Higher frequency estimates with low active trading volume may be subject to illiquidity bias issues.¹⁴

Observation Period for Beta

One disagreement among analysts involves the observation look back period from which the beta is estimated. Two typical observation periods are two-year and five-year look back periods. One consideration for using a two-year period may be that some of the GPTCs underwent their initial public offering within the last five years and significant volatility may be incorporated in a five-year observation period. The impact of an outlying company return observation is lessened by the incorporation of a longer time period.

Capital Structure for Relevering Beta

Analysts typically unlever GPTC betas in order to remove the effects of debt in the company's capital structure. Unlevering is achieved using the respective capital structures. Relevering these betas is based on the analyst's selection of an appropriate capital structure for the subject company.

The analyst should be able to support the selection of the capital structure used in the unlevering and relevering of beta estimates. The analyst typically estimates the subject company capital structure based on one of the following:

1. The optimal capital structure
2. The industry-based capital structure
3. The actual capital structure

An issue may arise in the analyst's estimation of the subject company's actual capital structure. Some analysts use an iterative method (based on market value of invested capital) to determine the subject company's actual capital structure. Other analysts use the subject company's accounting-book-value-based capital structure.

If the subject is a controlling ownership interest, then the holder of the subject interest is able to affect the capital structure of the company. In this case, the analyst typically selects an optimal capital structure base. To perform that procedure, the analyst may calculate and rely on GPTC capital structures, or other industry capital structure data. Additionally, the analyst may apply an optimal capital structure based on a target provided by company management.

It is up to the analyst to determine which capital structure is the most appropriate. The capital structure estimate used for calculating the WACC should be the same capital structure estimate used to relevel the selected beta estimate.

Multiple Betas or Weighting Betas

If the subject interest has highly diversified business operations and/or product/service offerings, the analyst may select guideline companies from several different industries. This procedure may raise an issue between analysts, especially if some of the included guideline companies:

1. Represent only a small portion of the subject company operations and
2. Have different capital structures and betas from the other guideline companies.

Alternatively, the analyst may calculate several different industry beta estimates based on various guideline companies and apply a weighting system to determine an appropriate beta for the subject company. This procedure for calculating beta may raise an issue. This is because the opposing analyst may disagree with:

1. The calculation of multiple betas and
2. The weighting system applied.

Additionally, one analyst may apply a weighting system based on revenue, while the other may apply one based on EBITDA. The analyst should explain and support the application of any weighting system.

Calculating multiple betas to reflect the different operations of the subject interest may be appropriate. However, this procedure may raise an issue if the subject interest is well diversified. The opposing analyst may argue that there are GPTCs that incorporate this diversification.

Summary and Conclusion

While the BUM and the MCAPM are generally accepted cost of equity capital models, there may be disagreements over the inputs to each model. This is because a minor difference in the discount rate may lead to substantial differences in the overall business value conclusion.

It is important for the analyst to understand, support, and explain the rationale for selecting and applying each factor applied in the cost of equity capital analysis.

Notes:

5. Duff & Phelps, *2017 Valuation Handbook: Guide to Cost of Capital*, Appendix 3.
6. *Ibid.*
7. *Ibid.*, 412.
8. Gary R. Trugman, *Understanding Business Valuation*, 2nd ed. (New York: American Institute of Certified Public Accountants, 2002), 331-334.
9. *Ibid.*
10. <https://faculty.mcombs.utexas.edu/keith.brown/AFPMaterial/TopicC10.1.pdf>
11. *Global GT LP v. Golden Telecom, Inc.*, 993 A.2d 497 (Del. Ch. 2010)
12. Duff & Phelps, *2018 Valuation Handbook U.S. Cost of Capital* (Hoboken, NJ: John Wiley & Sons, 2018), 37.
13. *Estate of Victor P. Clarke*, 35 T.C.M. 1482 (1976).
14. "Estimating Risk Parameters," Aswath Damodaran, Stern School of Business, <http://people.stern.nyu.edu/adamodar/pdfiles/papers/beta.pdf>

This article was previously published in Willamette Insights and is reprinted here with permission.

John Kirkland is an associate in the Atlanta office of Willamette Management Associates.

Mr. Kirkland can be contacted at (404) 475-2303 or by e-mail to jckirkland@willamette.com.

Nicholas J. Henriquez is an Associate in the Atlanta office of Willamette Management Associates.

Mr. Henriquez can be contacted at (404) 475-2317 or by e-mail to njhenriquez@willamette.com.