

Valuation Adjustments Related to the Use of Capital Market Data in Developing Unit Principle Property Appraisals

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Taxpayers, tax counsel, tax assessment authorities, and valuation analysts (“analysts”) sometimes use market-derived pricing data from publicly traded stocks and bonds (“capital market data”) when developing unit principle valuations for property tax purposes. Sometimes analysts directly use these capital market data in the application of the income approach, market approach, and cost approach in unit principle property appraisals. Analysts may use these securities data to develop yield capitalization rates, direct capitalization rates, pricing multiples, and required rates of return (to measure either entrepreneurial incentive or economic obsolescence). However, securities often have risk and expected return investment characteristics different than the taxpayer’s property that is the subject of the unit principle appraisal. In particular, securities are different than taxpayer property with regard to the investment attributes of (1) operational control and (2) marketability. Therefore, analysts often consider control price premium data and discount for lack of marketability studies to estimate a valuation adjustment to apply in a unit principle property appraisal that relies on capital market data. This valuation adjustment may be applied to account for differences in the risk and expected return investment attributes of publicly traded securities compared to taxpayer industrial and commercial property. Like all valuation adjustments, such an adjustment is intended to make the “comparables” (i.e., the publicly traded securities) more like (i.e., have the same investment characteristics as) the “subject” (i.e., the taxpayer’s taxable property). This discussion summarizes the development of such a valuation adjustment when capital market data are directly used to develop a unit principle appraisal of taxpayer property for property tax purposes.

INTRODUCTION

Taxpayers, tax counsel, taxing assessment authorities, and valuation analysts (“analysts”) may directly apply market-derived pricing data from publicly traded stocks and bonds (“capital market data”) when developing unit principle property appraisals for property tax purposes. The unit principle (sometimes called the utility principle) of prop-

erty appraisal encompasses the following generally accepted property appraisal approaches: the income approach, the market approach, and the cost approach.

The direct use of securities pricing and other capital market data can affect each of the unit principle property appraisal approaches. For example, the use of capital market data can affect (1) the

income approach direct capitalization method, (2) the market approach stock and debt method, and (3) the cost approach historical cost (or original cost) less depreciation method. In the application of the cost approach, for example, the use of capital market data can affect the measurement of either entrepreneurial incentive or economic obsolescence.

It is important for analysts to understand that securities have fundamentally different risk and expected return investment characteristics than the taxpayer's industrial or commercial property subject to taxation. In particular, publicly traded securities and taxpayer property typically have different risk and expected return investment attributes with regard to:

1. operational control and
2. marketability.

Analysts are sometimes called on by property owners to analyze the operational control and marketability differences between (1) industrial or commercial property and (2) negotiable securities. These analyses are intended to quantify any "valuation adjustment" that may be applicable to the value conclusions of a unit principle property appraisal developed with the direct use of capital market data.

When developing such a valuation adjustment, analysts often consider control price premium ("CPP") data and discount for lack of marketability ("DLOM") data. Analysts consider such empirical data sources in order to estimate the valuation adjustment applicable to the unit principle property appraisal that relies on capital market data.

Such a valuation adjustment may be applicable to certain unit principle appraisal methods. Like all valuation adjustments, such a valuation adjustment is intended to make the "comparable properties" (i.e., the publicly traded securities) more comparable to the "subject property" (i.e., the taxpayer's industrial or commercial property).

UNIT PRINCIPLE PROPERTY APPRAISAL METHODS

The unit principle of property appraisal is applied to value all of a taxpayer's property collectively as a single unit (the "total unit") of property. Depending on the unit principle property appraisal method applied, the appraisal typically concludes the value of all of the taxpayer's working capital accounts, real estate, tangible personal property, and intangible personal property.

When developing unit principle property appraisals, analysts should consider whether or not the total property unit is subject to taxation in each taxing jurisdiction. For example, working capital or intangible personal property may not be subject to property taxation in certain taxing jurisdictions. In such an instance, the value of the property that is not subject to taxation should be removed from the total unit value in order to conclude the value of the taxpayer's taxable property.

The unit principle of property appraisal was originally developed to value the total property of public utility and other regulated taxpayers. Historically, such "utility-type" taxpayers included electric generation and distribution companies, telecom companies, interstate pipelines, airlines, railroads, and others.

Today, the unit principle of property appraisal is often applied to value any taxpayer property that (1) moves (e.g., airlines and railroads), (2) crosses taxing jurisdictions (e.g., pipelines and electric distribution companies), or (3) is physically, functionally, and economically integrated (e.g., gas distribution companies, water and wastewater companies, electric generation plants, oil refineries, mines, marinas, hospitals, and many others).

There are generally accepted unit principle property appraisal approaches and methods. Some of the generally accepted unit principle property appraisal methods include the following:

1. The income approach direct capitalization method
2. The income approach yield capitalization method
3. The market approach stock and debt method
4. The market approach direct sales comparison method
5. The cost approach historical cost (or original cost) less depreciation method

Market-derived pricing data from securities is sometimes applied in each of these unit principle property appraisal approaches and methods. In particular, market-derived capital market data may be applied in the analyst's development of:

1. the income approach direct capitalization method and
2. the market approach stock and debt method.

The Direct Capitalization Method

The direct capitalization method is a generally accepted unit principle income approach appraisal method. Depending on how it is applied, the direct capitalization method may also be a generally accepted summation principle income approach appraisal method.

Analysts often apply several different pricing multiples in the application of the stock and debt property appraisal method. And, analysts often consider several different time horizons (e.g., latest 12-month period, five-year average period) in the application of the stock and debt property appraisal method.

In the unit principle direct capitalization method, a defined measure of income is divided by a market-derived direct capitalization rate in order to estimate the total unit value. Analysts sometimes derive the direct capitalization rate from the prices of publicly traded stocks and bonds (i.e., securities).

In order for this property appraisal method to develop meaningful value indications, the securities should be sufficiently comparable to the taxpayer property (i.e., the taxpayer's industrial and commercial property) from a risk and expected return investment attribute perspective.

Alternatively, in the direct capitalization method, the direct capitalization rate can be developed indirectly (i.e., not directly from securities pricing data). The taxpayer's weighted average cost of capital (including the capital components of debt, preferred equity, and common equity) is typically analyzed to conclude a yield capitalization rate. Then, the direct capitalization rate may be calculated as: the yield capitalization rate minus the expected long-term growth rate in the measure of income subject to capitalization.

The Stock and Debt Method

The stock and debt property appraisal method is sometimes referred to as the guideline publicly traded company ("GPTC") method in the business valuation literature. The stock and debt method is a generally accepted unit principle property appraisal method. In contrast, the GPTC method is a generally accepted market approach business valuation



method. These two valuation methods have numerous procedural differences. However, for simplicity purposes only, we refer to these two different valuation methods interchangeably for purposes of this discussion.

In the unit valuation principle stock and debt method, the total unit may be valued through the use of valuation pricing multiples derived from selected GPTCs.

In the stock and debt property appraisal method, the sum of the taxpayer's long-term debt, preferred stock, and common stock (i.e., the securities) results in the value indication for the total unit of taxpayer property.

In the stock and debt property appraisal method, analysts first select GPTCs that provide meaningful pricing guidance with regard to the subject taxpayer company. Second, analysts typically develop valuation pricing multiples by dividing the GPTC value indications by the GPTC financial fundamentals.

Some of the typical GPTC financial fundamental metrics include the following:

1. Net sales
2. Earnings before interest and taxes ("EBIT")
3. Earnings before interest, taxes, depreciation, and amortization ("EBITDA")

In order to estimate the value of the total unit of taxpayer industrial and commercial property, the analyst applies the valuation pricing multiples (derived from the GPTCs) to the taxpayer's respective financial fundamentals.

INVESTMENT ATTRIBUTES OF PUBLICLY TRADED SECURITIES VERSUS TAXPAYER PROPERTY

The direct capitalization method and the stock and debt method sometimes rely directly on capital market data (i.e., securities pricing data) in order to estimate the value of the total unit of the taxpayer's industrial or commercial property.

However, analysts should understand that there are significant differences in the risk and expected return investment attributes of (1) the taxpayer's taxable property and (2) the securities used in these unit valuation methods. With regard to the analyst's consideration of and measurement of any appropriate valuation adjustment, securities are not comparable to taxpayer property—at least in terms of investment risk and expected return attributes.

For purposes of this discussion, we consider the term “comparable” to mean that the subject taxpayer and the GPTCs relied on in the unit principle appraisal:

1. operate in a similar industry (or the GPTC data can be adjusted for industry differences),
2. have similarly sized business operations,
3. have business operations of the same general current and expected future income-generating capacity (or the GPTC data can be adjusted for income differences), and
4. have similar profit margins, rates of investment return, growth rates, and other financial fundamentals (or the GPTC data can be adjusted for any differences).

In this discussion, we compare the risk and expected return investment attributes of operating property and publicly traded securities in the same general industry—and in the same (or sufficiently comparative) companies.

If the risk and expected return characteristics of the publicly traded securities are different from the taxpayer's property, then—without the analyst applying an appropriate valuation adjustment—the unit principle appraisal may not conclude a credible value indication for the taxpayer's industrial or commercial property.

The level of risk related to investing in taxpayer operating property is often greater than the level of risk related to investing in publicly traded securities. The direct relationship between risk and

expected return on investment is well established both in the financial literature and in the investment community.

Accordingly, any additional risk related to investing in a taxpayer's industrial or commercial property would cause investors to require a greater rate of return compared to investing in similar industry publicly traded securities.

This greater rate of return required by investors will result in (1) lower valuation pricing multiples (e.g., price-to-earnings valuation pricing multiples) and (2) higher direct capitalization rates.

That is, the price-to-earnings valuation multiples applicable to negotiable securities would have to be downward adjusted (i.e., decreased) in order to make these pricing multiples applicable to the valuation of taxpayer industrial or commercial property. And, downward-adjusted (i.e., decreased) pricing multiples imply upward-adjusted (i.e., increased) direct capitalization rates.

DIFFERENCES BETWEEN TAXPAYER PROPERTY AND PUBLICLY TRADED SECURITIES

The risk and expected return investment attribute differences between taxpayer industrial or commercial property and publicly traded securities are principally related to the following two investment concepts:

1. Operational control
2. Marketability

Operational control refers to the rights and privileges associated with having control over (1) an operating property (whether tangible or intangible) or (2) a financial asset (such as working capital accounts).

Marketability refers to the ability to sell a property quickly, at a low transaction cost, and at a predictable price.

The following sections in this discussion:

1. analyze the two investment concepts of operational control and marketability,
2. review data and empirical studies related to each of these two investment concepts, and
3. consider a reasonable range for a valuation adjustment based on these two investment concepts.

OPERATIONAL CONTROL ATTRIBUTES

The controlling owners of many types of businesses typically can perform the following types of ownership/operational control activities:

- Set operational and/or strategic policy and change the direction of the business
- Decide which product or service lines to offer and which product or service lines not to offer
- Decide which properties to buy and operate—and which properties to sell and not operate
- Decide which product/service markets and geographical territories to discontinue—and which product/service markets to expand into
- Determine management compensation and other employment arrangements
- Negotiate and consummate mergers and acquisitions and other capital market transactions
- Decide to liquidate, dissolve, recapitalize, or sell the company
- Determine the entity's capital structure and decide to finance, refinance, or recapitalize the entity
- Enter into contracts on behalf of the entity—and enter into contracts with the entity
- Decide the dividend policy—or other forms of profit or property distributions to the entity owners

By contrast, noncontrolling owners cannot unilaterally make these ownership/operational control decisions. Because of this ability to control business operations and to implement business decisions, controlling business owners have less investment risk than do noncontrolling (minority) investors.

Because of this reduced investment risk, the value of a noncontrolling investment in a business entity is less than the pro rata portion of the total business enterprise value.



The value increment of the controlling ownership position compared to the noncontrolling ownership position is typically called the “control price premium.” The control price premium represents the extra value associated with having ownership and operational control of an income-producing business enterprise.

Control price premiums may differ depending on the operating environment in different industries. For example, controlling owners in heavily regulated (or even partially regulated) industries—such as public utilities, interstate and intrastate pipelines, or railroads—may need to obtain regulatory approval in order to implement certain strategic management decisions—such as a merger, acquisition, liquidation, or divestiture.

Ownership/operational control may not result in as much of a value increment in regulated industries as it is in nonregulated industries. This is because, regardless of percentage ownership, no single individual (or group of individuals) enjoys “absolute control” over the regulated business enterprise.

Even though the business owner may not have absolute control of the business property in a regulated industry (such as a public utility or a railroad), the business owner does have more control over the business property operations compared to the securities investor.

The securities investor has (at most) indirect control over the business property operations. When securities trade on stock exchanges, they trade in noncontrolling ownership interest blocks. Therefore, valuation pricing multiples and securities

prices derived from stock market data relate to noncontrolling ownership interests.

That conclusion means that securities prices and securities pricing multiples already incorporate an implicit discount for lack of ownership/operational control (“DLOC”). Stock exchange-derived security prices do not reflect a control price premium (“CPP”). Rather, stock exchange securities prices reflect an implicit DLOC.

MARKETABILITY DIFFERENCES

Marketability refers to the ability to sell a property quickly, with a reasonable and predictable selling cost, and at a reasonably priced stable sale price. The difference in price that an investor will pay for a liquid security compared to an otherwise comparable illiquid property may be substantial. This difference in price is typically referred to as the DLOM.

Because of these marketability differences, a transaction involving taxpayer operating property encompasses much greater investment risk than a transaction involving negotiable securities.

That is, it takes more time to sell taxpayer operating property than it takes to sell publicly traded securities. It costs more in selling expenses to sell taxpayer operating property than the brokerage fees associated to stock exchange sale commissions. And, the ultimate sale price of taxpayer property is more variable and uncertain than the known stock market trading price of publicly traded securities.

This increase in investment risk related to the illiquid taxpayer property (compared to the liquid securities) is often quantified through the estimation of the DLOM.

Most negotiable securities are extremely marketable. They trade quickly and easily on stock exchanges such as the New York Stock Exchange. Security transactions occur on the day of the market order, and the sale proceeds from these transactions are received almost immediately.

Taxpayer operating properties, on the other hand, are less marketable. Taxpayer property sale transactions are often time consuming and expensive. Taxpayer property owners have no organized or efficient market in which to sell their industrial or commercial property.

Taxpayer property owners are often not sure how to price the property for sale. That is, the price is certainly not based on the last stock exchange trading price. And, taxpayer property owners typically do not know when the property sale transaction will occur or when the sale proceeds will be received.

The marketability differences between taxpayer property and publicly traded securities generally can be separated into two components:

1. The longer market exposure time involved in selling the illiquid taxpayer property (compared to the liquid securities)
2. The higher transaction costs involved in selling the illiquid taxpayer property (compared to the liquid securities)

Taxpayer Property Investment Holding Period

Taxpayer property is subject to a longer market exposure (selling) period than the almost-immediate selling period for negotiable securities. In addition, taxpayer property has greater risk than negotiable securities with regard to their respective anticipated holding periods.

Securities investors are able to turn over their investments hourly, daily, or weekly. That is, investors in negotiable securities can own their investments for a relatively short time horizon—if they so choose.

However, taxpayer operating property may turn over once every few decades, if at all. In other words, the investment holding period for taxpayer operating property is much greater than the investment holding period for publicly traded securities.

The increased investment holding period increases the risk associated with taxpayer operating property. As market conditions change, securities investors can liquidate their portfolios almost immediately.

Taxpayer property owners cannot easily liquidate their portfolio of operating property. The longer the expected investment time horizon, the greater the risk to the investor. This risk is due to market price volatility risk, missed alternative investment opportunities, inflation risk, and other factors.

Taxpayer Property Transaction Costs

The typical transaction costs related to securities investors are low and predictable. This statement is true whether the investor is selling securities or buying securities. In contrast, the typical transaction costs related to taxpayer property owners are often large and unpredictable.

These potentially greater transaction costs (as a percent of the total dollar amount of the sale transaction) represent an increased investment risk to taxpayer property owners—when compared to securities investors.

To compensate for the greater investment risk associated with these two factors, taxpayer property owners require a greater rate of return on their investment than do securities investors on their investments.

CONTROL PRICE PREMIUMS AND DISCOUNTS FOR LACK OF MARKETABILITY

In order to consider the marketability and operational control differences between taxpayer property and publicly traded securities, analysts may estimate:

1. the control price premium associated with taxpayer operating property compared to publicly traded securities and
2. the discount for lack of marketability associated with taxpayer operating property compared to publicly traded securities.

Analysts are often called on to measure the appropriate valuation adjustment based on CPP data and DLOM data. Taxpayers, tax counsel, and tax assessment authorities can use these analyses to measure the valuation adjustment that may be applicable to the unit principle appraisal of industrial or commercial property.

Valuation adjustments (i.e., with valuation discounts and valuation premiums) are a generally accepted valuation procedure in both the property appraisal discipline and the business valuation discipline. For example, valuation adjustments have been recognized by the federal courts for decades in valuation-related judicial decisions with respect to federal income tax, gift tax, and estate tax issues.

In addition, valuation adjustments are recognized in the professional standards of various valuation professional organizations (“VPOs”). Such VPO professional standards include the following:

1. The American Institute of Certified Public Accountants *Statement on Standards for Valuation Services*
2. The American Society of Appraisers *Business Valuation Standards*
3. The Appraisal Institute *Standards of Professional Practice*
4. The International Valuation Standards Counsel *International Valuation Standards*

5. The *Uniform Standards of Professional Appraisal Practice* promulgated by the Appraisal Foundation

ESTIMATING THE CPP

Since operational control is a more desirable investment characteristic than lack of operational control, taxpayer property may be valued at a price premium compared to securities. Such a CPP may affect valuation pricing multiples, direct capitalization rates, and so forth.

One data source for estimating the CPP is *Mergerstat Review* published by FactSet Mergerstat, LLC. *Mergerstat Review* presents a CPP study that includes comprehensive research on publicly announced mergers, acquisitions, divestitures, and the premiums paid for controlling interests in public companies.

Mergerstat Review data are often analyzed to estimate the CPP. This is because these data include price premiums paid for many different industries over the past 45 years.

The following discussion summarizes how some analysts apply *Mergerstat Review* data to estimate a CPP. This CPP is considered as part of the valuation adjustment applicable to the unit principle property appraisal.

Mergerstat Review Analysis

To estimate a CPP, the analyst may examine price premium data related to control transactions in industries similar to the subject taxpayer industry. For example, if the analyst was developing a valuation adjustment for a capital-intensive company in a regulated industry, the analyst may examine control transactions in capital-intensive, regulated industries.

The analyst may compare CPP data over both a short-term and a long-term time period. The purpose of this procedure is to identify whether there have been any significant changes over time in the amount of CPPs paid to the measurement of the appropriate valuation adjustment. Usually, CPP data closer in time to the subject valuation date are more meaningful.

However, there could be changes in the financial and economic environment over time that result in higher or lower levels of the CPP paid. Therefore, analysts often consider the level of the CPP paid over a time period of 5 or 10 years.

Analysts should note that *Mergerstat Review* calculates the reported acquisition price premium data based on the acquired company stock price on

the transaction announcement date, and not on the transaction close date.

There is often a difference of several months between the announcement date and close date for the acquisition transactions analyzed in the *Mergerstat Review* data. During that time period, some market appreciation of the target company stock—unrelated to the pending acquisition transaction—may have occurred.

The analyst can estimate this market influence for each transaction where an announcement date and a close date are available. The analyst can measure this market influence by adjusting the effects of market appreciation or depreciation from the stated CPP.¹

For all industries included in *Mergerstat Review*, the total average reported acquisition price premium from 2001 to 2020 was 42.8 percent, and the reported acquisition price premium for the past five years was 42.9 percent.

Analysts should note that the CPP will likely differ depending on the industry. For example, in 2020, the average acquisition price premium for the brokerage, investment management and consulting industry was 40.4 percent. However, the average acquisition price premium for the drugs, medical supplies, and equipment industry was 74.3 percent.²

The analyst can identify those industries that are most similar to the taxpayer's industry in order to extract the most relevant data to apply in the valuation adjustment analysis.

Controlling Ownership Interest versus Noncontrolling Ownership Interest Price Premiums

Mergerstat Review includes acquisition price premium data from transactions where as little as 10 percent of the target company's stock is purchased. Therefore, acquisition price premiums calculated from the *Mergerstat Review* transactional data typically include noncontrolling ownership interest transactions as well as controlling ownership interest transactions.

Mergerstat Review presents the averages of the price premiums paid for the acquisition of both noncontrolling ownership interests (defined here as a 10 percent equity interest up to a 50 percent equity interest) and controlling ownership interests (defined here as greater than a 50 percent equity interest).

According to the *Mergerstat Review* transactional data, for the years from 2016 through 2020, the average acquisition price premium paid for a

noncontrolling ownership interest was 29.7 percent (rounded).

Buyers of noncontrolling ownership interests typically expect to receive some—but not all—of the economic benefits associated with operational control. Such economic benefits may be in the form of contractual agreements, continued business relationships, or other synergistic benefits associated with these strategic alliances.

The noncontrolling investments may also be significant enough to allow the purchaser to obtain one or more seats on the target company's board of directors. However, in these instances of a noncontrolling ownership interest acquisition, the buyer does not enjoy the economic benefits of *absolute* ownership control.

In contrast, purchasers of a controlling ownership interest expect to gain synergistic benefits as a result of the acquisition *and* the economic benefits of absolute ownership control of the target company's operating property.

The ownership control element of an acquisition price premium is often estimated as:

1. the additional price premium paid for a controlling ownership interest in excess of
2. the price premium paid for a noncontrolling ownership interest.

The difference between these two types of acquisition transactions is that the controlling ownership interest buyer also gets the economic perquisites of absolute control.

Let's consider an illustrative example (using the *Mergerstat Review* data) to estimate the incremental value associated with absolute ownership control. If the per share market value of common stock for a company was \$100 and a buyer is willing to pay a price premium of 30 percent for a noncontrolling ownership interest, then the purchase price per share would be \$130 for the noncontrolling ownership interest.

If a buyer is willing to pay a price premium of 43 percent for an absolute controlling ownership interest, then the purchase price would be \$143 per share for an absolute controlling ownership interest.

In this example, the incremental price premium paid for absolute ownership control (and not for the synergistic benefits that already accrue to the buyer of a noncontrolling ownership interest) is: $(\$143 - \$130) / \$130$ —or 10 percent.

This 10 percent price premium indicates the incremental price that a buyer would pay to obtain absolute ownership control over a target company.

This increment price is in excess of the price that the buyer would pay to receive only the level of control associated with a noncontrolling ownership position.

Other Transaction Databases

In addition to analyzing transaction data reported in *Mergerstat Review*, the analyst can also analyze data reported by S&P Capital IQ, FactSet, or Refinitiv Workspace, to name a few. These databases maintain extensive information on historical U.S. merger and acquisition transactions.

When estimating the CPP, it may be important to include acquisition transactions from the database that involve financial buyers only (i.e., nonstrategic acquirers and nonleveraged buyout transactions). Such data would eliminate the impact of strategic buyers and leveraged buyout transactions from the CPP analysis.³

This is because strategic acquirers may pay an acquisition price premium for expected buyer-specific, post-merger synergies in addition to a price premium paid solely for control of operating property.

In this discussion, we are interested in isolating the price premium associated with the control of taxpayer property.

Similar to the application of the *Mergerstat Review* data, the analyst may include transaction data for both a shorter time period such as 5 years, and a longer time period such as 10 years—for the reasons discussed above.

There is often a difference of several months between the announcement date and the effective date for the transactions in this database. The analyst may want to make the same adjustment for the target company market appreciation between (1) the announcement date and (2) the effective date.

CPP CONCLUSION

A valuation adjustment analysis may consider data from multiple data sources, such as *Mergerstat Review*, S&P Capital IQ, and FactSet.

After analyzing the CPP data in relevant industries from these securities, the analyst may calculate price premium measures of central tendency over relevant time periods (i.e., 5 years, 10 years, etc.).

The analyst should be aware that the data related to the acquisition of controlling ownership interests (versus noncontrolling ownership interests) indicate that a large portion of acquisition

price premiums relate to expected post-transaction synergistic benefits—and not only to the ownership control of operating property.

ANALYSIS OF THE DLOM

In addition to estimating a CPP, the analyst may also consider the DLOM component of the valuation adjustment. The DLOM component takes into consideration the time, the difficulty, the expense, and the uncertainty of selling taxpayer property compared with selling liquid securities.

This DLOM component may be an important consideration in measuring a valuation adjustment to apply to securities-derived capitalization rates and valuation pricing multiples in the development of the unit principle property appraisal.

Analysts typically rely on empirical studies to quantify the appropriate DLOM. Generally, such empirical studies incorporate data that are based on capital market transaction observations—rather than on theoretical economic principles.

There are two categories of empirical studies that analysts often consider to quantify the DLOM for noncontrolling ownership interests in private companies:

1. Studies of price discounts on private stock sale transactions prior to an initial public offering (“IPO”); these studies are often referred to as “pre-IPO studies”
2. Studies of price discounts on the sale of restricted shares of publicly traded companies; these studies are often referred to as “restricted stock studies”

Analysts often incorporate empirical studies that address the pricing impact associated with the lack of marketability of non-publicly-traded securities. The consensus of such studies indicates that non-publicly-traded (nonmarketable) securities suffer from a lack of marketability compared to publicly traded (marketable) securities.

The quantitative effect of this investment illiquidity characteristic is that the prices of nonmarketable securities are discounted by approximately 30 percent to 50 percent when compared to the prices of comparative publicly traded securities.

From data analyzed in published studies, the analyst can create data subsets that include companies that operate in the same industry as the taxpayer. Similar to the CPP studies, the analyst may examine data from industries that are similar to the industry in which the taxpayer property operates.

PRE-IPO STUDIES

A pre-IPO study examines arm’s-length sale transactions in the stock of a private company that has subsequently achieved a successful IPO of its stock.

In a pre-IPO study, the DLOM is quantified by analyzing (with various adjustments) the difference between:

1. the public market price at which a stock was issued at the time of the IPO and
2. the private market price at which a stock was sold (in an arm’s-length transaction) prior to the IPO.

Analysts often consider various published pre-IPO studies. Three pre-IPO studies are summarized below.

Emory Studies

A number of studies were conducted under the direction of John D. Emory Jr., currently president, and John D. Emory Sr., currently senior advisor, of Emory & Co. in Milwaukee, Wisconsin.⁴ The Emory studies covered various time periods from 1980 through 2000.⁵

The Emory studies excluded:

1. development stage companies;
2. companies with a history of real operating losses;

3. companies with an IPO price less than \$5 per share;
4. foreign companies; and
5. banks, saving and loans, real estate investment trusts, and utilities.

Except for the 1997 through 2002 study, Emory used the same methodology for each of the studies. The 1997 through 2002 study focused on sale transactions of common and convertible preferred stock, and did not exclude companies on the basis of financial strength.

The observations in each study consisted of companies with an IPO in which Emory’s firm either participated or received a prospectus. A prospectus for the 4,088 offerings was analyzed to determine the relationship between:

1. the IPO price and
2. the price of the latest private stock sale transaction (up to five months prior to the IPO).

As indicated in Exhibit 1, the mean and median price discounts from all of the transactions analyzed in the Emory pre-IPO studies is 44 percent and 43 percent, respectively.⁶

Valuation Advisors Studies

Valuation Advisors, LLC (“VA”), maintains a database that includes over 17,000 pre-IPO transactions that occurred within two years of an IPO.⁷

These pre-IPO transactions are arranged into five time periods: four 3-month intervals for the 12 months immediately before the IPO, and a single period for the time frame from one to two years before the IPO. The pre-IPO transactions are also arranged by type of security (i.e., stock, convertible preferred stock, or option).

VA performed a pre-IPO study for each year between 1995 and 2020. Exhibit 2 summarizes the implied DLOM results of the VA studies.

**Exhibit 1
Emory Pre-IPO Studies
Indicated DLOM Results**

Pre-IPO Study Analysis Period	Number of Prospectuses Reviewed	Number of Qualifying Transactions	Indicated Price Discount	
			Mean	Median
1980–1981	97	12	59%	68%
1985–1986	130	19	43%	43%
1987–1989	98	21	38%	43%
1989–1990	157	17	46%	40%
1990–1991	266	30	34%	33%
1992–1993	443	49	45%	43%
1994–1995	318	45	45%	47%
1995–1997	732	84	43%	41%
1997–2000 [a]	1,847	266	50%	52%

[a] This is an expanded study. The expanded study focused on sale transactions of common and convertible preferred stock, and did not exclude companies on the basis of their financial strength. Note: The results above are from “Underlying Data in Excel Spreadsheet for 1980–2000 Pre-IPO Discount Studies, as Adjusted October 10, 2002,” located at www.emoryco.com/valuation-studies.shtml.

Willamette Management Associates Studies

Willamette Management Associates (“WMA”) prepared 18 pre-IPO studies covering the period of 1975 through 1997 and an additional study covering the five years 1998 through 2002.

As in the previous pre-IPO studies, the 1998–2002 study included only private market stock sale transactions that were considered to be on an arm’s-length basis.

The transactional data analyzed in these pre-IPO studies included (1) sales of private stock in private placements and (2) repurchases of treasury stock by the private company.

All transactions involving the granting of employee, executive, or other compensation-related stock options were eliminated from consideration in the pre-IPO studies. In addition, all transactions involving stock sales to corporate insiders or other related parties were eliminated from consideration.⁸

Due to the small sample size of identified transactions in 2001 and 2002, the data from those years was excluded from the analysis.

The indicated DLOM results of the WMA pre-IPO studies are presented in Exhibit 3.

RESTRICTED STOCK STUDIES

The second type of empirical study that analysts frequently consider when developing a discount DLOM is restricted stock studies. Restricted stock studies examine the market prices of restricted public stock transactions dating back to the late 1960s.

These restricted stock studies, which consider hundreds of transactions, indicate an average dis-

Exhibit 2 Valuation Advisors Pre-IPO Studies Indicated DLOM Results

IPO Year	Period before IPO in Which Transaction Occurred					Number of Transactions
	0–3 Months	4–6 Months	7–9 Months	10–12 Months	1–2 Years	
1995	37.82%	28.62%	60.40%	50.33%	60.64%	34
1996	30.83%	52.97%	56.37%	69.38%	71.81%	270
1997	34.18%	50.00%	67.12%	76.01%	80.00%	212
1998	23.35%	46.67%	68.93%	71.41%	71.91%	212
1999	30.77%	53.89%	75.00%	76.92%	82.00%	694
2000	28.70%	45.08%	61.51%	68.92%	76.64%	653
2001	14.74%	33.17%	33.38%	52.06%	51.61%	115
2002	6.15%	17.33%	21.88%	39.51%	55.00%	81
2003	28.77%	22.30%	38.36%	39.71%	61.37%	123
2004	16.67%	22.68%	40.00%	56.25%	57.86%	334
2005	14.75%	26.10%	41.68%	46.11%	45.45%	296
2006	23.47%	20.69%	40.23%	46.51%	56.27%	264
2007	12.67%	32.55%	43.69%	56.00%	54.17%	459
2008	20.00%	24.21%	45.85%	52.17%	41.18%	41
2009	6.16%	31.85%	26.82%	41.00%	34.87%	108
2010	15.81%	29.89%	44.42%	47.54%	51.88%	358
2011	23.60%	32.70%	43.30%	51.40%	62.60%	302
2012	19.60%	24.00%	28.90%	39.60%	47.40%	322
2013	18.80%	25.40%	47.40%	49.80%	56.70%	541
2014	12.90%	27.90%	37.10%	47.60%	59.20%	756
2015	22.40%	27.40%	41.10%	46.70%	52.10%	444
2016	6.50%	18.20%	29.20%	33.20%	41.10%	268
2017	22.30%	28.60%	52.40%	46.70%	50.00%	381
2018	24.50%	41.50%	51.40%	62.60%	61.60%	564
2019	21.20%	31.90%	46.40%	52.00%	62.00%	430
2020	35.50%	46.10%	55.10%	55.00%	60.80%	651
1995–2020 Average	21.24%	32.37%	46.07%	52.86%	57.93%	
2008–2020 Average	19.17%	29.97%	42.26%	48.10%	52.42%	

Source: Brian K. Pearson. “Valuation Advisors’ Lack of Marketability Discount Study™,” Business Valuation Resources Teleconference, August 23, 2007 (1995–2006); Valuation Advisors database (2007–2020).

count for the restricted stock of a public company as compared to its freely tradable (registered) counterpart stock of:

1. approximately 35 percent for transactions occurring in the 1968 to 1988 period and
2. approximately 20 percent to 25 percent for transactions occurring after 1990.

Registered stock includes the shares of public companies that can be freely traded in the open market. Unregistered shares of stock are not registered for trading on a stock exchange. Unregistered shares cannot be freely traded in the open market.

The observed price discounts (i.e., public stock price compared to same company private stock

Exhibit 3 Willamette Management Associates Pre-IPO Studies Indicated DLOM Results

Time Period Analyzed	Number of Companies Analyzed	Number of Transactions Analyzed	Standard Mean Price Discount	Trimmed Mean Price Discount [a]	Median Price Discount
1975–78	17	31	34.0%	43.4%	52.5%
1979	9	17	55.6%	56.8%	62.7%
1980–82	58	113	48.0%	51.9%	56.5%
1983	85	214	50.1%	55.2%	60.7%
1984	20	33	43.2%	52.9%	73.1%
1985	18	25	41.3%	47.3%	42.6%
1986	47	74	38.5%	44.7%	47.4%
1987	25	40	36.9%	44.9%	43.8%
1988	13	19	41.5%	42.5%	51.8%
1989	9	19	47.3%	46.9%	50.3%
1990	17	23	30.5%	33.0%	48.5%
1991	27	34	24.2%	28.9%	31.8%
1992	36	75	41.9%	47.0%	51.7%
1993	51	110	46.9%	49.9%	53.3%
1994	31	48	31.9%	38.4%	42.0%
1995	42	66	32.2%	47.4%	58.7%
1996	17	22	31.5%	34.5%	44.3%
1997	34	44	28.4%	30.5%	35.2%
1998	14	21	35.0%	39.8%	49.4%
1999	22	28	26.4%	27.1%	27.7%
2000	13	15	18.0%	22.9%	31.9%

[a] Excludes the highest and lowest deciles of indicated discounts.

Source: Pamela Garland and Ashley Reilly, “Update on the Willamette Management Associates Pre-IPO Discount for Lack of Marketability Study for the Period 1998 Through 2002,” *Insights* (Spring 2004).

price) indicate the DLOM. These stock price discount data are the basis for the restricted stock studies.

Restricted stock studies are frequently considered by analysts with regard to measuring the DLOM for private company stock. However, restricted stock studies are less relevant to analysts when measuring the DLOM component of a valuation adjustment to the unit principle property valuation.

Restricted shares of public corporation stock may not be traded directly on a stock exchange. However, the investor has certainty that, in a relatively short time period, the trading restrictions will lapse. While restricted shares may be restricted, they are public company stock—only with a temporary trading restriction.

Unlike the restricted stock owners, the taxpayer property owner permanently lacks access to a liquid market. The illiquidity of taxpayer operating property will not resolve in 6 months or 12 months. The illiquidity of taxpayer operating property is a permanent attribute of that property.

respectively.

Analysts often consider these data sources in the measurement of the DLOM component of the valuation adjustment to the unit principle property appraisal.

THE VALUATION ADJUSTMENT

An analyst can use the CPP data and the DLOM data discussed above in the measurement of a valuation adjustment to apply to the unit principle property appraisal. This valuation adjustment may be applied to the unit principle appraisal methods that were developed through direct reliance on stock market prices and valuation pricing multiples.

The effect of the CPP measurement and the DLOM valuation adjustment is multiplicative, and not additive. A simple example is presented in Exhibit 4 to illustrate this mathematical principle.

Let’s assume the analyst estimates a CPP adjustment of 25 percent and a DLOM adjustment of 50

Accordingly, while an interesting data source, the above-described restricted stock studies materially understate the DLOM applicable to the appraisal of taxpayer property.

Therefore, analyst’s generally give these studies little weight in the measurement of the valuation adjustment applicable to the unit principle property appraisal.

DLOM CONCLUSION

The mean and median DLOM indicated by the Emory studies were 46 percent and 43 percent, respectively.

The average DLOM indicated by the VA studies for the one to two years prior to the IPO transaction was 58.8 percent for the 1995 to 2012 period and 46.9 percent for the 2008 to 2012 period.

The mean and median DLOM indicated by the WMA studies for the years from 1975 through 2000 were 37.3 percent and 49.4 percent,

percent as the two components of the unit valuation principle valuation adjustment. Let's further assume that the unadjusted unit principle appraisal concluded a value for the Taxpayer Company stock component of the total unit of \$160 per share.

This example assumes that this unit value is derived exclusively from unit appraisal methods that rely directly on securities prices or securities pricing multiples. And, this example assumes that the valuation adjustment—as calculated—would apply to the Taxpayer stock component of the total unit value—and not to the total Taxpayer Company property value conclusion.

The appropriate application of the valuation adjustment in this illustrative example is presented in Exhibit 4.

Mathematically, the same valuation adjustment is achieved regardless of whether the CPP is applied first and the DLOM applied second—or whether the DLOM is applied first and the CPP is applied second.

APPLICATION OF THE VALUATION ADJUSTMENT TO THE UNIT PRINCIPLE PROPERTY APPRAISAL

The valuation adjustment can be applied in the development of the unit principle property appraisal by either:

1. reducing any securities-derived valuation pricing multiples by the amount of the valuation adjustment,
2. increasing the cost of equity capital component of the direct capitalization rate (if derived directly from securities prices) by dividing the equity component by one minus the valuation adjustment, or
3. decreasing the equity component of the capital-market-derived total unit value by the amount of the valuation adjustment.

The stock and debt method relies on valuation pricing multiples derived from the GPTCs to estimate the value of the taxpayer's total unit. The valuation adjustment would be appropriate to

Exhibit 4 Taxpayer Company ("Taxpayer") Illustrative Unit Principle Appraisal Value Indication Unit Value Expressed on a Per-Share of Stock Basis Application of Valuation Adjustment Illustrative Example

1. Per-Share Value of Taxpayer Stock, on a Noncontrolling, Marketable Ownership Interest Basis	\$100.00
2. Plus: 25% CPP Adjustment	<u>\$25.00</u>
3. Per-Share Value of Taxpayer Stock, on a Controlling, Marketable Ownership Interest Basis	\$125.00
4. Less: 50% DLOM Adjustment	<u>(\$62.50)</u>
5. Per-Share Value of Taxpayer Property, on a Controlling, Nonmarketable Ownership Interest Basis	\$62.50
6. Valuation Adjustment—to be Applied to the \$100 Per-Share Unadjusted Unit Value of Taxpayer Stock	<u>37.5%</u>

reduce the "stock" component of the stock and debt method unit value indication.

The taxpayer property owner can also apply the valuation adjustment to the direct capitalization method. As mentioned above, the valuation adjustment would be made to the cost of equity capital component of the direct capitalization rate.

The analyst may increase the cost of equity component of the direct capitalization rate by dividing (1) the cost of equity by (2) one minus the valuation discount.

A valuation adjustment may also be applied directly to the equity component of the taxpayer total unit value indication derived from the direct capitalization method and/or the stock and debt method. Such a valuation adjustment may be applicable when these unit principle appraisal methods rely directly on securities pricing data. This final adjustment application will likely be less often applied than the two above-described applications of the valuation adjustment.

CONCLUSION

There are generally accepted unit principle property appraisal approaches and methods. These unit principle property appraisal approaches and methods are often applied in the tax appraisal of taxpayer property where multiple properties are physically, functionally, and economically integrated.

This discussion summarized the development of a valuation adjustment that may be considered when capital market data are used directly in a unit principle property appraisal.

Particularly when applying the direct capitalization method and the stock and debt method,

analysts sometimes use securities pricing data to derive capitalization rates, valuation pricing multiples, and other unit valuation variables. This direct use of securities pricing data (or pricing multiples) does not consider the liquidity—and other risk and expected return—investment difference between publicly traded securities and taxpayer operating property.

Therefore, analysts may apply a valuation adjustment to the securities-derived valuation variables in order to adjust for these investment attribute differences.

The measurement and application of such a valuation adjustment allows a unit principle property appraisal based on securities prices (and pricing multiples) to conclude a unit value that reflects the illiquidity (and other investment attributes) of the taxpayer's industrial or commercial property.

Notes:

1. Where *Mergerstat Review* does not report a transaction close date, it is not possible to calculate the market appreciation for the transaction. For these transactions, the market appreciation adjustment would equal 0 percent, and, therefore, the ownership control price premium may be overstated.
2. The average control price premiums were calculated only from transactions where the control premium percent offered was available.
3. Eliminating all strategic acquirers (i.e., direct competitors, customers, and suppliers) and leveraged buyouts does not entirely remove potential post-merger financial benefits. This is because post-merger financial benefits include some of the effects of higher leveraged, lower cost debt, and a corresponding decrease in the company's overall cost of capital, which is difficult to verify for each transaction. However, by eliminating strategic acquirers from consideration, the analyst mitigates post-merger operation synergies.
4. John D. Emory Sr. was formerly with Robert W. Baird & Co. where the studies prior to April 1997 were conducted.
5. John D. Emory, "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock—January 1980 through June 1981," *Business Valuation News* (September 1985): 21–24, also in *ASA Valuation* (June 1986): 62–66; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, January 1985 through June 1986," *Business Valuation Review* (December 1986): 12–15; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock (August 1987–January 1989)," *Business Valuation Review* (June 1989): 55–57; "The Value of Marketability as Illustrated in Initial Public Offerings of

Common Stock, February 1989–July 1990," *Business Valuation Review* (December 1990): 114–16; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, August 1990 through January 1992," *Business Valuation Review* (December 1992): 208–212; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, February 1992 through July 1993," *Business Valuation Review* (March 1994): 3–5; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, January 1994 through June 1995," *Business Valuation Review* (December 1995): 155–160; "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, November 1995 through April 1997," *Business Valuation Review* (September 1997): 123–131; John D. Emory Sr., F.R. Dengel III, and John D. Emory Jr., "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock, May 1997 through December 2000," *Business Valuation Review* (September 2001): 15–19; and "Underlying Data in Excel Spreadsheet for 1980–2000 Pre-IPO Discount Studies, as Adjusted October 10, 2002," located at <http://www.emoryco.com/valuation-studies.shtml>.

6. See John D. Emory Sr., F.R. Dengel III, and John D. Emory Jr., "Discounts for Lack of Marketability: Emory Pre-IPO Discount Studies 1980–2000, as Adjusted October 10, 2002," www.emoryco.com/valuation-studies.shtml.
7. The database is available on a subscription basis from www.bvmarketdata.com.
8. The specific analytical procedures performed in the various WMA pre-IPO DLOM studies are detailed in Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweih, *Valuing a Business*, 4th ed. (New York: McGraw-Hill, 2000), 408–411.



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