Gift and Estate Tax Valuation Insights

Current Controversies Regarding Discount for Lack of Marketability Analyses

Aaron M. Rotkowski and Scott S. Cobb

For years, valuation analysts have relied on restricted stock studies and pre-IPO studies for empirical guidance with respect to estimating the DLOM related to the valuation of nonmarketable securities. Even though these empirical DLOM models represent the consensus among valuation analysts, some observers have developed contrarian positions regarding these generally accepted DLOM estimation procedures. This discussion will summarize the current controversies with regard to the estimation of the DLOM. Valuation analysts should be familiar with the bases for (and the responses to) these DLOM controversies.

Introduction

The discount for lack of marketability (DLOM) is often a controversial issue in valuation analyses. In recent years the Tax Court has demanded that valuation analysts perform an increasingly more rigorous analysis of the quantification of the DLOM.

The methods that valuation analysts use to estimate the appropriate DLOM are still evolving. The proof of this statement is the frequency of newly published empirical and theoretical studies that discuss the DLOM. As such, valuation analysts should keep abreast of the latest developments and controversies with regard to the DLOM.

This discussion addresses three of the current controversies regarding the methods used to quantify the DLOM. These current controversies are (1) the use of multiple regression to estimate the DLOM, (2) the disaggregation of DLOM attributes, and (3) the use of pre-IPO studies to estimate the DLOM.

Use of Multiple Regression Analysis to Estimate the DLOM

Various Tax Court cases (e.g., *Bernard Mandelbaum et al.* v. *Commissioner*[1]) and certain restricted stock studies provide valuation analysts with guidance regarding the DLOM. However, neither judicial precedent nor published studies were able to specifically translate company-specific factors into a point estimate for the DLOM.

It is important for the valuation analyst to consider the case-specific factors and the nature of the restricted stock DLOM studies. It is equally important for the valuation analyst to understand how these factors affect the DLOM.

One way to reach this understanding is to use a multifactor formula (i.e., a regression analysis) that may estimate the DLOM with precision.

Certain empirical DLOM studies (e.g., the Silber study,[2] Trout study,[3] and Hertzel and Smith study[4]) attempted to provide precise estimates of the DLOM using a formula. These models have an initial appeal because they (1) estimate a precise DLOM for a closely held company and (2) are based on empirical data.

However, formula-based methodologies are nonetheless problematic.

The most significant problem with regression-based DLOM models is the fact that the formulas only consider a limited number of variables. For example, the Silber model considers four variables: revenue, earnings, size of block, and relationship between buyer and seller. Many relevant valuation variables are omitted from the Silber formula.

For example, Silber does not consider (1) the expected holding period for the subject securities, (2) the level of subject company distributions, or (3) any transfer restrictions that may affect the subject stock. Valuation analysts generally agree that these factors are three of the most important factors that affect the magnitude of the DLOM. The other regression-based DLOM studies suffer from this same variable constraint problem.

In a simple example provided by John Kania,[5] a valuation analyst for the Internal Revenue Service, the author assumed a closely held company has (1) $60 million in annual revenue, (2) positive earnings, (3) a share block equal to 6 percent, and (4) no special relationship between the selling company and investor. Using these assumptions, Kania calculated a DLOM of 19 percent from the Silber model.

However, there are significant other factors that could influence the DLOM. For example, a shareholder agreement could severely restrict the ability to transfer the subject shares. This would cause the DLOM to increase, all else equal. Alternatively, the subject company could be in the process of selling its common equity. This would cause the DLOM to decrease, all else equal.

A second potential problem with regression-based models is the potential for forecast errors. Dr. Stanley Jay Feldman, a professor and valuation analyst, writes, "[regression-based] models should not be used for [selecting a DLOM] because the forecast errors are likely to be large. Moreover, based on the structure of these models and their prediction errors, it is not possible to state with any certainly that a 13.5% discount is statistically different than a discount of say 25%."[6]

Even after applying a regression model, valuation analysts should still consider the qualitative and quantitative factors that affect the DLOM.

Disaggregation of DLOM Attributes

Various restricted stock DLOM studies disaggregate restricted stock discounts into (1) lack of liquidity and (2) other factors. These studies achieve this disaggregation using statistical analysis.

Two notable restricted stock studies that analyze the DLOM in this manner are as follows:

1. a study conducted by Michael Hertzel and Richard L. Smith that analyzed 106 private placements occurring between January 1, 1980, and May 31, 1987 (the "Hertzel and Smith study")[7]
2. a research paper published by Mukesh Bajaj, et al., titled "Firm Value and Marketability Discounts" that analyzed 88 private placements occurring between January 1, 1990, and December 31, 1995 (the "Bajaj study")[8]

This disaggregation of the DLOM attributes has stimulated considerable debate in the valuation community. This section will present an overview of the issue.

The Hertzel and Smith Study

The Hertzel and Smith restricted stock study was primarily conducted to test whether private placement price discounts reflect a resolution of asymmetric information about the subject company value. With regard to information effects, Hertzel and Smith, "find evidence that discounts reflect costs incurred by private investors to assess firm value. . . ."[9]

Based on the Hertzel and Smith findings, companies that are difficult to analyze (e.g., privately owned companies and companies with significant intangible assets), should expect to have a larger DLOM.

The average price discount in the sample of private placements equaled 20.14 percent, based on the Hertzel and Smith study. According to Hertzel and Smith, "Private placement discounts in our sample vary widely. Thirty-nine of the placements in our sample were made at discounts of more than 25 percent and 8 were at premiums of more than 10 percent."[10]

Hertzel and Smith analyzed the difference in price discounts between private placements of restricted shares and unrestricted shares. According to Hertzel and Smith, "We find an additional discount of 13.5 percent for placements of restricted shares."[11]

The 13.5 price discount concluded in the Hertzel and Smith private placement study is often cited in Tax Court judicial decisions and in the valuation literature. However, there are at least three reasons why valuation analysts should be cautious when relying on the Hertzel and Smith price discount conclusion.

First, the purpose of the Hertzel and Smith study was not to determine the DLOM. Rather, Hertzel and Smith were generally examining private placement price discounts.

Second, the number of private placements involving restricted stock was small—both (1) in absolute terms (there were only 18 such private placements) and (2) relative to the number of private placements of unrestricted stock (88). Without additional data on the 18 restricted private placements, the Hertzel and Smith results require additional testing to verify the accuracy and the relevance of the study.

Third, the average placement size was 15.98 percent of the outstanding stock. When commenting on the observation of private placements completed at a price premium relative to the share price 10 days prior to the announced placement, Hertzel and Smith recognized that, "Premiums appear to reflect the value of control, cash infusions by investors who already own much of the outstanding stock, and market price declines between the time the placement price is negotiated and when it is announced to the market."[12]

It is impossible to know (based on the amount of data Hertzel and Smith made available) whether or not any of these effects are present in the 18 restricted private placements used to conclude the 13.5 percent price discount. If so, the lower than expected price discount would likely be mitigated by a price premium for ownership control, even if such ownership control was not absolute.

The Bajaj Study

The Bajaj study separately analyzed (1) registered private placement issues and (2) unregistered private placement

issues. Based on their study, the authors concluded that (1) the average price discount for unregistered issues was 28.1 percent, (2) the average price discount for registered issues was 14.0 percent, and (3) the overall average price discount was 22.2 percent.

The authors of the Bajaj study hypothesized that the observed private placement price discounts were due to factors other than illiquidity. Specifically, they attributed the observed price discounts to the following four factors: (1) the fraction of total shares offered in the placement; (2) business risk, as measured by volatility in the issuer's publicly traded shares; (3) financial distress, as measured by Altman's Z-score; and (4) the total proceeds from the private placement.

According to the Bajaj study, "controlling for all other factors influencing private placement discounts, an issuer would have to concede an additional discount of 7.23 percent simply to compensate the buyer for lack of marketability."[13]

The Bajaj study is conceptually related to the Hertzel and Smith study, insomuch as both studies (1) compare registered private placements with unregistered private placements and (2) determine an average price discount. The Bajaj study, however, addressed two of the three potential problems present in the Hertzel and Smith study.

First, estimating the DLOM was not the purpose of the Hertzel and Smith study. Estimating the DLOM is precisely what the Bajaj study attempted to do.

Second, the Bajaj study analyzed 50 or 51 unregistered private placements (depending on whether the authors' Table 5 is correct or the text that accompanies Table 5 is correct). Alternatively, there were only 18 unregistered private placements in the Hertzel and Smith study.

The Bajaj study attempted to improve on the Hertzel and Smith study by explaining the specific causes for the observed price discount. As indicated above, Bajaj concluded the difference between registered issues and unregistered issues was 22.2 percent.

However, the Bajaj study attributed only 7.23 percent of that price discount to illiquidity. The remaining price discount was attributed to the fact that the unregistered placements (1) were made by financially weaker firms and (2) involve smaller private placement proceeds—both factors that warrant a greater DLOM, all else equal.

In spite of these methodological improvements, the Bajaj study (as with the Hertzel and Smith study) may be downwardly biased by the presence of an ownership control price premium. The average ratio of shares offered to total shares in the Bajaj study equaled 15.87 percent.

Publicly traded stocks have relatively diffuse ownership. Therefore, a 16 percent ownership interest represents a significant ownership interest in the equity of a publicly traded company.

If the private placement price was upwardly influenced because the purchaser was receiving elements of ownership control (e.g., the ability to elect a member of the board of directors or influence management decisions), then the DLOM calculated in the Bajaj study would be understated.

The average size of the private placements analyzed in the Bajaj study is problematic for other reasons related to embedded control. The Bajaj study incorrectly assumes that "registered shares can be transacted freely, and the fact that the firm was publicly traded meant there was a ready market for these shares."[14]

This faulty assumption forms the basis of the discount analysis performed in the Bajaj study. In the Bajaj study, the starting point for the concluded DLOM is the discount differential between transactions in unregistered private placements (28.13 percent) and registered private placements (14.04 percent).

The assumption is that registered private placements are completely liquid, and any discount observed in transactions involving registered private placement is not related to liquidity. However, due to the average size of the registered private placements analyzed in the Bajaj study, it is likely that the blocks of registered stock were not completely liquid.

The average size of the registered private placements to the total shares outstanding ratio equaled 13.1 percent. According to Rule 144, adopted by the Securities and Exchange Commission in 1972, (generally) any person that has influence over the management of an issuer is said to have control; any person with control over an issuer is said to be an affiliate; and all affiliates are subject to the trading volume formula provisions of Rule 144.

The trading volume formula provisions require affiliate stock to be "dribbled out" in the marketplace over a specified period of time. This dribble-out period can easily approach several years. In these situations, which may be frequent in the registered issues analyzed in the Bajaj study, the marketability of the registered issues is clearly impaired.

Of course, rather than dribble out stock, affiliates can sell their stock in a private placement. The impaired marketability may contribute to some/all of the 14.04 percent discount observed in transactions of restricted stock.

Based on the above, the 14.04 discount observed from transactions of registered private placements—which was ignored by the Bajaj study authors—should be analyzed in the context of marketability. If the entire discount on registered private placements was due to lack of marketability, then the concluded DLOM from the Bajaj study may be understated by as much as 14.04 percent.

When relying on the Bajaj study results to estimate the DLOM for a privately owned company, it is important for the analyst to understand the difference between the subject private company and the companies included in the Bajaj study. The liquidity and risk/return characteristics of many privately owned companies are more comparable

to the companies issuing unregistered private placements than to companies issuing registered private placements.

In fact, it is likely that the subject private company is considerably more risky than either of those two groups of comparables. When compared to the unregistered private placements in the Bajaj study, many private companies have greater financial risk and a much longer expected investment holding period.

For the reasons listed above, it may be appropriate to consider the total 22.2 percent price discount as a lower bound for the DLOM and not, as the authors purport, to consider the 7.23 percent price discount as the relevant DLOM for privately owned companies.

Use of Pre-IPO Studies to Estimate the DLOM

Pre-IPO studies examine arm's-length sale transactions in the stock of a closely held company that has subsequently achieved a successful initial public offering 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.

There are three published pre-IPO studies: (1) Emory, (2) Valuation Advisors, and (3) Willamette Management Associates. These pre-IPO studies covered hundreds of transactions during a span of over 20 years.

Median price differences between private transaction prices and public market prices varied under different market conditions, ranging from about 40 to 60 percent, after eliminating the "outliers." This is strong support for the hypothesis that the fair market value of a noncontrolling ownership interest in a privately held company should be discounted from its publicly traded counterparts.

Many valuation analysts agree that the pre-IPO DLOM studies provide the most relevant empirical data with regard to the DLOM for a privately owned company. The reason for this is that companies in the pre-IPO DLOM studies more closely resemble privately held companies to which the DLOM is being applied.

The pre-IPO DLOM studies are the only DLOM studies that involve transactions in the shares of privately owned companies. John D. Emory, et al., illustrates this point by the rhetorical question, "if the kinds of discounts found in this study [the May 1997 through December 2000 Emory Study] occur where marketability is probable, but not a certainty, how much greater should discounts be for more typical company's stock that has no marketability, little if any chance of ever becoming publicly marketable, and is in a neutral to unpromising situation?"[15]

Whether a valuation analyst is examining a company, an ownership interest, or a transaction, it is important that the subject interest be as similar as possible to the data used in the analysis. In this regard, if the subject interest is a privately owned security with an expected holding period exceeding two years, then the pre-IPO DLOM studies may provide a more relevant comparison than the restricted stock DLOM studies. The unique factors of each company and each engagement will affect which specific DLOM studies should be analyzed.

Common criticisms of the pre-IPO DLOM studies are: (1) the companies included in the study represent selection bias, (2) IPO prices are inflated due to hype, and (3) pre-IPO transactions reflect compensation for services.

The selection bias argument is based on the fact that only successful companies complete an IPO. Pre-IPO DLOM studies eliminate from consideration, by definition, companies that filed for an IPO but were unsuccessful. If there was a bias based on the fact that the pre-IPO DLOM studies include only "successful" companies, it would understate the size of the DLOM. One would expect a "troubled" company to be less liquid than a "successful" company, with fewer options for liquidity resulting in a greater DLOM.

In addition, the impact of selection bias on the indicated average DLOM may be minimal. This is because only about 1 in 5 companies that file for an IPO fail to complete the IPO when scheduled.

Willamette Management Associates (WMA) conducted a failed-IPO study that compared the number of companies that filed an IPO registration with the SEC on Form S-1 to the number of companies that successfully completed their IPO.[16]

The WMA failed-IPO study found that, among other things, (1) from 1990 through 2002, approximately 8,100 companies filed IPO registration statements with the SEC, and (2) approximately 1,800, or 23.3 percent, of those companies did not complete the IPO. The WMA failed-IPO study considered a registration to be "failed" if an IPO was not completed within 18 months of the IPO registration. Some companies may have completed an IPO after this 18-month period, thereby lowering the percentage of failed IPOs.

Based on the relatively low percentage of failed IPOs indicated by the WMA failed-IPO study, this factor may have a minimal effect on the reported average DLOM.

The price inflation hype argument is based on the theory that underwriters over-hype new issues. Therefore, underwriters drive IPO stock prices up and increase the indicated DLOM. However, empirical studies generally find the first-day stock price appreciation of IPOs is often substantial, indicating that IPOs are systematically under priced.

According to Tim Loughran and Jay Ritter, "In the 1980s, the average first-day return on IPOs was 7%. The average first day return doubled to almost 15% during 1990–1998, before jumping to 65% during the internet bubble years of 1999–2000 and then reverting to 12% during 2001–2003."[17]

The compensation for services argument is based on the idea that the buyers of shares prior to the IPO are likely to be insiders who provide some sort of service to the company. Therefore, the discount from the IPO price that these buyers receive is not for the lack of marketability of the stock. Rather, it is a form of compensation for the services provided to the company.

Buyers of the stock at the IPO are less likely to be insiders, so the IPO price is less likely to be discounted to provide compensation for services performed.

In fact, the WMA studies attempt to eliminate all transactions involving insiders. The Emory and Valuation Advisors studies contain a substantial number of arm's-length transactions, usually with institutional investors, who usually have rights that make their stock more valuable than the common stock with which it is compared at the time of the IPO.

One-third to one-half of the pre-IPO transactions in recent years involve convertible preferred stock, which is more valuable than the common stock with which the price is compared. Also, many of the institutional investors require put rights. These factors would have a downward bias in the calculated discounts.

These often-cited arguments are easily addressed by looking at evidence cited herein. It is important to consider the fact that the pre-IPO DLOM studies are the only studies based on transactions in shares of private company stock. Therefore, these studies generally provide a meaningful starting point in the measurement of a DLOM for a privately owned ownership interest.

". . . there is a large and compelling body of literature that supports the existence of the DLOM."

Summary and Conclusion

In spite of the disagreements regarding the DLOM, there is a large and compelling body of literature that supports the existence of the DLOM.

Restricted stock studies, the first type of analysis performed to empirically estimate the DLOM, began appearing in 1971. Between the first restricted stock study published by the SEC in 1971 and today, the DLOM literature has developed considerably. Studies have expanded to include pre-IPO studies, option pricing studies, and discounted cash flow models.

The studies have affirmed that smaller, riskier companies warrant a greater DLOM, all other factors being equal. The studies are also consistent in attributing a larger DLOM (1) to companies that do not pay dividends and (2) to ownership interests with longer expected investment holding periods.

Between 1971 and 2007, numerous DLOM studies were published that affirm what the 1971 SEC Study concluded: (1) the DLOM is an economically valid concept and (2) the size of the DLOM is often substantial.

Notes:

1. *Mandelbaum, et al.* v. *Commissioner*, T.C. Memo 1995-255.
2. William L. Silber, "Discounts on Restricted Stock: The Impact of Illiquidity on Stock Prices," *Financial Analysts Journal*, July–August 1991, pp. 60–64.
3. Robert R. Trout, "Estimation of the Discount Associated with the Transfer of Restricted Securities," *Taxes*, June 1977, pp. 381–5.
4. Michael Hertzel and Richard L. Smith, "Marketability Discounts and Shareholder Gains for Placing Equity Privately," *Journal of Finance*, June 1993.
5. John J. Kania, "Predicting Lack of Marketability Discounts by Use of an Economic (Statistical Regression) Model)," *Business Valuation Review*, December 2002.
6. Stanley Jay Feldman, "A Note on Using Regression Models to Predict the Marketability Discount," *Business Valuation Review*, September 2002, p. 145.
7. Hertzel and Smith, "Marketability Discounts and Shareholder Gains for Placing Equity Privately."
8. Mukesh Bajaj, David J. Denis, Stephen P. Ferris, and Atuyla Sarin, "Firm Value and Marketability Discounts," *Journal of Corporation Law*, Fall 2001.
9. Hertzel and Smith, "Marketability Discounts and Shareholder Gains for Placing Equity Privately," p. 484.
10. Ibid., p. 470.
11. Ibid., p. 480.
12. Ibid., p. 470.
13. Bajaj, Denis, Ferris, and Sarin, "Firm Value and Marketability Discounts," p. 114.
14. Ibid., p. 107.
15. 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. pp. 16-7.
16. Gregg Gaffen, "The Willamette Management Associates Failed IPO Study: Does a DLOM Apply to Controlling Ownership Interests?," Willamette Management Associates *Insights*, Autumn 2004.
17. Tim Loughran and Jay Ritter, "Why Has IPO Underpricing Changed Over Time?" *Financial Management*, Autumn 2004, pp. 5–37.

Aaron Rotkowski is a manager in our Portland, Oregon, office. Aaron can be reached at amrotkowski@willamette.com or (503) 243-7529.

Scott Cobb is a senior manager in our Washington, D.C., office. Scott can be reached at (703) 235-4608 or sscobb@willamette.com.