Estimating Discount Rates and Direct Capitalization Rates in a Family Law Context

Stephen P. Halligan

Estimating the risk-adjusted discount rate or direct capitalization rate are among the more challenging aspects of developing a reasonable business value indication when using the income approach to valuation. Generally accepted business valuation practice recognizes multiple methods for the development of discount rates and capitalization rates. Analysts that (1) implement generally accepted practice, (2) rely on credible sources for rate of return information, and (3) provide circumstance-specific support and rationale when developing discount and capitalization rates will be better positioned to defend their business value conclusions.

Introduction

Valuation analysts ("analysts") often use the income approach to value a business, business ownership interest, security, or intangible asset within a family law context. In the income approach, the analyst will use a discount rate or direct capitalization rate to convert projected income (e.g., net income or cash flow) into an estimate of value.

The discount or capitalization rate, if calculated incorrectly, may exert a significant impact on the concluded value of the subject company or subject business interest. Therefore, it is important that the analyst (1) understands the differences between discount rates and capitalization rates, (2) knows the methods commonly used to estimate discount rates and capitalization rates and understands how to properly apply them, and (3) considers and assesses the unsystematic risks specific to the subject company.

This discussion will summarize (1) the distinctions between a discount rate and a direct capitalization rate, (2) the methods and formulas commonly used to estimate discount rates and capitalization rates, and (3) the identification and quantification of size risk premiums, industry-specific risk premiums, and company-specific risk premiums that may affect the discount rate or capitalization rate.

The Discount Rate and Capitalization Rate Defined

In its most basic form, the income approach estimates the value of a business or asset as the present value of the income to be generated by that particular business or asset. In other words, the income approach values a business or asset by discounting a projected income by a rate of return that reflects the risk inherent in the business and/or income steam.

Principally, there are two valuation methods within the income approach: (1) yield capitalization and (2) direct capitalization. Both of these methods use analogous measures of return and, if properly applied in the appropriate income-based analytical method, should produce consistent results.

Depending on the income approach valuation method selected (i.e., yield capitalization or direct capitalization), the analyst will use either a discount (yield capitalization) rate or a capitalization (direct capitalization) rate to convert the projected level of income into an estimated present value. Discount rates and capitalization rates represent risk-adjusted rates of return that investors expect on various investment options.

Both rates of return (i.e., a discount rate or a capitalization rate) take into account the risks and

uncertainties associated with the income stream that is projected for the subject investment (i.e., the subject company or asset). It is important to note, however, that although these measures of risk and return are related and have the ability to produce complementary results, they are not interchangeable.

Within the yield capitalization method, it is appropriate to use the discount rate, which may also be referred to as the "present value rate," "present value discount rate," "required rate of return," or the "yield capitalization rate." Within the direct capitalization method, it is appropriate to use the direct capitalization rate, often referred to simply as the "capitalization rate."

Yield Capitalization and the Discount Rate

By definition, the discount rate is a rate of return used to convert a future monetary sum into present value.[1]

Alternatively, the discount rate is the "opportunity cost" that an investor would have to forego by investing in the subject company rather than investing in other investments that have similar risk-return profiles. This opportunity cost (i.e., discount rate) is estimated based on consideration of market conditions prevailing as of the valuation date and as they apply to the specific characteristics of the subject investment.

The discount rate is estimated through the use of one of several generally accepted models used in the calculation of the cost of equity capital. These models include, but are not limited to, (1) the capital asset pricing model (CAPM) or modified capital asset pricing model (MCAPM) and (2) the build-up model (BUM). These models are described later in this discussion.

The discount rate is the required rate of return used in a yield capitalization analysis. In a yield capitalization analysis, the analyst projects an appropriate measure of income for several discrete time periods into the future. This projection of prospective income is then converted to a present value by the use of the discount rate. An example of an income approach method that uses yield capitalization is the discounted cash flow method.

Direct Capitalization and the Capitalization Rate

Within the direct capitalization method—incorporating a *capitalization* rate rather than a *discount* rate—a single-period, or point-estimate, measure of income expected to be generated by a business over a long-term operating horizon (i.e., 20-plus years) is "capitalized by"—or divided by—a capitalization rate. The expected level of income should reflect a reasonable level of earnings based on consideration of (1) historical earnings, (2) expected earnings, and (3) the anticipated impact of industry and economic conditions.

By definition, a capitalization rate is any divisor (usually expressed as a percentage) used to convert anticipated economic benefits of a single period into value.[2]

It is important to note that although the definition of the capitalization rate is similar to the definition of the discount rate, it contains a subtle, yet significant, difference from the discount rate definition. A discount rate is used to convert a *series* or stream of future income to an indicated present value, while a capitalization rate is used to convert only a *single-period* expected level of income to an indicated present value.

The difference between discounting a series of future income returns and capitalizing a single-period level of income is rooted in the assumptions underlying the direct capitalization and yield capitalization models.

The direct capitalization method assumes that the projected level of normalized income will either (1) remain constant or (2) increase at a constant rate over time. In instances where the projected income is expected to increase at a constant rate over time, the capitalization rate is equal to the discount rate minus the expected long-term growth rate in the income measure.

The long-term growth rate is subtracted from the discount rate due to the fact that a discount rate considers the inflationary effects incorporated by the CAPM (or MCAPM) and BUM. This concept is explained further in *Valuing a Business*.

> If the build-up procedure or the capital asset pricing model procedure is used to develop the present value discount rate from which the growth rate is to be subtracted in order to derive a direct capitalization rate, that discount rate incorporates the expected rate of inflation as part of the required rate of return. Since the nominal government bond interest rates used in developing these discount rates incorporate expected inflation over the duration of the bond, the implication is that the selected long-term growth rate should also reflect the impact of expected inflation on the economic income variable being capitalized.[3]

"The CAPM recognizes there is a direct correlation between the cost of capital and the risk associated with a particular investment. . . ."

Therefore, in its most simple form, the capitalization rate is equal to the discount rate for the subject company, less the expected long-term sustainable growth rate in the income measure, however defined. This means that in order to develop a more meaningful understanding of the capitalization rate, it is important to understand the components of the discount rate.

Estimating the Discount Rate

Estimating a reasonable discount rate may be a challenging and controversial aspect of the business valuation, particularly as relating to the analysis of nonpublic (i.e., closely held) companies.

To estimate the required rate of return for a particular company, the analyst should be prepared to deal with the risk-related complexities associated with nonpublic companies. These complexities include the consideration of risk-based adjustments for size, management depth, liquidity, and other company-specific (i.e., unsystematic) risk factors.

Several generally accepted methods are available to estimate a discount rate, from which a capitalization rate may be derived. A description of all of the available methods used to estimate a discount rate is beyond the scope of this discussion. Therefore, this discussion focuses on two of the more common methods used to estimate a discount rate. These methods are (1) the CAPM (or MCAPM) and (2) the BUM.

Capital Asset Pricing Model

The CAPM is a widely recognized method used to estimate a discount rate. It is discussed extensively in valuation literature and in the valuation community. The focus of this discussion is to understand the basic concepts of the CAPM, the underlying assumptions inherent in those basic concepts, and the use of the CAPM as it relates to the estimation of discount and capitalization rates. Therefore, this section includes only a simplified description of the CAPM.

The CAPM is defined as follows:

> A model in which the cost of capital for any stock or portfolio of stocks equals a risk-free rate plus a risk premium that is proportionate to the systematic risk of the stock or portfolio.[4]

Simply stated, the CAPM reflects the relationship between (1) the risk of an asset and (2) its expected return. While the CAPM was originally developed for the analysis of marketable securities, analysts have found the CAPM to be a practical method for estimating the expected rate of return for assets that do not trade in a public marketplace.

The CAPM recognizes there is a direct correlation between the cost of capital and the risk associated with a particular investment, and that every such investment carries two distinct risks: (1) systematic risk and (2) unsystematic risk. Systematic risk, also referred to as "market risk," is the risk associated with investing in the market as a whole and that cannot be eliminated through diversification. This measure of systematic risk is often referred to as "beta."

The second type of risk—unsystematic risk—is the risk that is unique to an individual investment and represents the volatility of an investment that is uncorrelated with general market moves. The calculation of unsystematic risk, to be discussed in more depth later, requires a complete analysis of the company or investment, comparing characteristics of the subject investment to (1) other companies or practices in the same industry and (2) the market as a whole. In contrast to systematic risk, unsystematic risk typically can be mitigated through diversification.

The CAPM equation is often expressed as follows:

$$E(R_i) = R_f + \beta\,(RP_m)$$

where:

$E(R_i)$ = Expected return for an individual security (i)

R_f = Rate of return available on a risk-free security

β = Beta

RP_m = Equity risk premium (ERP) for the market as a whole[5]

Three of the company-specific equity risk premium components of the CAPM are as follows:

1. The risk-free rate
2. The market-derived ERP
3. The selected beta

The risk-free rate reflects the minimum return an investor expects to receive from his or her investment, based on the impact of inflation over time and expectations regarding the real rate of interest on money.

The market-derived ERP is the market return that an investor can expect over the risk-free rate by investing in the market portfolio, which is assumed to consist of a fully diversified bundle of perfectly liquid securities and is the same for all investors.

The beta component of the CAPM represents the subject security's sensitivity to the market as a whole. This variable calculates the amount of expected systematic risk, or market risk, for the subject security.

These three components of the CAPM, in part, compensate the investor for the assumed risk he or she takes by investing in a certain security. Because the risk of the security, as measured by the CAPM, is based on its relationship to the diversified portfolio, it assumes that the unsystematic risks (i.e., company-specific risks), are diversified away. Therefore, in the CAPM, the investor is only compensated for the systematic risk.

As a result, the original unmodified version of the CAPM assumes that the only component of risk that investors care about is the risk of the market (i.e., systematic). In practice, however, it is common to adjust the CAPM (to the MCAPM) in order to reflect different risk-return profiles and the additional risk normally associated with investments other than publicly traded equity securities. Therefore, the basic form of the CAPM is typically modified to reflect the additional risk associated with (1) the size of the subject company and (2) company-specific risk factors.

The MCAPM seeks to incorporate these risk premiums in the quantification of a required rate of return.

The MCAPM formula is often expressed as follows:

$$E(R_i) = R_f + \beta \times RP_m + RP_s \pm RP_c$$

where:

$E(R_i)$ = Expected return for an individual security (i)

R_f = Rate of return available on a risk-free security

β = Beta

RP_m = ERP for the market as a whole

RP_s = Risk premium for small size

RP_c = Risk premium attributable to other company-specific risk factors[6]

Build-Up Model

A second method commonly used to estimate a discount rate in valuations of small businesses is the BUM. In the BUM, a discount rate is estimated by summing the analyst's quantified assessments of the systematic and unsystematic risks associated with a particular business or interest. The BUM uses four basic elements to estimate a discount rate.

The BUM formula is often expressed as follows:

$$E(R_i) = R_f + RP_m + RP_s \pm RP_i \pm RP_c$$

where:

$E(R_i)$ = Expected (market required) rate of return on security (i)

R_f = Rate of return available on a risk-free security as of the valuation date

RP_m = General expected ERP for the "market"

RP_s = Risk premium for smaller size

RP_i = Risk premium attributable to the specific industry

RP_c = Risk premium attributable to the specific company[7]

The first component of the CAPM, the MCAPM, and the BUM is the risk-free rate of return. The risk-free rate is considered to represent a riskless investment with virtually no risk of default. The most common source for a risk-free rate proxy is U.S. Treasury bonds.

When selecting a risk-free rate, it is appropriate to select a Treasury bond with the same maturity as the investment horizon for the subject company. Typically, the 20-year Treasury bond is used. This is

because the 20-year Treasury bond is the benchmark that the Duff & Phelps (D&P) data used to estimate the equity risk premium.

The second component of the BUM is the ERP. This element of the discount rate considers the general expectations of the market as a whole. This is the premium that investors should receive in order to entice them to invest in the public equity markets instead of in riskless, long-term government securities (e.g., risk-free Treasury bonds).

The third component of the BUM is a size premium that is often added when valuing small, closely held businesses. This risk premium is added because the empirical evidence provided by D&P and others show that, generally speaking, as the size of a company or practice decreases, the risk of that company increases. Therefore, a smaller company or practice must pay an additional risk premium in order to attract funds. Both the ERP and size premium can be obtained from the D&P *Valuation Handbook: Guide to Cost of Capital*.

The final component of the BUM is the risk specific to the company being valued and the industry in which it operates. This is often one of the more subjective areas of business valuation and one that should be given careful consideration in family law cases.

Company-specific risk includes risk associated with the particular industry in which the subject company operates in relation to the economy as a whole, as well as the risks associated with the internal workings of the subject company, including such things as management, leverage, key person reliance, dependence on specific suppliers and customers, and the like.

Estimation of Premiums in the MCAPM and BUM

Equity Risk Premium

The ERP, as discussed previously, is the measure of the incremental return that investors demand to be compensated for when investing in the market portfolio of common stocks, represented by a broad-based market index (e.g., S&P 500), rather than investing in risk-free securities. If an investor opts to invest funds in an investment that is riskier than the risk-free rate (e.g., a U.S. Treasury bond), the investor expects to be compensated for the increased risk assumed by investing in the market.

There is no single, universally accepted methodology for estimating the ERP. As a result, there are many different types of ERP estimates, though some may be labeled with the same general term. The estimated ERPs can vary widely based on assumptions used in the calculation of each (e.g., time period analyzed, risk-free rate used, computation of the average returns).

As a result of the wide variations in ERPs, it is common for the analyst to use one of the ERPs calculated and published by D&P. As of the current date, D&P publishes two unconditional ERPs and one conditional ERP for analysts to use to estimate discount and capitalization rates. These ERPs are provided in D&P's annual publication, the *Valuation Handbook: Guide to Cost of Capital*. The three ERPs are as follows:

1. The long-horizon expected ERP (historical)
2. The long-horizon expected ERP (supply-side)
3. The D&P recommended ERP (conditional)

The calculations of these three ERPs can be categorized as either ex ante or ex post. Ex ante is a Latin phrase meaning "before the event." Methods referred to as "ex ante" mean that the ERP was estimated using the returns on a diversified portfolio implied by expected (future) stock prices or expected dividends. Ex post is a Latin phrase meaning "after the event." Methods referred to as "ex post" mean that the ERP was estimated using the averages of realized (historical) single-period returns, or by using the returns on common stocks in terms of realized multiyear compound returns.[8]

The historical ERP and the supply-side ERP are both considered "unconditional" ERPs, and are essentially the same equation with slightly different inputs. The D&P historical ERP is calculated as the large company stock total returns minus long-term government bond income returns. The D&P supply-side ERP is calculated as the historical equity risk premium minus the price-to-earnings ratio calculated using the three-year average earnings.

The difference lies within the equity returns whereby the supply-side ERP only includes the returns attributable to economic growth (i.e., inflation) and company earnings as it removes the price-to-earnings ratio from the calculation.

The ERP, in general, assumes the historical data—which covers the period from 1926 to present—included within the calculation is representative of the future. The supply-side ERP was created to remove unsustainable growth.

It is worth noting that when the supply-side ERP is lower than the historical ERP, it implies that investors expect growth in future earnings. This

would mean that in periods of economic downturn, when investors foresee decreasing earnings, it is not unrealistic to see a supply-side ERP that is higher than the historical ERP.

The terms "conditional" and "unconditional," when used in reference to the ERP, are intended to mean that the ERP reflects current market conditions or does not reflect market conditions, respectively.

Size Premiums

Consideration of the size of the business to be valued as part of a marital dissolution case is important. Many empirical studies have provided evidence that the degree of risk (i.e., cost of capital) has an inverse relationship with the size of a company.[9] These studies have found that the realized returns on smaller companies have been substantially greater over a long period of time than the basic CAPM would have predicted. This means that the betas for smaller companies do not account for all of the risks faced by those who invest in small companies.

The size risk premium is applied specifically to compensate investors for the uncertainty associated with the continued operations of the smaller company. This risk premium generally, but not exclusively, is based on the assumptions that smaller companies have:

- less resources and access to capital than their larger counterparts;
- less money to spend on research and development, advertising, and human capital;
- a greater dependency on fewer customers; and
- less resources to fend off competition and redirect themselves after changes in the market occur.[10]

These assumptions typically translate into a greater degree of difficulty for smaller companies relative to larger companies to sustain their cash flow and return value to owners. Therefore, based on the previously referenced assumptions, and consideration of the fact that the risks associated with size are unlikely to be eliminated through diversification, it is generally recommended that a size risk premium be considered when estimating a discount rate for smaller companies.

The principle source of size premium data is the Center for Research in Security Prices (CRSP) at the University of Chicago. The CRSP data categorizes the public stock marketplace into 10 deciles based on the market capitalization of the companies in the market. The largest cap companies are categorized in decile 1 and the smallest cap companies are categorized in decile 10. More recently, the 10th decile of the CRSP has been broken down into six subparts, referenced as 10a, 10b, 10w, 10x, 10y, and 10z.

The analyst should select the appropriate size premium based on the characteristics of the subject company being valued relative to the characteristics of the companies comprising each decile, or subpart decile.

Summary descriptions of the CRSP deciles are located in the D&P *Valuation Handbook: Guide to Cost of Capital*. Additional information related to size premium data and calculation methodology can be found in the D&P *Risk Premium Report Size Study*.

Industry-Specific Risk Premiums

In the BUM, the analyst will include an adjustment for industry-specific risk. This additional risk premium—or discount, in some cases—is a modification

"Quantifying . . . a company-specific risk premium (C-SRP), is one of the more challenging and subjective tasks required during the development of a reasonable discount rate and direct capitalization rate."

to the BUM, which is meant to incorporate a measure of beta risk for companies that participate in a particular industry.

This adjustment has the ability to affect the estimate of value if the industry in which the subject company operates has more or less risk than the average of other companies in the same size category.

The D&P *Valuation Handbook: Guide to Cost of Capital* provides industry risk premium data based on Standard Industrial Classification (SIC) codes. The industry risk premium is calculated by D&P using the following formula:

$$RP_i = (FI\text{-}beta \times RP_m) - RP_m$$

where:

RP_i = Industry risk premium
FI-beta = Full-information beta
RPm = ERP estimate used in calculating RP_i[11]

The industry risk premium is a simple concept at first glance; however, despite the simplicity of the industry risk premium formula, there are a few caveats the analyst should be familiar with before incorporating this risk premium in the BUM.

The first point of caution is that these adjustments are valid only to the extent that the subject company's risk characteristics are similar to the weighted average of the companies that make up the industry for the SIC code shown.[12] Therefore, the analyst will inspect the list of companies in the subject company's relevant SIC code to verify that the companies included in the calculation of the industry-specific risk premium are substantially similar to the subject company.

In addition to this point, it is not recommended to incorporate an industry risk premium if the market approach, guideline publicly traded company method, has been rejected as a viable valuation methodology.

The second important point to note is that the industry risk premium should not be used in the context of a cost of equity model that already incorporates beta risk. Industry-specific risk likely will be overstated if beta, in conjunction with the addition of an industry-specific risk premium, is used to calculate the ERP.

Company-Specific Risk Premium

As previously mentioned, risk can be divided into two separate categories: (1) systematic risk, commonly known as market risk, and (2) unsystematic risk, also known as company-specific risk. Quantifying an unsystematic risk premium, or rather a company-specific risk premium (C-SRP), is one of the more challenging and subjective tasks required during the development of a reasonable discount rate and direct capitalization rate.

The C-SRP is the additional return required by investors to compensate them for the additional unsystematic risk associated with the subject company/interest. Typically, in a family law context, this additional unsystematic risk is often attributable to reliance of the subject company on a key person (i.e., key person dependence risk), the reliance of the subject company on a key supplier (key supplier dependence risk), or the concentration of business revenue in a key customer or a small number of key customers (customer concentration risk).

To quantify certain risk-related adjustments (e.g., industry risk premium and size premium) when estimating the required rate of return on an investment, an analyst can rely on generally accepted, quantifiable procedures to assess the subject company's risk. However, to assess and estimate a C-SRP, there is no generally accepted model or method available. As a result, estimating the C-SRP generally is based on the analyst's informed assessment of the investment-specific internal and external factors faced by the subject company.

There are several judgment-based models that analysts can consider to estimate a reasonable level of C-SRP. These models include the following:

1. The Warren Miller factors
2. The Gary Trugman factors
3. The Black/Green factors

Each of the aforementioned models provides an outline for evaluating certain risk factors regarding the subject company. These C-SRP factor sets aid in identifying the individual risk factors in relevant categories.

The Warren Miller factors are grouped in a SWOT (strengths, weaknesses, opportunities, and threats) analysis with three categories: (1) macro

environmental, (2) industry, and (3) company. The Gary Trugman risk factors are also presented in three categories: (1) financial risk, (2) nonfinancial risk, and (3) company-specific factors. The Black/Green factors are presented in five main categories: (1) competition, (2) financial strength, (3) management ability and depth, (4) profitability and stability of earnings, and (5) macroeconomic and microeconomic effects.

Based on either the analyst's own experience and judgment, or consideration of one of the models identified, a list of key company-specific factors is developed. At this point, an analyst must consider the relevant facts and circumstances and quantify the level of risk relating to the key company-specific factors identified.

Three procedures frequently used to estimate the C-SRP are as follows:

1. The plus/minus procedure
2. The numeric procedure
3. The listing procedure

In the plus/minus procedure, the analyst indicates either a "+" notation or a "-" notation next to each identified risk factor. A plus notation indicates that the factor is assumed to increase the appropriate C-SRP; a minus notation indicates that the factor is assumed to decrease the appropriate C-SRP. A blank notation indicates that the factor is assumed to exert a neutral, or no, impact on the C-SRP. Double or triple notations can be used to indicate the expected severity of the impact on the C-SRP.

This procedure is intended to reflect only the analyst's opinion regarding whether a certain factor affects the C-SRP for the subject company. The procedure provides no mathematical quantification of an appropriate C-SRP.

The numeric procedure is similar to the plus/minus procedure, though the analyst assesses a percentage value to each C-SRP factor. In contrast to the plus/minus procedure, the percentage numbers assigned to each factor are summed to estimate a C-SRP.

Based on the listing procedure, the analyst identifies and lists all of the key positive and negative company-specific risk factors. Professional judgment is then used to estimate a reasonable level of C-SRP.

After the assessment of the company-specific risk factors, the analyst generally compares the identified risk attributes to the risk attributes of a benchmark investment. Based on this comparison, the analyst decides how much (if any) additional risk is associated with the subject company, as compared with the industry benchmark.

Again, it is important to note that the quantification of a C-SRP is subjective and based on the analyst's professional judgement regarding the company-specific risk factors identified.

Summary and Conclusion

This discussion (1) addressed the difference between a discount rate and a capitalization rate, (2) described the methods commonly used to estimate a discount rate and a direct capitalization rate, and (3) summarized the quantification of a C-SRP using various analytical models.

It is important that the analyst using the income approach is well-versed regarding:

1. the fundamental differences between a discount rate and a direct capitalization rate;
2. the assumptions that are inherent in the models used to quantify a discount rate and the risk premiums that are incorporated in the development of a discount rate; and
3. the company-specific risk factors that may exert an impact on the estimation of the discount rate and direct capitalization rate.

Notes:

1. Business Valuation Standards, American Society of Appraisers, 2009.
2. Ibid.
3. Shannon P. Pratt and Alina V. Niculita, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 5th ed. (New York: McGraw-Hill, 2008), 247.
4. Shannon Pratt and Roger Grabowski, *Cost of Capital*, 5th ed. (Hoboken, NJ: John Wiley & Sons, 2014), 1254.
5. Ibid., 192.
6. Ibid., 197.
7. Ibid., 180.
8. Ibid., 113.
9. *2016 Valuation Handbook: Guide to Cost of Capital* (Hoboken, NJ: John Wiley & Sons, 2016).
10. Ibid., 4-2.
11. Pratt and Grabowski, *Cost of Capital*, 181.
12. Ibid., 181.

Stephen P. Halligan is an associate in our Portland, Oregon, office. Stephen can be reached at (503) 243-7529 or at sphalligan@willamette.com.