

# Developing the Cost of Capital for Unit Principle Valuation Purposes

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*The property-specific risk premium is an important consideration in unit principle valuations of industrial or commercial property performed for property tax purposes. This risk premium is a component in the estimation of the cost of equity capital used to develop the unit principle valuation discount rate or direct capitalization rate. An investment in industrial or commercial property has different risk and return characteristics (and is generally more risky) than an investment in a diversified portfolio of marketable securities—the benchmark that is often used to estimate the taxpayer’s cost of equity capital. This discussion presents (1) various factors that may be considered and (2) several procedures that may be applied to estimate the property-specific risk premium in the unit principle valuation.*

## INTRODUCTION

For property tax assessment purposes, many state and local taxing jurisdictions value public utility, transportation, communication, energy, and other similar utility-type properties by applying the unit principle of property valuation.

The unit valuation principle involves the collective valuation of the taxpayer’s industrial or commercial property as a single “unit” of operating property. The taxpayer’s property is valued in aggregate—as one integrated unit.

In the unit principle valuation, there is a direct relationship between investment risk and expected investment return. The relationship between risk and expected return is an important consideration in the development of the appropriate cost of equity capital.

In contrast, the summation valuation principle involves the separate valuation of each asset category or component of the taxpayer’s industrial or commercial property. The total value of the subject property is the additive sum (or the “summation”) of each of the individual asset category values.

Valuation analysts (“analysts”) apply generally accepted procedures for measuring expected investment rates of return. These procedures include the measurement of net present value, internal rate of return, payback period, profit margin, return on assets, and return on invested capital.

Analysts also apply generally accepted procedures for measuring investment risk. These procedures include the measurement of the general equity risk premium, the industry risk premium, and the size risk premium.

However, analysts often do not have readily available empirical data sources for measuring property-specific risk. This statement is true in spite of the fact that the concept of a property-specific risk adjustment in estimating the cost of capital is generally accepted. Mostly due to these empirical data constraints, the analytical mechanics for quantifying the property-specific risk premium are different than the analytical mechanics used to quantify the other cost of capital components.

Accordingly, the topics addressed in this discussion are twofold: (1) identifying property-specific investment risk factors and (2) estimating

the property-specific risk premium (“PSRP”). This discussion reviews several sets of risk factors that analysts typically consider when analyzing property-specific investment risk.

This discussion also summarizes the procedures that may be used to estimate a particular PSRP measurement based on an analysis of the relevant PSRP factors.

## PROPERTY-SPECIFIC RISK PREMIUM TERMINOLOGY

In the current academic literature related to investment analysis and portfolio management, “property-specific risk” is interchangeably referred to as “investment-specific risk,” “company-specific risk,” “nonsystematic risk,” “unsystematic risk,” “nondiversifiable risk,” and “idiosyncratic risk.”

For purposes of this discussion, we will use the term property-specific risk. This is because most of the risk factors that are specific to a subject unit of property also affect the property owner/operator.

Regardless of the terminology used to name this type of risk, the PSRP is the component of risk that makes an investment in the subject unit of property unique and different from any benchmark investments that are used to measure capitalization rates, valuation pricing multiples, and other valuation pricing metrics.

In many (but not all) types of property transactions, investors expect to be compensated for the assumption of property-specific risk. In contrast, investors generally do not expect to be compensated for property-specific risk in those types of security sale transactions in which property-specific risk can be diversified away.

This risk diversification process is a conceptual cornerstone of modern corporate finance principles. However, the following discussion explains why this risk diversification process is typically not applicable in the unit principle property valuation.

## HOW TO CONSIDER PROPERTY-SPECIFIC RISK IN THE UNIT PRINCIPLE VALUATION OF TAXPAYER PROPERTY

Property-specific risk may be considered in every valuation where the taxpayer property is:

1. not perfectly liquid,
2. not perfectly diversified, or

3. not subject to limited liability.

For investments that lack the risk mitigation influences of liquidity, diversification, and limited liability, property-specific risk cannot be diversified away. For investments that benefit from these particular risk mitigation influences, property-specific risk can be diversified away (in part or in total).

The PSRP is used directly in the application of the income approach when estimating the cost of equity capital for purposes of developing:

1. an income approach valuation analysis of an equity security,
2. an income approach valuation analysis of invested capital,
3. a yield capitalization method using the discounted cash flow valuation procedure, or
4. a direct capitalization method using the “constant growth model” procedure. (The constant growth model is a direct capitalization procedure that determines the value of property based on an assumption that the income derived from the property grows at a constant rate each year.)

An analysis of the PSRP may be considered indirectly in the application of both the sales comparison approach and the cost approach when:

1. selecting guideline publicly traded companies and guideline unit sale transactions,
2. extracting subject-specific pricing multiples from guideline publicly traded companies/unit sale transactions,
3. quantifying the entrepreneurial incentive cost approach component of a replacement (or reproduction) cost new less depreciation method, and
4. quantifying the economic obsolescence component of the total obsolescence adjustment in any cost approach method.

Significantly, the magnitude of the taxpayer’s property-specific risk may vary based on the nature of the property valuation assignment. That is, an individual property-specific risk may vary based on:

1. the unit of industrial or commercial property in the valuation assignment,
2. the statutory or other standard of value selected in the valuation assignment (e.g., fair market value versus fair value versus investment value versus owner value),

3. the statutory or other standard (or definition) of value selected in the valuation assignment, and
4. the statutory or other premise of value appropriate for the valuation assignment.

## COST OF EQUITY CAPITAL MEASUREMENT MODELS

There are several generally accepted cost of equity capital measurement models that may be applied in the valuation of industrial or commercial property. The property valuation and corporate finance literature often employ different names for these four models.

For purposes of this discussion, these four generally accepted cost of equity capital measurement models include the following:

1. The modified capital asset pricing model
2. The build-up model
3. The dividend yield plus capital gains model
4. The Duff & Phelps Risk Premium Report Model

Inexperienced analysts sometimes ask: Why not use the capital asset pricing model (“CAPM”) (or any other cost of equity model) as it was originally developed? These inexperienced analysts effectively ask: Why do we need to modify the CAPM (or any other generally accepted cost of equity model) for consideration of property-specific risk?

The answer is that the CAPM (and each other cost of equity measurement model) is perfectly suited for the purpose for which it was developed. The purpose for which the CAPM was developed, however, is not the purpose to which analysts generally apply this cost of equity model in the unit principle valuation of industrial or commercial property.

The CAPM was developed for, and is used by, money managers, investment managers, and fund managers who invest in publicly traded securities as part of a well-diversified portfolio of publicly traded securities. The CAPM (and each other cost of equity model) is well suited to estimate the required return on investment for this valuation purpose.

For property tax purposes, however, analysts need to estimate the cost of equity capital for the purpose of a valuation of industrial or commercial property—and not a valuation of equity securities. Accordingly, the CAPM has to be modified to achieve this valuation purpose.

When modifying the CAPM, the analyst should not include risk considerations in the PSRP that

have already been accounted for in other CAPM components. For example, many of the risk factors that are often cited as reasons for the addition of a PSRP are general characteristics of small companies. As a result, adding a PSRP to the small company cost of capital may be double counting risks factors that have already been captured in the CAPM size risk premium component.<sup>1</sup>

## HOW THE PSRP MODIFIES THE COST OF EQUITY CAPITAL MEASUREMENT MODELS

The purpose of the PSRP is to compensate investors for the type of investment risk that cannot be diversified away. In other words, the PSRP adjusts the cost of equity in order to derive a required rate of return commensurate with the total level of investment risk associated with the subject investment.

Because of the nature of the property investment, the property-specific investment risk cannot be eliminated through the process of public company investment portfolio diversification.

The CAPM (and every other cost of equity model) assumes that nonsystematic investment risk (i.e., non-beta risk) can be diversified away. Property owner/operators, however, are subject to the investment risks that are assumed away by the use of the CAPM (and by other cost of equity models). To property owner/operators (unlike diversified investment portfolio managers), these nonsystematic risks cannot be diversified away.

These particular types of investment risk are intrinsic to these types of property investments. Because of the nature of these property investments, such risks cannot be diversified away—and should not be assumed away—by the analyst.

Accordingly, property-specific risk cannot be diversified away for (1) property investments and (2) owner/operator investors. Therefore, such investors require an investment rate of return that is commensurate with such investment risk. The PSRP adjusts the CAPM (and the other cost of equity measurement models) so as to produce such a risk-adjusted required rate of return on investment.

## METHODS TO QUANTIFY THE PSRP

For the generally accepted cost of equity models, there are recognized data sources available to measure (1) the risk-free rate of return, (2) the gen-

eral equity risk premium, (3) the industry equity risk premium, and (4) the size equity risk premium.

These generally accepted data sources are applied by the analyst to create a baseline or a benchmark required rate of return that is based on a baseline or benchmark investment.

The analyst may then compare the risk attributes of this benchmark investment to the risk attributes of the subject property investment. Based on this comparison, the analyst may decide how much (if any) additional risk is associated with the property investment compared with the benchmark investment. Based on this comparison, the analyst may decide if a PSRP is appropriate.

The “model” available to measure the PSRP is the analyst’s informed professional judgment, based on the analyst’s studied consideration of various generally recognized risk factors. Over the years, several analysts have suggested various sets of risk factors that may be considered with regard to the PSRP selection process.

This discussion considers the following recognized PSRP factors that may be considered in the development of the unit principle valuation.

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

## The Shannon Pratt Factors

In *Valuing a Business*, Shannon Pratt (retired from Shannon Pratt Valuations, Inc.) presents a discussion of the risk factors that analysts may consider in selecting the direction and magnitude of the PSRP.<sup>2</sup>

According to Pratt, the direction and magnitude of the PSRP may be based on the following risk factors:

1. Leverage (to the extent it is not already considered in cash flow)
2. Size
3. Volatility of earnings or cash flow
4. Industry risk
5. Other property-specific factors



Pratt summarizes 29 other risk factors that fall under the “other property-specific factors” category. This subcategory of risk factors includes the following factors:

1. Management depth
2. Management expertise
3. Access to capital
4. Customer concentration
5. Customer pricing leverage
6. Customer loyalty and stability
7. Level of current competition
8. Potential new competitors
9. Supplier concentration
10. Supplier pricing advantage
11. Product of service diversification
12. Life cycle of current products or services
13. Geographical distribution
14. Demographics
15. Availability of labor
16. Employee stability
17. Internal and external culture
18. Economic factors
19. Industry and government regulations
20. Political factors
21. Fixed assets’ age and condition
22. Strength of intangible assets
23. Distributions system
24. IT systems
25. Technology life cycle
26. Location

27. Legal/litigation issues
28. Internal controls
29. Currency risk

Pratt notes that the estimation of the PSRP is often a matter of the analyst's professional judgment. However, the analyst should be careful to distinguish between those factors that influence the magnitude of the financial projections and those factors that affect the degree of uncertainty of achieving the financial projections.

In doing so, analysts should be careful to assure that adjustments to the cost of capital—such as the PSRP—do not duplicate adjustments that were made to cash flow or value in other sections of the valuation analysis.

## The Black/Green Factors

Parnell Black and Robert Green (of Black/Green & Company) have developed a set of risk factors for analysts to consider when estimating a PSRP. These PSRP factors are described in various publications and training materials of the National Association of Certified Valuators and Analysts.

The various Black/Green PSRP factors are summarized in the following six categories:

1. Competition
2. Financial strength
3. Management ability and depth
4. Profitability and stability of earnings
5. National economic effects
6. Local economic effects

Black and Green suggest individual quantitative and qualitative assessments within each of the first four categories of PSRP factors. In order to conclude an appropriate PSRP, the analyst assigns a specific point value (ranging from 1 point for low risk to 10 points for high risk) to each individual risk factor. The assigned point value is based on the analyst's analysis and opinion of each particular risk factor.

For each of the last two economic factor categories, the analyst assigns a point value of “minus one” for a strong economy, “plus one” for a weak economy, and “zero” for a neutral economy. Again, the assigned point value is based on the analyst's analysis and opinion of each economic factor.

The sum of the following values provides an indication for the PSRP: (1) all of the point values in the first four risk factor categories (weighted by the number of individual factors in each category) and

(2) all of the point values in the last two economic factor categories.

## The Warren Miller Factors

Warren Miller (of Beckmill Valuation Analytics) has suggested a competitive advantage/strategic analysis structure for estimating the appropriate PSRP. In a series of articles published in the American Institute of Certified Public Accountant quarterly newsletter, *CPA Expert*, Miller groups into three categories the PSRP factors to be considered in a strengths, weaknesses, opportunities, and threats (“SWOT”) analysis.<sup>3</sup>

These three categories of SWOT-related risk factors are based on the groundbreaking strategic planning and analysis work of Michael Porter.

Miller's three categories of individual PSRP factors are as follows:

1. Macroevironmental
2. Industry
3. Company

Miller suggests a subgroup of factors to consider within each of the three general categories of risk factors. Miller also suggests a rigorous application of the Porter “five forces” competitive analysis as part of the analyst's process of selecting the PSRP.

Miller expands on the topic of unsystematic risk in *Value Maps* and explains how unsystematic risk can be identified in the three-category framework.<sup>4</sup>

Miller explains that the macroenvironmental category of risk factors encompasses the following subcategories:

1. Economy
2. Politics
3. Foreign events
4. Demographics
5. Lifestyles and values
6. Innovation

The industry risk factor category, which Miller also refers to as the competitive domain, includes the following subcategories:

1. Customers
2. Complements
3. Competitors
4. Suppliers
5. Substitutes
6. New entrants

The company risk factor category is designated by the acronym “SPARC,” which represents the following subcategories:

1. Strategy
2. People
3. Architecture
4. Routines
5. Culture

Miller’s three-category framework is more than just a tool for identifying and estimating unsystematic risk. When applied properly, the framework allows the analyst to explain why the company performs as it does.

## The Gary Trugman Factors

In *Understanding Business Valuation*, Gary Trugman (of Trugman Valuation) presents a comprehensive discussion of the risk factors that analysts may consider in selecting the PSRP.<sup>5</sup>

Trugman presents categories of individual PSRP factors. Analysts may consider each of these quantitative and qualitative factors in judgmentally selecting the appropriate PSRP.

One of the Trugman categories of PSRP considerations relates to the following risk factors:

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

Trugman presents another category of PSRP considerations that relate to the following nonfinancial risk factors:

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

With each of the above-described PSRP considerations, Trugman cautions that the analyst needs

to be careful not to double count any specific risk factor. In other words, in selecting a PSRP, it is important to consider whether a particular risk factor has already been accounted for with the selection of other risk premium data. For example, if a discrete industry risk premium is used in the cost of capital analysis, there typically would be no need to consider industry risk within the PSRP.

A property-specific assessment of all of these risk factors is relevant to the PSRP selection process. Further, as with all of the above-listed PSRP factors, the analyst has to ultimately rely on informed judgment and professional experience to select a specific PSRP measurement.

## PROCEDURES FOR THE ANALYST TO EXPLAIN THE SELECTED PSRP

There are at least three procedures for (1) selecting the specific PSRP based on the analysis of the property-specific risk factors and (2) explaining the ultimate selection of the PSRP in the valuation report.

These PSRP selection procedures are sometimes called:

1. the plus/minus procedure,
2. the number procedure, or
3. the listing procedure

All three of these procedures start with a listing of the relevant PSRP factors selected by the analyst.

### The Plus/Minus Procedure

In the plus/minus (or +/-) procedure, the analyst indicates either a “+” notation or a “-” notation next to each selected risk factor. The plus notation indicates that the risk factor increases the appropriate PSRP; the minus notation indicates that the risk factor decreases the appropriate PSRP. A blank notation indicates that the risk factor has a neutral impact on the appropriate PSRP. The plus/minus procedure is also referred to by some analysts as the component observation method.<sup>6</sup>

Double or triple notations (e.g., ++ or ---) indicate that the individual risk factor has a particularly positive or a particularly negative impact on the ultimate selection of the PSRP. Each plus/minus notation, however, does not represent one percentage point.

Ultimately, the selection of the PSRP is based on the analyst’s professional judgment. The selection of the PSRP is not the mathematical sum of “plus” and “minus” indications.

## The Numeric Procedure

Using the numeric procedure, the analyst assigns a specific percentage number to each PSRP factor.

If the analyst assigns “2.0” to a particular risk factor, that indicates that the analyst will add two percentage points to the ultimate selection of the PSRP. If the analyst assigned “(1.0)” to a particular risk factor, that means that the analyst will subtract one percentage point from the ultimate selection of the PSRP. And, if the analyst assigns “0” to a particular risk factor, that factor has no impact on the final PSRP. The numeric procedure is also referred to by some analysts as the component detail method.<sup>7</sup>

In contrast to the previously described “plus/minus” procedure, in the numeric procedure the selected PSRP is the actual numeric summation of all of the individually assigned numeric values for each selected risk factor.

## The Listing Procedure

Using the listing procedure, the analyst lists all of the negative and all of the positive risk factors. The analyst does not assign a numeric value to either the negative factors or the positive factors. And, the analyst does not indicate the relative importance of any of the risk factors. The listing procedure is also referred to by some analysts as the component summary method.<sup>8</sup>

## A Simplified Illustration

Exhibit 1 presents the three PSRP selection procedures as applied to a hypothetical taxpayer property. In this illustrative example, the analyst identified the strategic, financial, and operational risk factors that most affect the subject property.

Based on a due diligence analysis, the analyst assessed each positive and each negative property-specific risk factor affecting the unit of taxpayer property. The analyst reported three alternative presentations of the same property-specific risk analysis in Exhibit 1.

Exhibit 1 illustrates the three alternative presentation formats or procedures (i.e., plus/minus, numeric, and listing) of the analyst-selected PSRP factors in this hypothetical analysis. Significantly, regardless of the presentation procedure selected, the analyst consistently selected 5 percent as the appropriate PSRP.

Based on this illustrative example, this 5 percent PSRP is the appropriate cost of equity capital adjustment applicable to the property valuation.

## SUMMARY AND CONCLUSION

In all property valuation analyses, there is a direct relationship between investment risk and expected investment return. Furthermore, the measurement of expected investment return is involved in virtually every type of valuation assignment that an analyst performs.

There are generally accepted procedures for measuring expected investment return and for measuring most components of investment risk.

In addition, there are generally accepted procedures for adjusting the expected investment return for most components of risk. In many cases, property-specific risk may be a material component of the total investment risk related to the taxpayer’s industrial or commercial property.

There are generally accepted cost of equity capital measurement models, and the PSRP is a component of each of these models. There are generally accepted empirical data sources for the quantitative measurement of most cost of equity capital model components.

The PSRP analysis should be considered directly in all income approach property valuation analyses. Also, the PSRP should be considered indirectly in all sales comparison approach and all cost approach property valuation analyses.

### Notes:

1. Duff & Phelps, LLC, 2019 *Cost of Capital: Annual U.S. Guidance and Examples*, Chapter 6: Basic Building Blocks of the Cost of Equity Capital – Property-Specific Risk Premia, Cost of Capital Navigator, 2.
2. Shannon P. Pratt, Alina V. Niculita, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 5th ed. (New York: McGraw-Hill, 2008), 202–203, 213–24.
3. Warren D. Miller, “Assessing Unsystematic Risk” (Parts I, II, and III), *CPA Expert* (Summer 1999, Winter 2000, and Summer 2000).
4. Warren D. Miller, *Value Maps: Valuation Tools that Unlock Business Wealth* (New York: John Wiley & Sons, 2010), 12–16.
5. Gary R. Trugman, *Understanding Business Valuation*, 5th ed. (New York: American Institute of Certified Public Accountants, 2017), 534–39.
6. James R. Hitchner, *Financial Valuation: Applications and Models*, 4th ed. (New York: John Wiley & Sons, 2017), 223–25.
7. *Ibid.*
8. *Ibid.*

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