

Financial Valuation *and* Litigation Expert

IEWS AND TOOLS FROM LEADING EXPERTS ON VALUATION, FORENSIC/FRAUD AND LITIGATION SERVICES



**Editor's
Outlook**

Jim Hitchner

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A very special document has come to our attention here at VPS, and we are pleased to share it with you in this special, double-sized edition!

I have a passion for education—particularly within the business valuation community. I'm proud that both the American Institute of Certified Public Accountants (AICPA) and National Association of Certified Valuation Analysts (NACVA) offer education courses based on *Financial Valuation Applications and Models*, of which I'm editor and co-author. I've voluntarily devoted endless hours creating slides and handout materials to accompany those courses.

And now I am pleased to share yet another educational opportunity with you. The Internal Revenue Service's "Discount for Lack of Marketability Job Aid for IRS Valuation Professionals" is an outstanding document that will aid valuation analysts in determining and defending discounts for lack of marketability. I have excerpted large amounts of information from the IRS DLOM Job Aid, enhanced that with information from my own publications regarding the same topics, and created this special edition just for you!

IRS's DLOM Job Aid Discount for Lack of Marketability Job Aid for IRS Valuation Professionals

A blockbuster document, the "Discount for Lack of Marketability Job Aid for IRS Valuation Professionals," has recently come to our attention, and we are thrilled to be the first to share this information with our readers!

DLOMs are the sole focus of the IRS DLOM Job Aid. The 107-page detailed study gives an in-depth presentation on IRS views concerning almost all of the current DLOM models, databases and studies. Most of these IRS reviews include background, summary, areas of focus, strengths, weaknesses, important parameters, prevalence in professional practice and court-case coverage and citations. This article provides a summary of the IRS Job Aid and will provide keen insight into how the IRS evaluates DLOMs.

Jim Hitchner, editor in chief of this journal and CEO of Valuation Products and Services, LLC ("VPS"), its publisher, and Eva Lang, president of VPS, believe that we are the first business valuation organization to discover this important study and are happy to share this information with the business valuation profession. VPS will also be presenting several webinars on this important area. The first one will be a thorough analysis of the Job Aid. The second will offer the

creators of some of the DLOM models, databases and studies an opportunity to rebut the criticisms contained in the Job Aid. (See page 2 for time, date and details on the first webinar). Given the importance of this Job Aid, we will present these webinars at later dates as well.

Before we delve into the Job Aid and the information it contains, we must acknowledge the incredible amount of fine work done by the IRS (see Sidebar 2 on page five for the IRS personnel involved).

We were very impressed at the breadth and depth of detail contained within the document. This Job Aid clearly advances the body of knowledge of DLOMs, which is one of the highest impact areas of business valuation, and allows valuation analysts to understand the thought process that the IRS employs when reviewing and performing DLOM analyses in business valuations.

We believe this IRS DLOM Job Aid will help both the IRS and taxpayers deal more efficiently in resolving DLOM disputes. Obviously, we do not agree with everything in the Job Aid; there are actually several areas with which we disagree. However, there are many areas with which we do agree.

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Either way, we must still give a big *thank you* for the time, energy and thought put into this. Well done. Now, on to the details.

This study is titled “Discount for Lack of Marketability, Job Aid for IRS Valuation Professionals,” September 25, 2009. It was developed by the IRS Engineering/Valuation Program DLOM Team. There is also a “Disclaimer” on the second unnumbered page that states the following:

This job aid is meant to provide information to IRS valuation analysts when considering the discount for lack of marketability (DLOM). Always read Section E, Evaluation and Recommendations, in conjunction with Section D, Summary of Approaches to DLOM. Note that while certain of the studies reviewed may indicate large discounts, such discounts are not appropriate in all facts and circumstances. The Valuation Analyst must have a clear understanding of the facts and circumstances of each interest to be valued, use professional judgment in choosing a DLOM—just as is done for all other parts of a valuation— and apply a reasonableness test. In other words, the Analyst must get behind the data used to support a DLOM choice rather than simply using summary statistics and resulting conclusions developed by somebody else.

The job aid does not make any bright line selections or exclusions as to what approach to DLOM is best in any given set of circumstances—that is up to the Valuation Analyst’s professional judgment.

JOB AID BACKGROUND

Initially, the team was charged with assisting Howard Lewis, Engineering Program Manager, who had been asked to act as a moderator for a summit on DLOM by [Tax Court] Judge David Laro

in September 2008. At the end of August 2008, Howard Lewis retired. In October 2008 LMSB Field Specialists reorganized and the position of Program Manager was eliminated. However, given the convening of this private sector summit, it was anticipated that there would be renewed energy devoted to this issue. The development work of this team was to take into account outcomes of the September 2008 summit and provide guidance to our employees.¹

Jim Hitchner was one of the creators, organizers and/or moderators at Judge Laro’s three DLOM summits, conferences and sessions, which took place in San Diego in 2008 and 2009 and in Georgetown in 2010. For the first 2008 conference, Hitchner was the lead moderator for a panel consisting of the following professionals and their topics:

- Lance S. Hall, ASA, FMV Opinions, Inc., “The Comparative Analysis of Restricted Stock Approach (CARS)” and “The FMV Restricted Stock Study”
- Z. Christopher Mercer, ASA, CFA, Mercer Capital, “Quantitative Marketability Discount Model (QMDM)”
- Marc Vianello, Vianello Forensic Consulting, LLC, “The VFC Longstaff DLOM Methodology”
- Dr. Sumon C. Mazumdar, LECG and University of California-Berkley, “Firm Value and Marketability Discounts” and “The Bajaj et al. Study”
- Dr. Ashok Abbott, University of West Virginia, “Abbott Liquidity Factor and Study”

At the end of this summit, Howard Lewis, Mel Abraham and Jim Hitchner led a discussion of all the presentations to attempt to reconcile the similarities and differences and to present their own views. For a detailed summary of Judge Laro’s 2008 DLOM summit see *FVLE* Issue 15, October/November 2008, available at www.valuationproducts.com. This issue is also included as

Addendum 11 to this issue. The entire issue is devoted to this national summit on DLOMs. We here at VPS are proud to have been involved in the beginnings of this IRS Job Aid as well as the announcement and summary presented here.

On October 9, 2009 Judge Laro convened a second one-day conference in San Diego. Hitchner’s Valuation Products and Services, LLC was a co-sponsor of this event. Hitchner also created a case study to apply various DLOM models, databases and methods. Hitchner’s half-day session was titled “Discounts for Lack of Marketability Case Study Workshop – How to Apply and Reconcile the Various Qualitative and Quantitative DLOM Models and Databases.”

Hitchner moderated and presented this case study with a panel consisting of Bob Duffy, CPA/ABV, CFA, ASA, Partner, Valuation Services Group, Grant Thornton; Jay Fishman, FASA, Managing Director, Financial Research Associates; Linda Trugman, CPA/ABV, MCBA, ASA, Vice President, Trugman Valuation Associates; and Kevin Yeanoplos, CPA/ABV/CFF, ASA, Director of Valuation Services, Brueggeman and Johnson Yeanoplos. See Addendum 12 to this issue for an updated summary and reconciliation of values from Hitchner’s session at Judge Laro’s second conference.

Continued on next page

¹ “Discount for Lack of Marketability, Job Aid for IRS Valuation Professionals,” September 25, 2009, IRS Engineering/Valuation Program DLOM Team, p.1. http://www.mfford.com/html/irs_discount_guidelines.html

PLEASE NOTE:

- **Due to the extensive amount of quoted material within this issue, we have forgone the traditional use of “Ibid” within footnotes and instead have provided the best clarification possible.**
- **We have retained the existing stylistic features (capitalization, punctuation, etc.) within quoted materials, even when they are not consistent with our publication’s style guide.**

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Focus and Objective

The team’s focus was to define the issues around DLOM and to develop pro forma IDRs and audit techniques to assist valuers in the field. This information should be of value not only to our own personnel but also to our valuation customers.²

The team researched the state of art in DLOM starting by defining DLOM and differentiating it from such related areas as Discount for Lack of Liquidity (DLOL) and Discount for Lack of Control (DLOC). We reviewed longstanding methods for estimating DLOM. We explored the models in recent professional journals, discussed the pro’s and con’s of these models, explored their strengths and weaknesses and looked for elements of reconciliation among the models where possible.³

Executive Summary Conclusion

The conclusion section of the executive summary included the following caveat:

This Job Aid is meant to provide a background and context for the Discount for Lack of Marketability as such is commonly applied in business valuation analyses and reports. It reviews past and existing practices and attempts to provide insight into the strengths and weaknesses of these practices. It is not meant to provide a cookbook approach to evaluating a marketability discount as proposed by a taxpayer or to setting a proposed marketability discount in the case of an independent governmental appraisal. It is emphasized that, all background and existing practices aside, the establishment of a Discount for Lack of Marketability is a factually intensive endeavor that is heavily dependent upon the experience and capability of the valuator. By bringing the included material together in one document, we are striving to make the job of the IRS valuation analyst easier. We do not mean to provide guidance as to reasonable levels of marketability discounts that would prevail in all situational contexts or to imply that the IRS has any policy per se in the

Continued on next page

² IRS DLOM Job Aid, p. 1.

³ IRS DLOM Job Aid, p. 1.

⁴ IRS DLOM Job Aid, unnumbered pages 3-4.

evaluation or the determination of such discounts.⁵

Introduction

The extent of the DLOM review was as follows:

We will endeavor to explain the intent of the approaches most widely relied upon by practicing valuers as to how each estimates DLOM. We will identify the parameters used in a given approach, the strengths and weaknesses of the approach, the view of the valuation community concerning the approach, and what the courts have had to say about the approach, if anything. The job aid also provides initial IDR questions for examination of DLOM and some sample report language for reviewers to consider in situations where it's clear that the approach being used by the taxpayer is in error.⁶

LIQUIDITY VS. MARKETABILITY

The Job Aid distinguishes between *liquidity* and *marketability*, since some models address one or the other.

How does Liquidity differ from Marketability? These terms are often used interchangeably, although there is a technical distinction between them. Marketability indicates the fact of 'Salability,' while Liquidity indicates how fast that sale can occur at the current price.

- If it's liquid, it's marketable
- If it's non-marketable, it's illiquid
- Being illiquid does not necessarily mean non-marketable—it may still be sellable but not quickly or without loss of value⁷

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors also address the distinction between *liquidity* and *marketability*.

Did you know that liquidity and marketability are not necessarily the same? Note, first, that anything liquid has to be marketable. However, the reverse is not true. An asset or ownership interest can be marketable, but not liquid.

SIDEBAR 2 - IRS DLOM TEAM FORMED TO CONSIDER DISCOUNTS FOR LACK OF MARKETABILITY¹¹

<u>NAME</u>	<u>ROLE</u>		<u>POD</u>
Mike Gregory, ASA, AVA	Issue Champion	Engineering Territory Manager	St. Paul, MN
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James McCann, ASA	Research Analyst	Financial Analyst	San Francisco, CA
Aberdeen Sabo	Advisor	Estate Tax Attorney	Independence, OH

Let's take two examples. Is an ownership interest in a public stock marketable? Sure it is. Is it liquid? Yes, of course. These days, you can sell public stock almost instantly and receive your cash within three days or so. Now, let's look at a 100 percent controlling interest in a private company. Is it marketable? Although there are exceptions, the answer, generally, is *yes*. Now, is this ownership interest liquid? The answer is, of course, *no*, assuming liquidity means the ability to convert to cash very quickly and easily, that is, public stock. Another example of marketable illiquid is real estate because, generally, it takes time to turn a parcel of real estate into cash by selling it.⁸

Let's now distinguish some common assets and ownership interests:

- Public stock - *Liquid*
- Controlling interest in a private company - *Marketable illiquid*
- Minority interest in a private company - *Nonmarketable*
- Real estate - *Marketable illiquid*
- Machinery and equipment - *Marketable illiquid*⁹

FACTORS INFLUENCING MARKETABILITY

The Job Aid includes a list of factors that affect marketability (see Sidebar 3 on page six).

Some common factors that have been identified in various studies

as impacting marketability are listed below and are modeled after the Mandelbaum factors. The first set of factors relate to the characteristics of the subject company. The second set of factors relate to the characteristics of the subject interest.¹⁰

IT'S NOT JUST THE WILLING BUYER – THE WILLING SELLER MATTERS AS WELL

In determining/justifying marketability discounts, many appraisers only consider the willing buyer. However, common sense and the courts have emphasized that a willing seller must also be considered. In considering the market for a subject interest, the applicable market in which a hypothetical willing buyer may be found need not be one that includes the general public. The courts have determined that it is sufficient if there are potential buyers among those closely connected with a corporation.¹²

Continued on next page

⁵ IRS DLOM Job Aid, p. 2.
⁶ IRS DLOM Job Aid, p. 3.
⁷ IRS DLOM Job Aid, p. 6.
⁸ Hitchner, James R., editor, *Financial Valuation Applications and Models (FVAM)*, third edition, Wiley, 2011, p. 368.
⁹ Hitchner, *FVAM*, p. 369.
¹⁰ IRS DLOM Job Aid, p. 6.
¹¹ IRS DLOM Job Aid, p. 3.
¹² IRS DLOM Job Aid, p. 8.

SIDEBAR 3

Factors Influencing Marketability Identified¹³

SUBJECT COMPANY FACTORS

- Value of subject corporation's privately traded securities vs. its publicly traded securities (or, if the subject corporation does not have stock that is traded both publicly and privately, the cost of a similar corporation's public and private stock)
- Dividend-paying (or distribution) ability and history
- Dividend yield
- Attractiveness of subject business
- Attractiveness of subject industry
- Prospects for a sale or public offering of the company
- Number of identifiable buyers
- Attributes of controlling shareholder, if any
- Availability of access to information or reliability of that information
- Management
- Earnings levels
- Revenue levels
- Book to market value ratios
- Information requirements
- Ownership concentration effects
- Financial condition
- Percent of shares held by insiders
- Percent of shares held by institutions
- Percent of independent directors
- Listing on a major exchange
- Active vs. passive investors
- Registration costs
- Availability of hedging opportunities
- Market capitalization rank
- Business risk

SUBJECT INTEREST FACTORS

- Restrictive transfer provisions
- Length of the restriction period
- Length of expected holding period
- Offering size as a % of total shares outstanding
- Registered vs. unregistered
- General economic conditions
- Prevailing stock market conditions
- Volatility of stock

MARKETABILITY OF MINORITY VS. CONTROLLING INTERESTS

There is little dispute that minority interests in non-publicly traded entities lose value due to lack of marketability...Some believe that there should be little or no discount for lack of marketability on a controlling interest, while others believe there should be a discount applied. Most agree that any marketability discount for a controlling interest should be less than the discount for a minority interest in the same entity.¹⁴

... the controlling interest owner may not be able to sell the interest quickly or with certainty as to the ultimate sales price. Therefore, it follows that the controlling interest may not be fully marketable.¹⁵

SAMPLE INITIAL IRS INFORMATION DOCUMENTS REQUESTS ("IDR") ON DLOMS

The evaluation of the appropriateness of a discount for lack of marketability requires the collection and analysis of a substantial amount of information about the entity involved and the subject interest in that entity whose marketability is being considered. We provide below a list of typical inquiry areas that can be put forth in Information Document Requests toward the end of collecting such information. The bracketed notes below each item offer commentary about that item's relevance in evaluating its contribution to the lack of marketability and/or lack of liquidity determination.¹⁶ (See Sidebar 4 on page seven).

DLOM CATEGORIZATION

The Job Aid categorizes the approaches for calculation of a DLOM into the following categories:

1. Benchmark study approaches
2. Security-based approaches
3. Analytical approaches
4. Other approaches¹⁷

DISCUSSION OF SPECIFIC DLOM MODELS, DATABASES AND STUDIES¹⁸

We have decided to present the following areas from the Job Aid for further discussion:

- Benchmark restricted stock studies
- FMV Opinions restricted stock database and methodology including the restricted stock equivalent analysis
- Pre-IPO studies including Emory and Willamette benchmark studies and Valuation Advisors detailed database
- Mandelbaum factors/Judge David Laro Tax Court opinion
- Long-term equity anticipation securities ("LEAPS")
- Longstaff upper bound look-back option model
- Chaffe option model
- Wruck private placement study
- Hertz and Smith private placement study
- Bajaj, Denis, Ferris and Sarin private placement study
- Quantitative Marketability Discount Model ("QMDM")
- Partnership Profiles/Partnership Spectrum database

Other areas that were reviewed in this Job Aid included the following:

- Cost of flotation
- Bid-ask spread method
- Ashok Abbott liquidity discounts
- Nonmarketable investment company evaluation ("NICE") valuation system
- National Economic Research Associates ("NERA") CAPM approach
- Public vs. private P/E acquisition comparisons

Continued on next page

¹³ IRS DLOM Job Aid, pp. 6-7.

¹⁴ IRS DLOM Job Aid, p. 9.

¹⁵ IRS DLOM Job Aid, p. 9.

¹⁶ IRS DLOM Job Aid, p.10.

¹⁷ IRS DLOM Job Aid, p.12.

¹⁸ IRS DLOM Job Aid, pp. 12-67.

We have decided not to present these areas in detail, as they are either not directly relevant and/or much less seen in practice or business valuation courses concerning DLOMs for private companies, particularly smaller, private companies. Some of the areas are newer and could gain greater visibility or acceptance in the future. (See page 30 for details).

BENCHMARK APPROACHES

RESTRICTED STOCK STUDIES¹⁹

Restricted stock studies compare the value of the freely traded price of a public company's stock with that of restricted shares issued by the same company. The primary difference is that the restricted stock is not registered and is not freely traded on the markets. The restricted shares are also subject to SEC rules, primarily Rule 144. For the Job Aid's list of restricted stock studies, see Sidebar 5 on page eight.

Background

The Job Aid discusses some background as well as the evolution of the use of restricted stock studies in practice. It also discusses the dispersion of the data.

In recent years, as the discipline of business valuation has continued to evolve, the valuation communities and the courts have taken an increasingly critical view of simply beginning with a summary statistic from a group of studies and going from there, either by accepting the statistic as is or adjusting it without a believable explanation. Attention has turned instead to getting behind the data itself and deriving an appropriate discount from the data as such relates to the case at hand. This evolution needs to be understood by the valuator and duly considered in using restricted stock studies as an approach to DLOM.²⁰

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¹⁹ IRS DLOM Job Aid, pp. 12-19.

²⁰ IRS DLOM Job Aid, p. 13.

²¹ IRS DLOM Job Aid, pp. 10-11.

SIDEBAR 4

Sample Initial IDR Items on Marketability²¹

- a. History of dividend payments [cash dividends are a "liquid" return on investment, which might lower lack of marketability risk]
- b. Salaries and bonuses paid to the Officers of the company, over the five years leading up to the valuation date [especially in companies that don't pay dividends, Officers' compensation can provide cash flow to shareholders, which might lower lack of marketability risk]
- c. Compensation and/or fees paid to the Directors of the company, over the five years leading up to the valuation date [especially in companies that don't pay dividends, Directors' fees can provide cash flow to shareholders, which might lower lack of marketability risk]
- d. List of all marketable securities (description, number, cost value) shown on the latest financial statements [cash-equivalent securities might lower liquidity risk on a company-wide basis]
- e. List of all non-marketable securities and investments (description, number, cost value) shown on the latest financial statements [can provide information on how long it might take to liquidate non-marketable assets]
- f. Breakdown of adjusted cost basis for each of the marketable and nonmarketable assets owned by the company on the valuation date [can provide information on built-in capital gains tax expense to liquidate the company]
- g. Indicate if the adjusted cost basis of any of the company's marketable or non-marketable assets reflects a carry-over cost basis, pursuant to a Section 1031 (or similar type) tax-deferred exchange [can provide information on whether the company pursues available tax-deferral strategies]
- h. Current list of shareholders/partners showing the name of each shareholder/partner and the class and number of shares owned by each shareholder as of the valuation date [can provide information on relative ownership distribution and total number of shareholders]
- i. Copies of notes receivable (and/or notes payable) between the company and any shareholders, over the five years leading up to the valuation date [loans to/from shareholders might be relevant to evaluating lack of marketability risk]
- j. Company articles of incorporation and amendments, by-laws and amendments or partnership agreements and amendments [by-laws might address restrictions or procedures for transfer of shares]
- k. Copy of all shareholder agreements (such as buy/sell agreements, stock option agreements, stock purchase agreements, etc.) that have been in effect during the five years prior to the valuation date [shareholder agreements might address restrictions or procedures for transfer of shares]
- l. All documents pertaining to any sale of the company, a division or unit of the company, or shares (interests) in the company during the five years prior to the valuation date [recent sales/transfers might be relevant to evaluating lack of marketability risk]
- m. Board of Directors Meeting Minutes, for five years leading up to valuation date [Board meetings might address shareholder requests for sale/transfer of shares]
- n. Complete financial statements of the company for the five fiscal or calendar years prior to the valuation date, including balance sheets, income statements and cash flow statements [can provide additional information for evaluating lack of marketability risk]
- o. Complete income tax returns for the five fiscal or calendar years prior to the valuation date, including any audit adjustments [tax returns might include details that are not stated within the regular financial statements]
- p. Brief history and/or description of the company or the company's business (may already be included in an appraisal report) [can provide additional information for evaluating lack of marketability risk]
- q. Brief statement of duties of subject shareholder's participation in company operations [can provide additional information for evaluating lack of marketability risk]

SIDEBAR 5

RESTRICTED STOCK STUDIES - ATTEMPTING TO MEASURE THE MARKETABILITY DISCOUNT FOR PRIVATE FIRMS²²

Empirical Study (full citation below)	Time Period Covered	Average Discount
SEC overall average (a)	1/66 - 6/69	25.8
SEC nonreporting OTC companies (a)	1/66 - 6/69	32.6
Gelman (b)	1/68 - 12/70	33.0
Trout (c)	1/68 - 12/72	33.5
Moroney (d)	1/69 - 12/72	35.6
Maher (e)	1/69 - 12/73	35.4
Standard Research Consultants (f)	10/78 - 6/82	45.0 (median)
Willamette Management Associates (g)	1981 - 1984	31.2 (median)
Silber (h)	1/81 - 12/88	33.8
FMV Opinions, Inc. (i)	1/79 - 4/92	23.0
Management Planning, Inc. (j)	1/80 - 12/96	27.1
Bruce Johnson Study (k)	1/91 - 12/95	20.0
Columbia Financial Advisors (l)	1/96 - 4/97	21.0
Columbia Financial Advisors (l)	5/97 - 12/98	13.0

- (a) Discounts Involved in Purchases of Common Stock (1966-1969), *Institutional Investor Study Report of the Securities and Exchange Commission*, H.R. Do. No. 92-64, Part 5, 92nd Congress, 1st Session, 1971, 2444-2456.
- (b) Gelman, Milton, An Economist Financial Analyst's Approach to Valuing Stock of a Closely Held Company, *Journal of Taxation*, June 1972, 353-354.
- (c) Trout, Robert R., Estimation of the Discount Associated with the Transfer of Restricted Securities, *Taxes*, June 1997, 381-384.
- (d) Moroney, Robert E., Most Courts Overvalue Closely Held Stocks, *Taxes*, March 1993, 144-154.
- (e) Maher, Michael J., Discounts for Lack-of-marketability for Closely Held Business Interests, *Taxes*, September 1976, 562-71.
- (f) Pittock, William F., and Stryker, Charles H., Revenue Ruling 77-287 Revisited, *SRC Quarterly Reports*, Spring 1983.
- (g) Willamette Management Associates study (unpublished)
- (h) Silber, William L., Discounts on Restricted Stock: The Impact of Illiquidity on Stock Prices, *Financial Analysts Journal*, July-August 1991, 60-64.
- (i) Hall, Lance S., and Timothy C. Polacek, "Strategies for Obtaining the Largest Valuation Discounts," *Estate Planning*, January/February 1994, pp. 38-44.
- (j) Oliver, Robert P. and Roy H Meyers, "Discounts Seen in Private Placements of Restricted Stock: The Management Planning, Inc., Long-Term Study (1980-1996)" (Chapter 5) in Robert F. Reilly and Robert P. Schweih, eds, *The Handbook of Advanced Business Valuations* (New York: McGraw-Hill, 2000).
- (k) Johnson, Bruce, "Restricted Stock Discounts, 1991-95," *Shannon Pratt's Business Valuation Update*, Vol. 5, No. 3, March 1999, pp. 1-3. "Quantitative Support for Discounts for Lack of Marketability," *Business Valuation Review*, December, 1999, pp. 152-155.
- (l) CFAI Study, Aschwald, Kathryn F., "Restricted Stock Discounts Decline as Result of 1-Year Holding Period - Studies After 1990 'No Longer Relevant' for Lack of Marketability Discounts," *Shannon Pratt's Business Valuation Update*, Vol. 6, No. 5, May 2000, pp. 1-5.

²² IRS DLOM Job Aid, p. 14.

As can be seen from this data, the measures of central tendencies for these various studies would imply DLOM amounts of from a low of 13% to somewhere in the vicinity of the mid-40% decile. This is a wide range in terms of central tendency and indicates the probability of a much wider range across the individual data points. Further, the sample sizes in these studies are small, most involving less than 100 individual data points such that the reliability of the summary statistics is subject to considerable data variation. This factor emphasizes the need to get into the data itself instead of staying at the summary level.²³

**Restricted Stock Studies
Job Aid Summary**

- Authors of restricted stock studies have examined transactions in the shares of public and private companies.
- Restricted shares have some form of agreed upon or legal restrictions related to marketability.
- The studies exhibit average means and medians of 31.4% and 33%, therefore many analysts use a discount of about 35% or attach a subjective premium to the average discount to account for the perceived greater illiquidity of a private company's stock versus the restricted stock.
- The DLOM concluded by the more recent restricted stock studies are smaller than the DLOM concluded by the older restricted stock studies. One explanation for this phenomenon is the increase in volume of privately placed stock under Securities and Exchange Commission (SEC) Rule 144(a) in the past several years. Also, a change in the minimum investment holding period required by the SEC under Rule 144 from two years to only one year took place as of April 29, 1997.
- Effective February 15, 2008, the

SEC changed Rule 144 by shortening the holding period even further for restricted securities for *small companies*.

- The key to this DLOM approach is the importance of understanding the various marketability studies, how they relate to the subject interest being valued, and whether the ultimate marketability discount that is reasonable for the situation is below, equal to, or above the discounts (or range of discounts) suggested by the studies.²⁴

Areas of Focus

In discussing this approach with taxpayer or taxpayer's appraiser, the following areas of focus should be explored:

- Has Taxpayer's appraiser considered separation of 'lack of marketability' from other effects (e.g. blockage) that might be contributing to discounts observed in the Restricted Stock Studies data?
- Has Taxpayer's appraiser addressed variance and/or range of discounts observed in the Restricted Stock Studies data?
- On what basis has Taxpayer's appraiser determined that any particular 'average' or 'median' discount from the Restricted Stock Studies data is applicable to the subject company?
- On what basis has Taxpayer's appraiser adjusted the average or median discount data for factors applicable to the subject company?
- If Taxpayer's appraiser is using specific restricted stock transactions from a database, on what basis has Taxpayer's appraiser estimated those particular restricted stock transactions to be applicable to the subject company?²⁵

Strengths

- The advantage of using restricted stock studies is that the stock is identical to its freely traded counterpart, except for the duration of the resale restriction, and contemporaneous pricing data is available

showing differences in price between liquid and illiquid shares.

- These studies are commonly relied upon by business valuers because restricted stock studies were one of the few areas where early concentrated research was conducted and actual numerical values were produced. Considerable raw data was available for analysis and many different independent analysts worked the data and produced numerical results.
- Historically, these types of studies were the ones most often accepted by the Tax Court (however, this tendency is being challenged in recent times).²⁶

Weaknesses

- *Lack of Current Market Data*
The most compelling criticism of existing studies is that they rely on historical market data. A discount for lack of marketability is applied as part of the valuation process to estimate the fair *market* value of an asset or security. With some of the data in the studies reaching back to 1966, it may not reflect the dynamics of current market conditions.
- *Change in Holding Period for Restricted Stocks*

It is imperative that the expected holding period of the subject company stock be compared to the restricted stock study holding period being used. All except the last two studies use market data pre-April 1997, reflecting the then-current law requiring a two-year holding period prior to sale by an investor of Rule 144 issued restricted stock. The SEC, effective April 1997, amended Section 144 to require only a one-year holding period by investors, implying a lower discount for lack of marketability. The current law, effective February 2008, now requires

Continued on next page

²³ IRS DLOM Job Aid, p. 15.
²⁴ IRS DLOM Job Aid, p. 15.
²⁵ IRS DLOM Job Aid, pp. 15-16.
²⁶ IRS DLOM Job Aid, p. 16.

only a six month holding period by investors of small companies, however no new restricted stock studies have been published, as of yet.

- The studies imply an unusually high return on investment in small company restricted stock.
- *Reliance on averages of restricted stock studies.* Using measures of central tendency without an examination of the underlying data leads to the opportunity for mischaracterization of the true restricted stock trading patterns. For example:
 - The Maher Study discount range was 3% - 76%.
 - The Johnson Study range was from a 10% premium to a 60% discount.²⁷

The Job Aid indicates that some key parameters are:

1. Exchange on which the stock trades
2. Size of block as a percent of shares outstanding
3. Size of company issuing the restrictive shares²⁸

It also indicates that it is “very commonly relied upon” and that there is a trend towards deeper analysis and “getting behind the data instead of staying at the summary level.”²⁹

The following court cases are cited as rejecting using average results vs. detailed comparisons:

- *Temple v. U.S.*, No 903-CV-165 (March 10, 2006)
- *Peracchio v. Comm.*, T. C. Memo, 2003-280 (September 25, 2003)
- *Holman v. Comm.*, 130 TC 170 (May 27, 2008)³⁰

FMV RESTRICTED STOCK DATABASE—ANALYSIS³¹

At the time that this Job Aid was prepared and issued, FMV Opinions, Inc. had published a companion guide titled “Determining Discounts for Lack of Marketability, A Companion Guide to the FMV Restricted Stock Study.”TM This Companion Guide was issued in

2007. Please note that a new companion guide was issued in 2011. Since the 2011 guide was unavailable at the time of this Job Aid, we will focus on the 2007 edition. One statement made in the FMV Companion Guide was:

This User’s Guide will provide the valuator with the information necessary to successfully understand the theoretical foundation for the discount for lack of marketability, be fully informed regarding the underlying discount data, weigh the valid discount characteristics, determine an appropriate discount, and explain and defend the discount determination when challenged.³²

The 2007 Guide is rich in information and gives a good presentation on restricted stock and Rule 144. It also critiques some of the other DLOM studies, methods and data.

We have now observed that the Courts are increasingly skeptical of the traditional means of determining discounts for lack of marketability: the [restricted stock] Benchmark Average Approach; the Pre-IPO Approach, and the Quantitative Marketability Discount Model.³³

The Job Aid includes:

- ...an analysis of the 475 transactions in the FMV Restricted Stock database in 2009. The purpose was
 - a) to analyze the FMV model for determining DLOM on private equity, and
 - b) to determine whether it is possible to develop a statistically valid regression-based model to determine the DLOM. The conclusions drawn are:
 - 1) FMV Opinions’ model is flawed insofar as explanation of the DLOM’s on the restricted stock transactions in their database;
 - 2) Valuators cannot confidently rely on FMV’s model when determining DLOM’s on restricted stocks, much less on interests in private equity; and
 - 3) Neither FMV’s model nor multi-

variate regression analysis can be applied to FMV’s database to confidently determine the DLOM on private equity.

FMV Opinions and its principals continue to heavily promote their two-step approach utilizing their database in contributions to various valuation publications and with presentations at various seminars and meetings. Thus, it is likely that we will continue to see this approach used by various practitioners. Before accepting this approach, the reader should familiarize themselves with [the] analysis and conclusions and be sure that the result being put forth makes sense in the overall context of the valuation assignment.³⁴

DESCRIPTION OF FMV OPINIONS’ MODEL

My [IRS reviewer] understanding of FMV’s model is based on two articles by Espen Robak, CFA (Robak): ‘Marketability discounts: Using four measures of risk and adjusting for relative liquidity’ and ‘FMV introduces detailed Restricted Stock Study.’

Following are four quotes from these two articles that explain FMV’s thinking and methodology. The first three are from ‘Marketability discounts: Using four measures of risk and adjusting for relative liquidity’:

- ... there are inherent and significant differences between the liquidity of restricted stock and the liquidity of . . . private equity . . .
- We determine the ‘restricted stock equivalent’ discount, given the financial characteristics of the company . . . We determine the

Continued on next page

²⁷ IRS DLOM Job Aid, pp. 16-17.
²⁸ IRS DLOM Job Aid, p. 17
²⁹ IRS DLOM Job Aid, p. 17.
³⁰ IRS DLOM Job Aid, pp. 17-18.
³¹ IRS DLOM Job Aid, pp. 18-19, 86-94.
³² FMV Opinions, Inc., Determining Discounts for Lack of Marketability, A Companion Guide to the FMV Restricted Stock StudyTM, © FMV Opinions, Inc., 2007, pp. 4-5.
³³ FMV Opinions, Inc., p. 11.
³⁴ IRS DLOM Job Aid, p. 18.

incremental discount for the privately held company . . . based on a review of the most illiquid (i.e., large-block) restricted stock issues.

- We must adjust for the fact that private equity is more illiquid than the typical block of restricted stock in a public company.
- In terms of liquidity, large blocks are essentially like private equity.

The last is from 'FMV introduces detailed Restricted Stock Study':

- ...the discounts for restricted stock with longer-than-average holding periods are particularly applicable to privately held securities. The only question is 'How do we isolate the transactions with longer holding periods from the rest of the sample?' The answer is: 'by looking at transactions in large blocks until 1997.'

In short, FMV's model is based on the proposition that the DLOM on private equity is a function of firm characteristics...and the incremental difference between discounts on the smaller and larger blocks of restricted stock...³⁵

CRITIQUE OF FMV OPINIONS' MODEL³⁶

Here are three major problems with FMV Opinions' model, and then eight less consequential questions and comments.

Major Problems

- 1) FMV has not shown that block size is a statistically reliable proxy for quantifying the supposed difference in liquidity between restricted stocks and private equity.
- 2) The first step in FMV's analysis...is intended to account only for the financial risk characteristics of the subject entity, but it also reflects block size. The second step...is intended to segregate and quantify the impact of block size, but it is also influenced by the same financial risk characteristics

in the first step. While meant to be separate steps, the two are interrelated and, therefore, corrupted by each other.

- 3) According to Robak's article, the first step in FMV's analysis is to 'determine the "restricted stock equivalent" discount given the financial characteristics of the company...' The tables in Robak's article... show four such firm characteristics. The discounts in the 475-transaction survey...are inconsistent with this purpose because they are a function of both firm characteristics (such as Z-score and Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA)), and issue characteristics (such as per-share offering amount, and block size as a percent of total shares.) They are the discounts on particular offerings, and not indicators of marketability or lack thereof.³⁷

Other Questions and Comments

- 4) There is not a statistically significant relationship between discounts to market value and the four risk characteristics in Robak's article. I regressed the discounts in the database against market values, market-to-book (MTB) ratios, net profit margins, and dividend yields, and found a 0.0238 R-square, coefficients' signs contrary to economic theory, and an F-statistic low enough that the regression equation could not be relied on even at the 10% level of significance.³⁸
- 5) Selection of how many and which particular firm characteristics to include in the model, appears subjective, and has not been explained. Robak has only noted 'we use different indicators in different situations.'
- 6) FMV has not shown why survey quintiles are the best way – or even a reliable way – of extrapolating survey results to a subject outside the survey. Why weren't quartiles or deciles or multiple regression

used instead?

- 7) The restricted stock equivalent...is dependent on whether the analyst chooses to use quintiles or some other measure. One would get a different result using, say, quartiles or deciles.
- 8) The example in Robak's article – and summarized in my Attachment 1 – did not include the characteristic thought by them [BVR April 2006 Telephone Conference, "Discounts for Lack of Marketability"] to be most correlative with marketability: stock price volatility.
- 9) FMV Opinions did not explain why they used medians instead of means.
- 10) FMV Opinions did not explain why they used 'additive' and 'multiplicative' calculations to determine the Private Company Increment in step 2. Why not just one or the other?
- 11) FMV Opinions didn't explain how they selected the matching transactions...It's presumed that these were the only transactions in the same factor quintiles.

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³⁵ IRS DLOM Job Aid p. 87. The articles referenced are by Espen Robak, CFA, previously with FMV Opinions, Inc. and now with Pluris Valuation Advisors, LLC. "Marketability discounts: Using four measures of risk and adjusting for relative liquidity," *BV Update*, August 2002, Business Valuation Resources, LLC and "FMV introduces detailed Restricted Stock Study," *BV Update*, November 2001, Business Valuation Resources, LLC.

³⁶ IRS DLOM Job Aid, Exhibit A—Review FMV Restricted Stock Model, which includes a review of both this section: FMV Restricted Stock Database—Analysis, and the next section: Restricted Stock Equivalent Analysis, pp. 86-94.

³⁷ IRS DLOM Job Aid, pp. 87-88. The "Z" score is a calculation to help determine a company's financial health and for predicting potential bankruptcy. It was developed by Edward Altman and is sometimes called the Altman Z Score.

³⁸ Footnote 55, p. 88 of the Job Aid states: "R-square, or coefficient of determination, is a measure of the degree of association between the response variable (the discount) and independent variables, as a whole. By comparison, the most often quoted minimum acceptable R-square is 0.80."

Footnote 56, p. 88 of the Job Aid states: "The F-test is a comparison of the F-statistic and critical values of F at various significance levels. In this case, 1.293 vs 1.972 F-critical at the 10% significance level means one couldn't even be 90% certain that the regression equation explains observed discounts."

The last eight of these factors question FMV's model. The first three disprove it.³⁹

REGRESSION ANALYSIS

Robak refers to regression analysis in his article, 'Marketability discounts: Using four measures of risk and adjusting for relative liquidity,' but he doesn't explain why FMV's model doesn't use it, or go on to discuss it in either of his articles.⁴⁰

The Job Aid refers to:

...FMV's 475-transaction spreadsheet and found two combinations of firm and issue characteristics that, arguably, do result in regression models that explain the observed discounts in these transactions. These are in my Attachments 2 and 3.⁴¹

Attachment 2 shows that, collectively, stock price volatility, per-share offering price, offering as a fraction of total shares outstanding, and offering dollar amount, could be used to make predictions of discounts for restricted stock transactions outside the database. The 22.20 *F*-statistic, significant even at the 1% level (22.20>3.36), indicates that one could be 99% confident that this combination is related to the discount in a restricted stock transaction.

In regard to interests in private equity – which is more often the subject of IRS valuations— this model is lacking because—

- 1) It could not be used to determine lack-of-marketability discounts on interests in private companies; and
- 2) According to a number of authors (most of whom have Ph.D.s in economics [see footnote 42]), it does not control for (isolate and quantify) the nonmarketability determinants of observed discounts. Unlike the traditional

Restricted Stock Approach, these two studies suggested that only a portion of the overall discount represents a lack-of-marketability.⁴²

With the second limitation of Attachment 2 in mind, I tested other combinations of characteristics to see if there might be a combination which does control for non marketability factors. Of the combinations of characteristics I looked at [see footnote 42], the model in **Attachment 3** comes closest to allowing for determination of the DLOM on interests in private equity.

This model is adequate in that—

- The *F* test indicates that, collectively, this combination of characteristics is adequate for prediction of the DLOM on restricted stock; ;
- All four coefficients are consistent with economic theory; and
- By differentiating between stocks with registration rights and stocks without registration rights, the 'Registered vs. Restricted' term serves the purpose of quantifying the impact of marketability.

Unfortunately, this model, too, is lacking. While it could have been argued that the DLOM on restricted stock is 2.42% were it not for the registration indicator's statistically unacceptable 0.188 P-value, the registration indicator's high P-value (greater than 0.1) invalidates use of this model for determining DLOMs.⁴³

Summary - Attachments 2 and 3

While there are at least two combinations of firm and issue characteristics in FMV's database that adequately explain the discounts in it, neither can be used to predict the lack-of-marketability discount on an interest in a private company.

The regression models in Attachments 2 and 3 both fail because of the difference between private equity and the restricted stocks in FMV's database. The model in Attachment 2 also fails because it does not include 'registration indicator,' arguably the only variable that measures marketability. The model in Attachment 3 also fails because the P-value of the 'registration indicator' renders this model less than a reliable predictor.⁴⁴

Conclusion

FMV Opinions' 2-part model is based on the proposition that the DLOM on private equity is the sum of—

- The relationship between the financial risk characteristics of, and the discounts on restricted stocks; and
- The difference between the discounts on smaller and larger blocks of stock.

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³⁹ IRS DLOM Job Aid, pp. 88-89.
⁴⁰ IRS DLOM Job Aid, p. 89.
⁴¹ IRS DLOM Job Aid, pp. 89, 92-94. The Job Aid includes Exhibit A—Review FMV Restricted Stock Model that includes attachments 1, 2 and 3. Attachment 1 is FMV Opinions' 2 Step Model Per Espen Robak Article, Attachment 2 is the regression equation and model validity statistics and Attachment 3 is "A Regression-based Model That 1) Controls for the Non-marketability Components in Discounts to Market Price in Restricted Stock Transactions, and 2) Isolates the Lack-of-Marketability Component."
⁴² IRS DLOM Job Aid, pp. 89-90. The authors and/or PhDs referenced are in footnote 59, p. 90 of the Job Aid. "Bajaj, et al. 'Firm Value and Marketability Discounts,' 27 J. Corp. L. 89, 98 (2001) and Hertz and Smith's 'Market Discounts and Shareholder Gains for Placing Equity Privately,' 48 J. Fin. 459 (1993)." The combinations of characteristics looked at are in footnote 60, p. 90 of the Job Aid. "This included holding period, offering price, block size, stock price volatility, z-score, retained earnings, market value, revenues, and whether or not registered."
⁴³ IRS DLOM Job Aid, p. 90.
⁴⁴ IRS DLOM Job Aid, pp. 90 and 94. Attachment 3 included four factors: Stock Price Volatility, Offering Price Per Share, Offering as a % of Pre-offering Shares Outstanding, and Regression Indicator (with or without).

Three of the more important problems with FMV Opinions' model are:

- 1) FMV has not shown that block size is a statistically reliable proxy for the supposed difference in liquidity between restricted stocks and private equity;
- 2) The two steps in FMV Opinions' model are interrelated and, therefore, corrupted in that they are both influenced by firm characteristics and by block size; and
- 3) The discounts in FMV's database are the discounts on particular offerings, comprised of marketability and non-marketability factors, and not necessarily indicators of marketability or the lack thereof.

Applying multivariate regression analysis to FMV's database, I found two combinations of four firm and issue characteristics which could be used, with some degree of statistical certainty, to explain the discounts in FMV's study [see footnotes 44, 45]. The difference between them is that the model in Attachment 3 includes 'registration indicator,' the variable certain authors [see footnote 42] believe is the only one measuring marketability.

Whether looking at the model in my Attachment 2 or the model in my Attachment 3, or whether one agrees with the proposition that the registration indicator, alone, measures marketability, the fact is: 1) FMV Opinions' model cannot be used to reliably predict lack-of-marketability discounts on restricted stock transactions, much less interests in private equity; and 2) No one – FMV using their methodology, or someone using regression analysis – could use FMV's database to confidently predict lack-of-marketability discounts on either restricted stock transactions or interests in private equity.⁴⁵

RESTRICTED STOCK EQUIVALENT ANALYSIS⁴⁶

Job Aid Summary

This approach is a recent attempt to refine the traditional restricted stock studies approach to consider the real differences existing between the marketability of the restricted stock of publicly traded companies and the stock of companies that are not publicly traded and that, therefore, do not have only a limited period of lack of marketability. It derives a proposed DLOM as a two step process starting with the so-called 'Restricted Stock Equivalent DLOM.'

- 1) Estimate the 'Restricted Stock Equivalent Value' for application to the publicly traded stock
- 2) Add an increment to the restricted stock equivalent value to account for difference in marketability of the restricted stock of public companies versus the subject private stock

This approach to DLOM is fully described in a number of papers authored by Espen Robak and Lance Hall of FMV Opinions.

The essence of this approach is that straight restricted stock analysis misses the true characterization of DLOM for private companies because it relies totally on data relating to public companies, even though it focuses on the restricted stock of those companies. Per its supporters, private companies are even less marketable than the restricted stock of public companies and thus an extra increment of discount is appropriate. The proponents of this approach quantify this increment using data collected on a substantial number of restricted stock transactions by using the discount difference between the largest block sizes of purchased restricted stock and the smallest block sizes of such stock as an indi-

cator of the additional marketing risk faced by private companies.

Conceptually, the approach proceeds as follows:

- 1) To get the restricted stock equivalent value, select restricted stocks with characteristics as close to your subject as possible in terms of risk and distributions
- 2) Proxy for risk includes:
 - **Size** (as measured by assets, resources, or estimated pre-discount market value of equity)
 - **Profitability** (as measured by dollar amount of some level of profitability or percent of profitability)
 - **Balance sheet risk** (as measured by some measure of leverage or pre-discount estimated market value of equity to book value of equity)
- 3) Distributions are usually measured as the proportion of dividends or withdrawals paid out as a percentage of the pre-discounted market value of equity
- 4) Estimating the Private Company Incremental Discount
 - Large blocks of restricted stock relative to total shares outstanding are much closer to private equity than the typical smaller block of restricted stock
 - **Silber Study** of restricted stock⁴⁷
 - Fewer prospects in the pool of potential buyers
 - Longer period to feed out into public market under the SEC dribble out rule

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⁴⁵ IRS DLOM Job Aid, p. 91. Footnote 63, p. 91 of the Job Aid states: "The 0.17 R-square notwithstanding. It is less than problematic because of the large number of data points."

⁴⁶ IRS DLOM Job Aid, pp. 23-25, 86-94. Footnote 12, p. 23 of the Job Aid references Espen Robak, "Liquidity and Levels of Value: A New Theoretical Framework," *BV Update*, October 2004.

⁴⁷ See Job Aid footnote 13, p. 24: "William L. Silber, 'Discounts on Restricted Stock: The Impact of Illiquidity on Stock Prices,' *Financial Analysts Journal*, July-August 1991, pp. 60-64."

5) Difference between the average discount on the sample of small block restricted stocks with the characteristics similar to the subject and the average discount for a large block of stock would be the private stock liquidity increment to the discount⁴⁸

See the section **FMV Restricted Stock Database—Analysis** (p. 10) for conclusions that are the same as here.

In terms of the courts, the Job Aid states:

The approach is relatively new and has not had any significant vetting in the practitioner community or by the courts.⁴⁹

Areas of Focus

In discussing this approach with taxpayer or taxpayer’s appraiser, the following areas of focus should be explored:

- Has Taxpayer’s appraiser considered separation of ‘lack of marketability’ from other effects (e.g., blockage) that might be contributing to discounts observed in the Restricted Stock Equivalent data?
- Has Taxpayer’s appraiser addressed variance and/or range of discounts observed in the Restricted Stock Equivalent data?
- On what basis has Taxpayer’s appraiser determined that any particular ‘average’ or ‘median’ discount from the Restricted Stock Equivalent data is applicable to the subject company?
- On what basis has Taxpayer’s appraiser adjusted the average or median discount data for factors applicable to the subject company?
- If Taxpayer’s appraiser is using specific restricted stock equivalent transactions from a database, on what basis has Taxpayer’s appraiser estimated those particular restricted stock transactions to be applicable to the subject company?⁵⁰

Please note that these five “Areas of

Focus” are very similar to those in the section on **Restricted Stock Studies** and the next section, **Pre-Initial Public Offering (Pre-IPO) Studies**.

PRE-INITIAL PUBLIC OFFERING (PRE-IPO) STUDIES⁵¹

The Job Aid refers to and discusses three Pre-IPO studies/databases: Emory, Willamette and Valuation Advisors. The book *Financial Valuation Applications and Models* presents these three studies/databases and states:

Several IPO studies since 1980 have analyzed the stock prices of companies before and after they became public. The Emory studies are without a doubt the most extensive and, over these past 20 years or so, have been relied on by many valuation experts as empirical evidence of marketability discounts. Other studies have followed, some extending Emory’s data and others developing data of their own.

Since 1980, John D. Emory has been researching the value of stocks before and after they became public companies. Emory has published numerous IPO studies starting in January 1980 and ending December 2000. These studies have been published in *Business Valuation Review*, a journal of the Business Valuation Committee of the American Society of Appraisers.

Emory states: ‘It was my thought that if I could relate the prices at which private transactions took place before the initial public offering to the price at which the stock was offered subsequently to the public I would be able to gauge, in a somewhat objective way, the value of marketability.’

According to Emory, companies in the transactions of the study: ‘were promising in nature, and their securities had good potential for becoming readily marketable.

Why else would investors have bought the unregistered stock and why would a bona fide investment banker pursue a firm underwriting commitment? It should be noted that almost all of the major investment banks are represented as lead underwriters of the IPOs used in this study, as has been the case in the previous studies.⁵²

The book *Financial Valuation Applications and Models* further states:

Willamette Management Associates has published the results of more than 20 studies (time periods) that analyze IPO transactions that took place from 1975 to 2000. The premise of the studies was similar to that of the Emory studies; Willamette compared the sale price of stock placed privately before an IPO to the price at IPO to determine the discount for lack of marketability.

The Willamette studies, however, reviewed transactions that took place from 1 to 36 months before the initial public offering, whereas Emory analyzed transactions up to five months prior to IPO. Emory used information provided in the company prospectuses while Willamette used S-1 and S-18 registration statements which disclosed more information. Willamette also compared the price-earnings (P/E) multiple of the security at the time of the pri-

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⁴⁸ IRS DLOM Job Aid, pp. 23-24.
⁴⁹ IRS DLOM Job Aid, 25.
⁵⁰ IRS DLOM Job Aid, p. 25.
⁵¹ IRS DLOM Job Aid, pp. 19-23.
⁵² Hitchner, James R., editor, *Financial Valuation Applications and Models*, third edition, Wiley, 2011, pp. 382-383. Also John D. Emory, “The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock (eighth in a series), November 1995 through April 1997,” *Business Valuation Review* (September 1997), pp. 123-124, and 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,” *Business Valuation Review* (December 2002). Excel spreadsheet with the detailed data is available at www.emoryco.com.

vate transaction to the P/E multiple at the IPO.

Willamette also made adjustments to reflect differences in market conditions between the dates. To do this, Willamette used an Industry P/E multiple at the time of offering and compared it to the Industry P/E multiple at the time of the private transaction.⁵³

The book *Financial Valuation Applications and Models* further states:

Brian K. Pearson, CPA/PFS/ABV, ASA, of Valuation Advisors, LLC (VAL), has performed studies and created a searchable database on pre-IPO transactions. The source of the data is prospectuses filed with the SEC for companies going public. VAL records transactions in the company's stock prior to the IPO and compares that price with the IPO price. Transactions include stock, stock options, or convertible preferred stock. VAL updates the database monthly. As of 2007 it had over 3,900 pre-IPO transactions fully searchable by:

- Revenues
- Operating income
- Total assets
- SIC or NAICS code
- Company name
- Time period to liquidity
- Type of transaction⁵⁴

The Job Aid makes the following observations concerning Pre-IPO studies:

Traditionally many valuers would consider the results of both the restricted stock studies and the pre-IPO studies, consider the summary statistics and then select a DLOM for use in some subjective matter based on all of these studies. In more recent times, the pre-IPO studies have fallen somewhat from favor due to a significant number of problems identified in their use. The decision in *McCord v. Comm.*, 120 T.C. 358 (2003), pretty much totally rejected the pre-IPO

studies as a useful approach to DLOM. A recent court decision, *Bergquist v. Comm.*, 2008 TNT 142-8, has potentially breathed some life back into the pre-IPO studies but this case is a very factually specific case with an extraordinary set of conditions that cannot easily be generalized to other cases.⁵⁵

Studies have shown average discounts of the pre-IPO price from the offering price of around 40% to 45%. Pre-IPO studies have also shown substantial dispersion of the discounts around their sample means.⁵⁶

Areas of Focus

In discussing this approach with taxpayer or taxpayer's appraiser, the following areas of focus should be explored:

- Has Taxpayer's appraiser considered separation of 'lack of marketability' from other effects (e.g. management compensation) that might be contributing to discounts observed in the Pre-IPO Studies data?
- Has Taxpayer's appraiser addressed variance and/or range of discounts observed in the Pre-IPO Studies data?
- On what basis has Taxpayer's appraiser determined that any particular 'average' or 'median' discount from the Pre-IPO Studies data is applicable to the subject company?
- On what basis has Taxpayer's appraiser adjusted the average or median discount data for factors applicable to the subject company?
- If Taxpayer's appraiser is using specific pre-IPO transactions from a database, on what basis has Taxpayer's appraiser estimated those particular pre-IPO transactions to be applicable to the subject company?⁵⁷

Job Aid Summary

In general, the Pre-IPO studies provide measures of central ten-

dency for DLOM that are higher than those provided by the restricted stock studies. A difficulty in conducting and analyzing these studies is in determining the proper measuring point for the pre-IPO pricing so as not to pick up bias from the market's perception that an IPO or a sale of some other kind is in the wind. One must be cautious as to going too far back, however, because market conditions in general and for the company in specific could have changed markedly over time, especially if the company is small and in a highly competitive industry.⁵⁸

Strengths

- Empirical evidence, market data
- Broad time period coverage⁵⁹

Weaknesses

- Not contemporaneous – too much time gap often exists between pre-IPO transaction and public offering. Private transactions studied were between five months and three years prior to the IPO, providing a strong argument that factors other than marketability alone led to the price increase.
- Pre-IPO companies rapidly evolving – significant changes (difference in pre & post company) as many transactions involved companies in early stage of development
- Pre-IPO companies affected by changes in economic conditions
- Data includes only firms with successfully completed IPOs. No information included on candidate

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⁵³ Hitchner, *FVAM*, p. 386. Also Shannon P. Pratt, *Business Valuation Discounts and Premiums* (New York: John Wiley & Sons, Inc., 2001), p. 84.

⁵⁴ Hitchner, *FVAM*, p. 415. Also Valuation Advisors' DLOM Study—August 23, 2007, *Business Valuation Resources* teleconference (www.bvresources.com; see also www.valuationpros.com).

⁵⁵ IRS DLOM Job Aid, p. 19.

⁵⁶ IRS DLOM Job Aid, p. 20.

⁵⁷ IRS DLOM Job Aid, pp. 20-21.

⁵⁸ IRS DLOM Job Aid, p. 21.

⁵⁹ IRS DLOM Job Aid, p. 21.

companies where IPO doesn't eventually take place

- Pre-IPO transactions tend to be under-priced (most IPOs involve high growth companies) to fully subscribe the offering
- Pre-IPO transactions almost always involve related-party transactions (employees and company, service providers and company, etc) and do not reflect arms-length terms.
- There are indications that the *Willamette Management Associates Studies* 1999 and 2000 data may be skewed due to the dot.com 'bubble'
- Frequently viewed as inflating DLOM⁶⁰

The Job Aid indicates that some key parameters are:

1. Price stock initially offered to the public
2. Price at which latest presumably unaffected, private transaction occurred prior to IPO (time period varies by study)⁶¹

It also indicates that it is:

Not as common in practice as Restricted Stock studies after *McCord* case where pre-IPO studies were rejected; decision in *Bergquist* could bring new life.⁶²

The following court cases are cited:

- Estate of Gallo* (T.C. Memo 1985-363, 50 T.C.M. (CCH) 470)
- Estate of Hall* 92 T.C. 312 (1989)
- Howard v. Shay* (1993 U.S. Dist. LEXIS 20153 (C.D. Cal.1993), rev'd and remanded, 100 F.3d 1483 (9th Cir. 1996), cert. denied, 520 U.S. 1237 (1997))
- Okerlund v. United States* (53 Fed. Cl. 341 (Fed. Cr. 2002), motion for new trial Denied, 2003 U.S. Claims LEXIS 42 (Fed. Cl. 2003))
- McCord v. Commissioner* 120 T.C. No. 13 (2003)
- Bergquist v. Commissioner* 131 T.C. No. 2 (2008)⁶³

SECURITIES-BASED APPROACHES⁶⁴

As previously mentioned, the securities-based approaches discussed in this article and in the Job Aid include option data and models including LEAPS, Longstaff and Chaffe. We have not included the bid-ask spread method because even the Job Aid states: "This approach is not seen very often for estimating DLOM for a privately held company" and "This approach has not been vetted in any meaningful way by the courts."⁶⁵

This Job Aid omits a more recently visible Asian put-arithmetic average strike put-model developed by John D. Finnerty, PhD, managing principal of Finnerty Economic Consulting, LLC, New York, and Professor of Finance and director of the MS in Finance Program at Fordham University.⁶⁶ This model was adjusted by Stillian Ghaidarov, Director, Capstone Advisory Group, LLC in Los Angeles and formerly with Grant Thornton, LLP in Seattle.⁶⁷

Addendum 1 on pp. 40-41, "Why Finnerty's Put Option Model is the DLOM Model of Choice," is a new article written by Bob Duffy, CPA/ABV, CFA, ASA. Bob is a partner in the Valuation Services Group at Grant Thornton and has been very visible in speaking and writing on option models and DLOMs. Bob was also a presenter at the 2009 and 2010 DLOM sessions at Judge Laro's conferences. This article discusses three option models: Chaffe, Longstaff and Finnerty. It also recommends the use of the Finnerty corrected model.

Long-Term Equity Anticipation Securities ("LEAPS) – Robert Trout, 2003, and Ronald Seaman, 2005⁶⁸

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors discuss LEAPS.

An article in the Spring 2008 issue of the *ASA Business Valuation Review* entitled 'Minimum Marketability Discounts—3rd Edition' by Ronald M. Seaman, ASA,

described research on long-term equity anticipation securities (LEAPS) related to discounts for lack of marketability. LEAPS are exchange-listed options that grant the buyer (holder) the right, but not the obligation, to buy, in the case of a call, or to sell, in the case of a put, a specified amount of the underlying asset at a predetermined price on or before a given date. During the option term, which ranges from 14 to 26 months, LEAPS are a form of insurance against price fluctuations in publicly traded stocks. Mr. Seaman suggested that LEAPS could be used to quantify a DLOM by representing the cost of a LEAPS put option, expressed as a percentage of the price of the underlying stock, as a measure of the cost of price protection against a loss in value of the stock. He has performed several studies of LEAPS in order to provide evidence of such.

LEAPS are listed on several stock exchanges and are actively traded. They are American-style options that may be exercised at any time prior to the expiration date. LEAPS are issued in September, October, and November each year and expire on the third Saturday of January either two or three years later. For example, you could have purchased a LEAPS put option on Procter & Gamble stock at a certain price in October 2008 that would expire in January 2010 or a longer-term option that would expire in

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⁶⁰ IRS DLOM Job Aid, pp. 21-22.
⁶¹ IRS DLOM Job Aid, p. 22.
⁶² IRS DLOM Job Aid, p. 22.
⁶³ IRS DLOM Job Aid, pp. 22-23.
⁶⁴ IRS DLOM Job Aid, pp. 30-38.
⁶⁵ IRS DLOM Job Aid, p. 38.
⁶⁶ Finnerty, John D., "The Impact of Transfer Restrictions on Stock Prices," November 2007 and October 2002 whitepapers, <http://www.fma.org/Prague/Papers/TheImpactofTransferRestrictions.pdf>
⁶⁷ Ghaidarov, Stillian, "Analysis and Critique of the Average Strike Put Option Marketability Discount Model," September 2009 whitepaper, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1478266
⁶⁸ IRS DLOM Job Aid, pp. 30-32.

January 2011. As the Chicago Board Options Exchange states, LEAPS put options 'provide a medium to long-term insurance or hedge for stock owners in the event of a substantial decline in their stock.'⁶⁹

Sources of data for this study were, in general, the Chicago Board Options Exchange, delayed market quotes, and Yahoo! Finance. The percentage costs of the put options were calculated as the cost of the option divided by the stock price. (A detailed explanation of the sources of information and of the discount calculations is available at www.dlom-info.com, '2009 Study.'⁷⁰)

While Seaman's LEAPS information has made this type of analysis much more visible in recent times, Robert R. Trout published a LEAPS study, 'Minimum Marketability Discounts,' in the September 2003 edition of *Business Valuation Review*, pp. 124-126. This is the same Trout who published a restricted stock article and study, 'Estimation of the Discount Associated with the Transfer of Restricted Securities,' *Taxes* (June 1977), pp. 381-385.

Job Aid Summary

The authors [Trout and Seaman] concluded that the observed DLOM derived from the LEAPS studies should be viewed as a benchmark minimum price when applied to privately held companies. They viewed the derived discounts as minimum price discounts since

- a. The market value of the companies offering the underlying securities was much larger than the value of a privately held company
- b. The underlying securities are marketable
- c. The LEAPS can be sold at any time during the holding period
- d. There is a known liquidity event for LEAPS, e.g., the option has an expiration date generally between 1.5 and 2.0 years.

One year median discounts ranged from 8.3% for the safest company to 17% for the riskiest company. Two year median discounts ranged from 9.3% for the safest company to 31% for the riskiest company. A one year or two year implied discount would be used as a proxy depending on the length of time it would take to market the subject interest (e.g. for a controlling interest a one-year discount would generally be used as a proxy since it is easier to market a controlling interest in a privately held concern than it is to market a minority interest).

One area in which there has been criticism of using the LEAPS data as a starting point for the DLOM is that it only considers the cost of purchasing a put option, which protects an investor from a downward price movement. Therefore only the cost to purchase a put option is considered if using LEAPS data to develop a DLOM. If an investor can purchase a put (Protective Put) to protect against a downward movement in the stock the investor can also sell a call option (Covered Call) and receive a premium to offset the cost of the put. As a result the overall cost is reduced since the investor is receiving a premium for selling the call. Purchasing a put option and selling a call on the underlying stock is called a 'collar' options strategy.

At issue here is whether an investor in a privately held company, if they had the ability to hedge, would only purchase a put to protect against a price decline or purchase a put and sell a call locking in the current price and foregoing unlimited future profit potential.⁷¹

Strengths

- There are more than twice the number of LEAPS transactions in the LEAPS study than are considered in the restricted stock studies

thereby providing a more valid statistical sample

- LEAPS can be found that are valuation date specific
- Data can be segmented by industry and a search can be conducted for comparable public companies⁷²

Weaknesses

- An appraiser would still have to perform a qualitative analysis in order to arrive at a conclusion for the DLOM by adjusting the LEAPS based discount for private company considerations
- An owner of a privately held company does not have the ability to hedge the investment in an options market and as such the observed discount is a proxy and other qualitative factors must be considered to arrive at a final conclusion.⁷³

The Job Aid indicates that some key parameters are: "Based on market data for the price and Value Line Investment Survey reports to assess the safety factor."⁷⁴

It also indicates that, in professional practice, it is "Not seen very often, particularly for closely held companies."⁷⁵

In terms of court cases, the Job Aid indicates that "This approach has not been vetted in any meaningful way by the courts."⁷⁶

Continued on next page

⁶⁹ Hitchner, James R., editor, *Financial Valuation Applications and Models*, third edition, Wiley, 2011, pp. 419-420.
⁷⁰ Hitchner, *FVAM*, p. 420.
⁷¹ IRS DLOM Job Aid, pp. 30-31. The Job Aid footnotes 22 and 23, p. 31, indicate the following: "For additional information on the collar options strategy refer to <http://www.optionseducation.org/strategy/collar.jsp>" and "See <http://www.dlom-info.com/q-and-a.html> for response to collar options strategy by Seaman"
⁷² IRS DLOM Job Aid, p. 31.
⁷³ IRS DLOM Job Aid, p. 32.
⁷⁴ IRS DLOM Job Aid, p. 32.
⁷⁵ IRS DLOM Job Aid, p. 32.
⁷⁶ IRS DLOM Job Aid, p. 32.

The Longstaff Study,

*Journal of Finance, December 1995*⁷⁷

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors discuss the Longstaff Upper Bound Lookback Put Option Model:

Longstaff published 'How Much Can Marketability Affect Security Values?' Like Chaffe, Longstaff utilizes option pricing to attempt to answer the question. However, he suggests using a lookback put option. Unlike a European put option, a lookback put option is path dependent. It assumes that the option holder had perfect hindsight and would exercise the option at the optimal point. The value of a lookback option is therefore greater than a regular option, meaning that it costs more, resulting in a larger DLOM. In the 1995 article, Longstaff posited that volatility and the holding period are the key DLOM factors.

Longstaff's analysis indicates that the marketability discount is not a linear function of time; the greatest risks, and therefore the largest increases in the percentage discount, occur early in the restriction period. Lookback options guarantee the option holder a distribution based on the maximum price the underlying security achieves during the life of the contract. In deriving a lack of marketability discount from a lookback option such as Longstaff's, it appears to be most relevant for strategic investors and/or insiders with asymmetrical information. Empirical evidence indicates that private information enables strategic investors and/or insiders to time the market and realize excess returns. Therefore, for strategic investors and/or insiders, for whom resale restrictions (i.e., SEC Rule 144/lockup provisions) interfere with the investors' ability to exploit their asymmetrical information advantage to time the market, a greater lack of marketability

SIDEBAR 6

VOLATILITY OF UNDERLYING STOCK⁸⁰

	<u>10%</u>	<u>20%</u>	<u>30%</u>
1 Day	0.4%	0.8%	1.3%
30 Days	2.3%	4.7%	7.1%
180 Days	5.8%	11.8%	8.1%
1 Year	8.2%	17.0%	26.3%
5 Years	19.1%	41.0%	65.8%

SIDEBAR 7

LONGSTAFF MODEL DISCOUNTS AS A FUNCTION OF TIME AND VOLATILITY⁸¹

Term	VOLATILITY						
	10%	20%	30%	40%	50%	60%	70%
1 Day	0.40%	0.80%	1.30%	1.70%	2.10%	2.50%	3.00%
30 Days	2.30%	4.7%	7.00%	9.50%	12.00%	14.50%	17.00%
180 Days	5.70%	11.70%	18.00%	24.50%	31.20%	38.30%	45.70%
1 Year	8.20%	17.00%	26.30%	36.10%	46.60%	57.60%	69.20%
2 Years	11.80%	24.60%	38.60%	53.70%	70.10%	87.70%	106.70%
5 Years	19.10%	41.00%	65.80%	93.70%	125.00%	159.90%	198.50%

discount may be warranted. For investors with symmetrical information (i.e., rank-and-file employees), however, the Longstaff regression analysis generally provides an upper bound for the lack of marketability indication.⁷⁸

The *Financial Valuation and Litigation Expert* journal, published by Valuation Products and Services, LLC, devoted an entire issue to DLOMs.⁷⁹ As previously mentioned this issue included summaries of the different studies, models and databases presented at Judge Laro's first DLOM Summit in 2008. Marc Vianello of Vianello Forensic Consulting, LLC, gave a presentation titled "The VFC Longstaff DLOM Methodology." VPS also published an article on this in *FVLE* Issue 11, February/March 2008 which was a handout at the 2008 DLOM Summit. For a range of possible DLOMs see the table above [Sidebar 6].

As can be seen, the model is very dependent on volatility and the term. In fact, when you get to higher volatilities, the DLOM can exceed 100 percent, which is unsupportable. The Job Aid addresses this:

Volatilities in excess of 30% would most likely be used as a proxy. Therefore, the model may produce results which are not realistic as indicated in the table [Sidebar 7].⁸²

Job Aid Summary

The Longstaff approach assumes perfect market timing and, therefore, derives an upper bound for

Continued on next page

⁷⁷ IRS DLOM Job Aid, pp. 32-34.

⁷⁸ Hitchner, James R., editor, *Financial Valuation Applications and Models*, third edition, Wiley, 2011, pp. 420-421.

⁷⁹ *Financial Valuation and Litigation Expert (FVLE)*, Issue 15, October/November 2008, Valuation Products and Services, LLC, www.valuationproducts.com.

⁸⁰ *FVLE* Issue 15, p. 13 and IRS DLOM Job Aid, p. 33.

⁸¹ IRS DLOM Job Aid, p. 33.

⁸² IRS DLOM Job Aid, p. 33.

the lack of marketability discount since an investor is looking backward in time to make his buy/sell decisions instead of making these decisions based on present evidence and anticipated future stock price movements. Volatilities in excess of 30% would most likely be used as a proxy for privately held stock for which there is no public market. Therefore, the model may produce results which are not realistic as the upper bound in circumstances of this kind could well reach 100%.⁸³

Strengths

- The model can be easily implemented in Excel and provides a benchmark maximum estimate on the discount for lack of marketability.⁸⁴

Weaknesses

- The Longstaff model assumes that the investor has perfect market timing and that the investor has trading restrictions that prevent the security from being sold at an optimal time. Absent these restrictions, the investor would know the exact best time to exercise the option and sell the underlying stock and would do so.
- The Longstaff model produces very high marketability discounts with relatively low volatility of 30%. Most small cap companies have volatilities in excess of 50%. The model produces an estimate of an ‘upper boundary’ for DLOM.
- As mentioned previously the model should be used as a proxy for a maximum estimate and should not be used blindly to determine a discount for lack of marketability.⁸⁵

The Job Aid indicates that some important parameters are: ‘Time to expiration and volatility.’⁸⁶

It also indicates that, in professional practice:

The model is not seen often for

estimating DLOM for a privately held company. It is more useful for estimating the discount on a large block of restricted stock of a publicly traded company.⁸⁷

In terms of court cases, the Job Aid indicates that “This approach has not been vetted in any meaningful way by the courts.”⁸⁸

THE CHAFFE STUDY⁸⁹

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors discuss the Chaffe Option Model:

In 1993, David B. Chaffe III published an article about his theory that the Black-Scholes pricing model could be used to determine the amount of a marketability discount. Chaffe uncovered relationships in the comparison of his computation of the marketability discount with that of the transaction data. He found that the European option, which is exercisable only at the end of the option period, could be an appropriate model for the SEC Rule 144 holding period of restricted shares. Substituting certain inputs of the model to express conditions of a restricted stock, he was able to produce results similar to those of the restricted stock studies. His analysis was presented in *Business Valuation Review*, December 1993, ‘Option Pricing as a Proxy for Discount for Lack of Marketability in Private Company Valuations.’⁹⁰

On October 9, 2009 Judge Laro convened the second DLOM summit that was part of the conference “2nd Annual Business Valuation and Tax Conference” at the University of San Diego Law School. Jim Hitchner created, organized and moderated the DLOM session that consisted of applying the various DLOM models to a case study. As previously mentioned, the participants included Bob Duffy, Jay Fishman, Linda Trugman and Kevin

Yeanoplos. Duffy was given the task of applying the various option models including Chaffe. The following table presents some of his results using 55 percent volatility for three terms.

	<u>5 Year</u>	<u>10 Year</u>	<u>15 Year</u>
Chaffe European Put Option DLOM	37.7%	38.4%	34.7%

There is very little difference in the DLOM for the three time periods, and the 15-year DLOM is actually lower than both the 10 year and the 5 year, which does not make sense for traditional holding period concepts in DLOMs.

Job Aid Summary

In 1993 David Chaffee III published an article on his theory that the Black Scholes Option Pricing Model could be used to determine the DLOM. He found that the European Option exercisable only at expiration was an appropriate model for the SEC Rule 144 Holding Period of restricted shares.

Chaffee relied on the Black Scholes Option Pricing Model for a put option to determine the cost or price of the put option. The cost of the put option divided by the market price equals the Discount for Lack of Marketability (‘DLOM’).

Chaffee determined his proxy of a Discount for Lack of Marketability based on volatilities in excess of 60% based on analysis of small Over the Counter (‘OTC’) public companies.

Continued on next page

⁸³ IRS DLOM Job Aid, pp. 33-34.

⁸⁴ IRS DLOM Job Aid, p. 34.

⁸⁵ IRS DLOM Job Aid, p. 34.

⁸⁶ IRS DLOM Job Aid, p. 34.

⁸⁷ IRS DLOM Job Aid, p. 34.

⁸⁸ IRS DLOM Job Aid, p. 34.

⁸⁹ IRS DLOM Job Aid, pp. 35-36.

⁹⁰ Hitchner, James R., editor, *Financial Valuation Applications and Models*, third edition, Wiley, 2011, p. 419.

The appropriate DLOM for a stock with a two-year holding period and a volatility between 60% to 90% according to Chaffee was between 28% and 41% which he cited as similar to the restricted stock studies.

Chaffee increased the holding period to 4 years, which showed a range of DLOM from 32% to 49%. Increasing the holding period to greater than four years did not materially change the DLOM.

According to Chaffee the use of the Black Scholes Option Pricing model for European options produced a minimum DLOM since a European put option pricing formula does not take into account early exercise.⁹¹

Strengths

- The model can be easily implemented in Excel and is based on the European put option Black Scholes Formula.⁹²

Weaknesses

- As with all the option pricing models mentioned in this section, the DLOM should be used as a proxy only. Other qualitative factors must be considered to determine a final DLOM.
- Chaffee considered his results as 'downward' biased and as such his findings are considered a minimum DLOM
- The owner of privately held company stock does not have the ability to hedge their investment. The option models provide a proxy for marketability and the model can't be used without consideration to other factors.⁹³

The Job Aid indicates that some key parameters are:

- Stock price and exercise price are equal. The stock price and exercise price is equal to the marketable value of the privately held stock at the Valuation Date

- The rate is equal to the Weighted Average Cost of Capital
- Volatility is based on comparable publicly traded guideline companies
- The term is equal to the length of time the security is expected to remain non-marketable⁹⁴

It also indicates that, in professional practice, it is "Not seen very often, particularly in valuations of private companies."⁹⁵

In terms of court cases, the Job Aid indicates that "This approach has not been vetted in any meaningful way by the courts."⁹⁶

ANALYTICAL APPROACHES

JOB AID OVERVIEW

The analytical approach studies the discount for lack of marketability (DLOM) through the consideration of various transactional data sets. The involved data sets have been put together by the authors of the DLOM studies from various sources and number from less than 100 to several hundred sale transactions involving stock sales conducted outside the public market place. The sales normally involve the stock issuer as seller and various institutional entities as buyers thus by-passing the normal registration requirements of the U.S. Securities and Exchange Commission (SEC) for stock to be sold to the general public. These data sets generally compare the sale price for blocks of publicly traded stocks sold through private placements as compared to the sale price of the shares as traded on the primary market where such are listed. These data sets are analyzed statistically and through regression analyses to both determine the total amount of the discount and the breakdown of that discount across various postulated causal factors. The types of data in question are similar to those that form

the basis of the better known 'restricted stock studies' that are the subject of another portion of this DLOM job aid.

The transactions that make up the dataset are screened in various ways to eliminate outliers and to identify any specific factors relating to the private placement that are not comparable to the factors that are attributable to associated traded shares that also constitute minority interests. A typical private placement block size might be 15% of the total outstanding common stock. Where significant size blocks are involved in comparison to normal daily trading volumes for the associated stock on the public marketplace, some aspect of blockage discount as well as regular DLOM may be present in the transaction. The valuation analyst needs to be alert to such a possibility.

There have been a number of different researchers starting in the late 1980's that have taken an analytical approach to estimating DLOM. Almost all of these researchers come from the academic community and none started out his or her research with tax concerns in mind. The research was undertaken for various purposes but the fundamental underlying intent was to better understand the characteristics of capital formation among public companies. Typical questions posed for study are when should debt be issued instead of stock, when should preferred equity be issued instead of common equity, when should common equity be issued instead of debt or preferred equity and what mode of issuance should be used.⁹⁷

Continued on next page

⁹¹ IRS DLOM Job Aid, p. 35.

⁹² IRS DLOM Job Aid, p. 35.

⁹³ IRS DLOM Job Aid, p. 36.

⁹⁴ IRS DLOM Job Aid, p. 36.

⁹⁵ IRS DLOM Job Aid, p. 36.

⁹⁶ IRS DLOM Job Aid, p. 36.

⁹⁷ IRS DLOM Job Aid, p. 39.

In many cases, both registered and unregistered shares sell at a discount when privately placed in bulk. If one assumes that a registered share is freely tradable to anyone at any time then a marketability discount of zero would pertain to that share. Thus, by comparing the total discount per share for the private placement of unregistered shares to that of registered shares, analysts can obtain an estimate of the discount for lack of marketability for those shares since all other discount factors should be the same.

Some analysts dispute this approach on the grounds that even registered shares do not necessarily have a lack of marketability discount of zero if such are offered in bulk or are thinly traded in the marketplace. Under this logic the difference between the price of unregistered shares and registered shares offered in private placements would tend to underestimate the discount for lack of marketability. For example, if the difference in total discount is 10% but the registered shares already have a 5% discount for DLOM built-in then the actual DLOM for the unregistered shares is 15% rather than 10%. As the unregistered shares serve as a surrogate for the shares of a non-publicly traded entity the substance or lack thereof in the question raised above can be of some importance (in the illustration this amounts to an increase in DLOM of 50%).⁹⁸

KAREN HOPPER WRUCK⁹⁹

Job Aid Background and Summary

Karen Wruck studied equity ownership concentration and its effects on firm value. Her premise was that private placements act to increase ownership concentration by bringing aboard more large shareholders and that such increased concentration should

manifest itself in an overall increase in firm value thereby benefiting all shareholders. On the other hand, public offerings of equity tend to dilute share value for the existing ownership base.

Wruck studied 128 private sales of equity involving 65 companies traded on the New York Stock Exchange and 63 companies traded on the American Stock Exchange between July 1979 and December 1985. She measured the share price of the stock on the exchanges 1 day after the announcement of the private placement and compared that price to the share price involved in the placement.

She considered both placements of registered shares and placements of unregistered shares and found a 17.6% average difference in discounts between the two types of shares when privately placed. The median difference in discounts was 10.4%.

Wruck concluded that private placements of all types sell at a discount to the publicly traded shares but that unregistered shares required a higher discount for placement than registered shares. It was postulated that the need for this higher discount was a function of lack of marketability as well as the increased costs of monitoring borne by investors that hold unregistered shares. She hypothesized that private placements are generally bought by active investors that act to keep management on its toes thereby positively affecting overall firm value.

Since monitoring costs are involved to some extent for private placement investors, whether their shares are registered or unregistered, users of the Wruck study have postulated that the 17.6% average discount difference is pri-

marily related to lack of marketability for the unregistered shares. However, since the Wruck analysis did not control for the effects of other potential contributing variables, it is quite possible that a meaningful portion of the average discount difference could be caused by existing operational differences in data set firms rather than to marketability.¹⁰⁰

Strengths

- The strength of the Wruck analysis is its clearly defined hypothesis and the use of analytical tools to investigate that hypothesis. Both registered and unregistered placements are considered with companies listed on two different exchanges represented almost equally.
- The discount result reached is logically supported by the analysis approach used.
- Further, by comparing registered and unregistered placement discounts, the Wruck methodology presents a way of isolating the discount for lack of marketability from certain other factors such as assessment and monitoring costs that could also lead to discounts.¹⁰¹

Weaknesses

- The weakness of the Wruck analysis relates to the data selection approach that was utilized. The sample of firms chosen seems to have been primarily based on data availability rather than logical selection methodologies.
- The classification determination as to whether placed shares were registered or unregistered was predicated on published reports in the Wall Street Journal. Of the 128 firms in the sample, a determination was available for only 73 of the placements and that determination was subjective in nature.

Continued on next page

⁹⁸ IRS DLOM Job Aid, p. 41.
⁹⁹ IRS DLOM Job Aid, pp. 41-43.
¹⁰⁰ IRS DLOM Job Aid, pp. 41-42.
¹⁰¹ IRS DLOM Job Aid, p. 42.

• The measurement point was chosen as one day after the announcement date which would seem to take advantage of any immediate bounce in stock price thereby increasing measured discount amounts. This weakness is somewhat mitigated by the methodology that compares registered discounts to unregistered discounts instead of measuring unregistered discounts in total as an indication of lack of marketability. Thus, assuming that a market bounce might result from any private placement as Wruck hypothesizes, the difference in discount existing between the two types of placements might still be a valid measure of lack of marketability effects.¹⁰²

The Job Aid indicates that some key parameters are:

- the selection of the sample itself,
- the registration status of the placement, and
- the selection of a proper measurement point.¹⁰³

It also indicates that, in the view of the valuation community,

The Wruck study has been cited by a number of practitioners but is basically utilized as background material to introduce the subject of investigating marketability discounts analytically. Although the average and median discounts of the study are offered as evidence that the results of the benchmark studies may be much too high, the Wruck discounts themselves are not offered as actual discount proposals.¹⁰⁴

In terms of court cases, the Job Aid indicates,

Since the numerical values of the Wruck discounts have not been advanced in court as actual discount amounts, the courts have not specifically opined on the Wruck study and its results.¹⁰⁵

HERTZEL AND SMITH¹⁰⁶

Job Aid Background and Summary

Hertzel & Smith (H & S) studied market discounts and shareholder gains involved in the private placement of equity. They hypothesized that private equity placements are often undertaken by firms with limited tangible assets, by firms engaged in the speculative development of new products and by firms in financial distress. Due to the higher risk inherent in these types of firms, they tend to offer private placements priced at higher than normal discounts. These higher than normal discounts compensate investors for the higher information costs incurred and the higher monitoring costs required to keep suitably informed of investment status. Based on these premises, H & S believed that the discounts required to sell equity privately existed for a number of reasons beyond the potential lack of marketability of the purchased shares or the expectation that the buyers would provide services as well as investment capital.

H & S used statistical analysis techniques to identify those factors that contribute to the overall observed discount; including, but not limited to, the effects of lack of marketability. H & S found an average discount differential between private placements of unregistered shares as compared to private placements of registered shares of 13.5%. They considered this to be a surrogate for DLOM. However, they opined that this surrogate should not be accepted on face because they believed that if the DLOM discount was really this high, then firms would react by registering all of their shares prior to placement. H & S postulated that portions of the discount were due to the higher required assessment and monitoring costs required of private placement

investors and the tendency of the market to bid up the price of traded shares where private placement investors had taken an interest and shown a willingness to invest.

H & S analyzed 106 private equity placements with about 75% of those being firms traded over-the-counter. The time period of their study was January 1, 1980 through May 31, 1987. The measurement date used was 10 days after the announcement of the placement was made. Of the placements analyzed, 45 involved registered shares, 18 involved unregistered shares and 43 had an unknown registration status. H & S assumed that all of the placements where the registration status could not be determined were, in fact, registered for study purposes since this would lead to a conservative result with regard to the discount differential.

A regression analysis was performed using 7 independent variables with the registered versus unregistered variable used to estimate DLOM. The average private placement discount overall was found to be 20.14% with about two-thirds of that discount (13.5%) being related to concerns about lack of liquidity. The remainder of the discount was due to such other factors as the size of the placement, the degree of financial distress existing in the firm and the nature of the placement buyers. In the context of their paper, H & S seem to be using the terms marketability and liquidity interchangeably rather than with the type of differentiation that was noted earlier per Pratt and Abbott. As stated above, H & S considered this to be an upper bound for DLOL/DLOM

Continued on next page

¹⁰² IRS DLOM Job Aid, pp. 42-43.

¹⁰³ IRS DLOM Job Aid, p. 43.

¹⁰⁴ IRS DLOM Job Aid, p. 43.

¹⁰⁵ IRS DLOM Job Aid, p. 43.

¹⁰⁶ IRS DLOM Job Aid, pp. 43-46.

due to the perceived difference in assessment and monitoring costs between registered and unregistered shares.¹⁰⁷

Strengths

The strength of the H & S study is that it is somewhat more complete in its analysis than the Wruck study as seven variables potentially affecting discounts are identified and analyzed using a regression model. Through the multivariate analysis, H & S were able to isolate what they believe to be the specific effect of lack of marketability from the effects of the other variables considered. This effect is measured at 13.5% based on the use of a dummy variable relating to registration status.

- The H & S sample is primarily (75%) made up of smaller companies that are traded over-the-counter whereas the Wruck sample was composed of companies traded on major stock exchanges. These smaller companies would seem to be more like the companies that are most often the subject of valuation assignments where lack of marketability is a concern than are the larger companies studied by Wruck.¹⁰⁸

Weaknesses

- The H & S study once again suffers from sample selection, registration status determination and measurement point problems as was the case with the Wruck study.
- H & S were able to determine the registration status of only 63 of their 106 sample companies and assumed that the 43 that could not be determined would all be considered as registered. This is an obvious, very serious problem with the methodology employed since it is the registration status variable that is put forth as the measure of lack of marketability in the study. H & S consider this approach to lead to a conservative result since the assumption used

would act to reduce the amount of discount attributable to lack of marketability.

- H & S chose a measurement point at 10 days after the announcement date which gives any bounce upon announcement some time to dissipate prior to the measurement. This choice should also act to produce a more conservative discount result; however, the choice of measurement point remains arbitrary and totally subjective.¹⁰⁹

The Job Aid indicates that some key parameters are:

- Fraction of total outstanding stock placed
- Financial distress of issuer
- Book to market ratio of stock value
- Log of the proceeds of the offering
- Registration status
- Investor is an individual
- Investor is a member of management

The other important variables in the approach are the sample selection methodology and the choice of measurement point.¹¹⁰

It also indicates that, in the view of the valuation community:

The H & S study, like the Wruck Study, has been cited by a number of practitioners but is basically utilized as background material to introduce the subject of investigating marketability discounts analytically. Although the average and median discounts of the study are offered as evidence that the results of the benchmark studies may be much too high, the H & S discounts themselves are generally not offered as actual discount proposals.¹¹¹

In terms of court cases, the Job Aid indicates:

Since the numerical values of the H & S discounts have not been

advanced in court as the primary determiners of proposed discount amounts, the courts have not specifically opined on the H & S study and its results.¹¹²

BAJAJ, DENIS, FERRIS AND SARIN¹¹³

Job Aid Background and Summary

Bajaj et al set about to study the concept of firm value and marketability discounts. They defined marketability as how quickly an asset can be converted into cash, without the owner incurring substantial transaction costs or having to give significant price concessions. They postulated that lack of marketability increases opportunity costs for asset holders and that such holders are also exposed to increased risks of loss. Both of these factors increase risk and lead to the need for discounting to lure investors to buy.

Bajaj et al set out the following factors affecting marketability:

- Uncertainty of the assets value
- Lack of availability of information on the asset to an outsider
- Availability of close substitutes for the asset
- Duration of the restriction on trades of the asset
- Size of the block being sold

An analysis was made of private equity placements during the period January 1, 1990 through December 31, 1995 involving 88

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¹⁰⁷ IRS DLOM Job Aid, pp. 43-44.

¹⁰⁸ IRS DLOM Job Aid, p. 45.

¹⁰⁹ IRS DLOM Job Aid, p. 45.

¹¹⁰ IRS DLOM Job Aid, pp. 45-46. Job Aid footnote 34, p. 45 states: "The financial distress parameter is based on an analysis of such things as the company's solvency, liquidity, return on assets, debt-serving capacity, etc. to measure overall financial condition." Footnote 35, p. 45 states: "This [Log of the proceeds of the offering] is a measure of the size of the placement in dollar terms expressed on a logarithmic scale."

¹¹¹ IRS DLOM Job Aid, p. 46.

¹¹² IRS DLOM Job Aid, p. 46.

¹¹³ IRS DLOM Job Aid, pp. 46-50.

transactions. The measurement date used was 10 trading days after the announcement date. Accounting data was drawn from Compustat. A cross-sectional analysis of discounts was made using regression techniques.

Bajaj et al found that, on average, all private placements are made at discounts whether the block placed consists of registered shares or non-registered shares. For registered shares, the average discount was 14.04% and for unregistered shares the average discount was 28.13%. The respective median discounts were 9.85% and 26.47%. Combining unregistered and registered share transactions gave an overall average discount of 22.21% and a median discount of 20.67%.

As a first estimate of DLOM the average discounts were compared to get a discount differential of 14.09%. This was predicated on the premise that no DLOM should exist for registered shares since such could become immediately freely traded. A regression analysis was then conducted to attempt to further sort out the factors contributing to the overall discounts. This analysis used four independent variables with the registered/unregistered status being one. The coefficient for the registration variable turned out to be 7.23% indicating that registered shares would require a lesser discount than unregistered shares by that amount. This provided a more refined estimate of the specific effects of lack of marketability in Bajaj's view.

Bajaj et al also stratified their overall discount data to provide statistics for the larger group of discounts, the middle group of discounts and the smallest group of discounts. Averages of 43.33%, 20.36% and 2.21% were derived by group. Discussion was provided of

the various factors that might explain the range of differences among these stratified groups. These included the fractional size of the block to total shares outstanding, the business risk facing the firm, the degree of financial distress of the firm and the total proceeds raised in the offering.

The Bajaj et al study has generated considerable response and criticism as it was the first study offered as a basis for court testimony for tax purposes when Dr. Bajaj began testifying before the Tax Court in cases such as the *Estate of Gross* and *McCord*. Most notable among the parties criticizing the study were Shannon Pratt, Mark Mitchell, Lance Hall and Chris Mercer. These critics found problems with many facets of the study including sample selection, measurement date, the combining of registered and unregistered share transactions, the choice of regression variables, the failure to consider the holding period as an explanatory factor, the failure to consider the Rule 144 affiliate provisions, the failure to properly identify registration status, and lack of rigor in the regression model employed.¹¹⁴

Strengths

- The Bajaj study like the H & S study concentrated primarily (82%) on companies traded over-the-counter. Although there is some debate among critics, the Bajaj sample of 88 companies seems to be better defined and the registration status of the component private placements more confidently determined with about 58% being unregistered.
- As mentioned for H & S the use of primarily smaller companies seems to be better suited to the measurement of the effects of lack of marketability than companies traded on major exchanges.
- Bajaj considered five different

parameters that were seen to affect discounts, one of which was a variable based on registration status. This approach, like the approach pursued by H & S, allowed a direct measurement of what Bajaj considered to be the effects of lack of marketability. His isolated discount amount of 7.23% is supported by his model but seems to be too low to survive the application of a sanity check.¹¹⁵

Weaknesses

The potential weaknesses of the Bajaj study have been spotlighted by a number of its critics including Pratt, Hall, Mercer and Mitchell and Norwalk. These weaknesses are concentrated in the areas of concern over sample choice, the remaining presence of some uncertainty in actual registration status, the relatively low coefficient of determination or R2 factor generated by the regression model used and the choice of a measurement date of 10 days after the announcement.

- Certain writers have pointed to data errors in the sample and the failure to consider other transactions occurring within the analysis period that are considered to be logical choices with required data available.
- There is some question among analysts as to what the 7.23% discount amount attributable to lack of marketability by Bajaj really measures and whether, even if it truly measures a pure marketability component of discount, it is the proper level of discount to be considered in a transactional analysis. Bajaj himself has been somewhat inconsistent in how he applies the results of the study using the 7.23% in certain cases and a larger discount that is said to include the effects of assessment and monitoring costs in other cases.

Continued on next page

¹¹⁴ IRS DLOM Job Aid, pp. 46-47.

¹¹⁵ IRS DLOM Job Aid, p. 48.

- Another weakness of the Bajaj study in the view of his critics is it does not explicitly consider the length of the required holding period for an unregistered placement as a factor in the analysis. Not all unregistered placements are subject to the same holding period limitations and, accordingly, the analysis of registered versus unregistered placements should not be treated as a binary variable as Bajaj has proposed.

- Finally, critics argue that simply because some private placement shares are registered does not automatically make them freely tradable such that no DLOM should apply to them.¹¹⁶

The Job Aid indicates that some important parameters are:

Bajaj combines the five areas potentially affecting marketability related discounts into four parameters for use in his model. These parameters are:

- the percent of shares placed out of the total outstanding shares,
- the Z-score which is a measure of a firm's financial strength or lack thereof based on an analysis of ratios focusing on solvency, liquidity, return on assets, debt serving capacity, etc.,
- the registration status of the placement and
- the volatility of the stock as determined using actual data for the publicly traded stock of the sample company.

Other important variables are the selection of the sample to be analyzed and the choice of the measurement point.¹¹⁷

The Job Aid addresses the view of the valuation community as follows:

Unlike Wruck and Hertzell & Smith, the Bajaj study has received intense attention from the valuation community, much of it critical in nature. Critics such as Pratt, Hall, Mercer and a number of

other practitioners have cast much skepticism on Bajaj's sample selection, his model's weaknesses including its rather low explanatory value as measured by R², the use of registration status as a binary variable rather than one that considers the differential effects of required restriction periods and the unreasonably low amount that is attributable to lack of marketability as a discrete variable. The general thesis advanced by his critics for Bajaj's relative success in his court appearances is that he had poor and unprepared opposition that could not and did not exploit all of the weaknesses in his study and his testimony.

The critics advance a number of reasons why the Bajaj approach should not be accepted by practitioners but, in each case, the criticism is accompanied by support for the critics own preferred approach to DLOM. In the case of Pratt and Hall, this is the use of the benchmark study approach while in the case of Mercer it is the use of his QMDM approach. Hall believes that the data in the FMV Opinions restricted stock study can be used to counteract the conclusions that Bajaj has advanced.¹¹⁸

In terms of the courts, the Job Aid states:

To date, only Bajaj and his colleague Dr. Shapiro have gone to Court with the analytical approach as their main support for a DLOM discount selection. Bajaj has testified in the *Estate of Gross, Litman and Diener v. USA, McCord et ux v. Commissioner* and *Richie C. Heck v. Commissioner* among others. Shapiro utilized the same approach in his testimony in *Lappo v. Commissioner*.

In general, the Courts have given favorable treatment to Bajaj's general approach to DLOM citing the conceptual basis and the use of

mathematical techniques to separate out contributing factors. However, no Court has accepted his 7.23% estimate as the proper DLOM at face value. In *McCord*, the Court instead chose to look at all of the Bajaj data and to select a DLOM based on the summary results from his middle strata of discount transactions arriving at a number of 20%. A similar approach has been taken in other cases where the 20% discount has been accepted as a starting point and then adjusted up to 23% or 25% based on factors that the Court thought were important. In *Gross*, Bajaj did not propose a strict DLOM discount based on his study but instead argued for 25% which included a 20% original amount plus 5% to account for the S corp. effects on marketability. This total discount was accepted by the Court.¹¹⁹

Dr. Bajaj was originally scheduled to participate in Judge Laro's 2008 DLOM summit and to make a presentation in the DLOM session in which Jim Hitchner was the lead moderator. Just before the DLOM summit, Dr. Bajaj was unable to participate. However, he arranged for Dr. Sumon C. Mazumdar, LECG and University of California-Berkley, to fill in and present "Firm Value and Marketability Discounts" and "The Bajaj et al. Study." Dr. Mazumdar did a thorough job.

As previously mentioned, the *Financial Valuation and Litigation Expert* journal, published by Valuation Products and Services, LLC, devoted an entire issue *Continued on next page*

¹¹⁶ IRS DLOM Job Aid, pp. 48-49.

¹¹⁷ IRS DLOM Job Aid, p. 49.

¹¹⁸ IRS DLOM Job Aid, p. 49

¹¹⁹ IRS DLOM Job Aid, p. 50. Court case citations are as follows: **Estate of Gross*, T.C. Memo 1999-254, 78 T.C.M. (CCH) 201, T.C.M. (RIA) 99254, 1999 Tax Ct. Memo LEXIS 290; *David S. and Malia A. Litman v. The United States, United States Court of Federal Claims*, 2007 U.S. Claims LEXIS 273, August 22, 2007; *McCord v. Comr.*, 120 T.C. 358 (2003); *Heck v. Comr.*, T.C. Memo 2002-34; *Clarisa W. Lappo v. Comr.*, T.C. Memo 2003-258, Tax Ct. Memo LEXIS 257, 86 T.C.M. (CCH) 333."

to DLOMs, including summaries of the different studies, models and databases presented at Judge Laro's 2008 DLOM Summit.¹²⁰ Dr. Mazumdar's summary from *FVLE* Issue 15 is found in Addendum 2, pp. 42-45.

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors present the Bajaj et al. critiques and also the rebuttals from Dr. Shannon Pratt of Shannon Pratt Valuations and Lance Hall of FMV Opinions. See Addendum 3 on pp. 46-47 for further discussion.

The Job Aid concludes this section on analytical approaches, including Wruch, Hertzell and Smith, and Bajaj et al., as follows:

Overall, many judges seem to be using the work of Bajaj and the other analytical studies as ammunition to hold all practitioners accountable for unsupported reliance on the benchmark studies. Even though an acceptable bottom line number has not come out of these studies per se, they have raised several questions and have tended to show that the benchmark studies can sometimes lead to unreasonably high results. Among the questions that they have brought to the surface is the existence of investors with long investing horizons for which marketability is not a particular concern and the development of the derivative markets which have allowed the creation of synthetic liquidity that did not exist at the times when the benchmark studies were constructed.

As a result of the weaknesses cited relating to sample selection, sample point classification and measurement point concerns, it is unlikely that these approaches can be used to derive a numerical result that will go forth unchallenged. Instead, the raw data collected and the many component factors proposed can be used to

make subjective judgments about discount magnitudes that would seem more satisfactory than using the gross averages generated by the benchmark studies, either with or without unsupported adjustments for changing facts and circumstances. For example, consideration of volatility and expected holding period as opposed to restriction period would seem to be factors that provide meaningful insight to the DLOM and DLOL question. Also the availability of hedging strategies can act to increase effective liquidity where those strategies exist. These strategies replicate the existing value parameters of a non-liquid security by combining the value parameters of other securities that are publicly traded and, therefore, more liquid.¹²¹

OTHER APPROACHES

QMDM (Christopher Mercer)¹²²

This Job Aid makes reference to Chris Mercer's 1997 publication (see below). More recent information is contained in "Quantitative Marketability Discount Model 4.0 and QMDM Companion, 2008," available at www.mercercapital.com Also available on the website is a concise summary of QMDM "The Quantitative Marketability Discount Model Fact Sheet," February, 2008 as well as the book, *An Integrated Theory*, second edition, Z. Christopher Mercer and Travis W. Harms, John Wiley & Sons, Inc., 2008, which Jim Hitchner reviewed in *Financial Valuation and Litigation Expert*, Issue 11, p. 4 (see Addendum 4 on page 48). This book contains a great deal of information on the QMDM.

Job Aid Background and Summary

The complete reference for this approach to the Discount for Lack of Marketability ('DLOM') is the 'Quantitative Marketability Discount Model' (see Mercer's book: *Quantifying Marketability Discounts*, by Z. Christopher Mercer, ASA,

CFA, Peabody Publishing, LP, 1997). The model calculates a matrix of discounts for lack of marketability, based upon a range of variables. Variables include rate of appreciation in assets, holding period until liquidation, and required rate of return to the hypothetical investor. The appraiser estimates which variables from the matrix are most appropriate for the subject interest. The intersection of those variables within the calculation matrix yields the DLOM.

Given the variable inputs, discounts from this method can vary significantly. For example, a 'base case' illustration on page 225 of Mercer's book presents a matrix of possible discounts ranging from 5% to 100%. Within the matrix, three discounts are proposed for purposes of discussion (31% [low], 58% [medium], and 71% [high]).¹²³

Areas of Focus

In discussing this approach with taxpayer or taxpayer's appraiser, the following areas of focus should be explored:

- On what basis has the Taxpayer's appraiser estimated the expected rate of appreciation (i.e. growth) on the underlying investment assets?
- On what basis has the Taxpayer's appraiser estimated the holding period before the hypothetical buyer would receive the cash flow return on their investment?
- On what basis has the Taxpayer's appraiser estimated the required rate of return to the hypothetical buyer?

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¹²⁰ *Financial Valuation and Litigation Expert (FVLE)*, Issue 15, October/November 2008, Valuation Products and Services, LLC, www.valuationproducts.com, Addendum 11.

¹²¹ IRS DLOM Job Aid, pp. 52-53.

¹²² IRS DLOM Job Aid, pp. 54-56.

¹²³ IRS DLOM Job Aid, p. 54.

- How does the required rate of return compare to alternative investments that were available to the hypothetical buyer on the valuation date?¹²⁴

Strengths

- As its name states, the QMDM provides a quantitative basis for reaching an opinion of the DLOM.
- Instead of arbitrarily selecting '35%' after a vague discussion of valuation theory and restricted stock studies, the QMDM allows the appraiser to estimate specific factors (e.g. rate of appreciation, holding period, and required rate of return), to conclude a specific DLOM from the calculation matrix.¹²⁵

Weaknesses

- While it avoids arbitrary selection of a DLOM, estimation of factors for the calculation matrix can be just as arbitrary and subjective.
- The matrix increases the number of things the appraiser needs to have an 'opinion' about, potentially leaving the appraiser over-extended on their clairvoyance about a multitude of events expected to occur many years into the future.
- Alternatively, if the appraiser simply relies upon management (i.e. the 'client') projections for parameter estimation, the appraiser's opinion of the DLOM might lack credibility and independence.¹²⁶

The Job Aid indicates that some important parameters are:

1. Base value of the marketable minority interest (the base value would be the pro rata of the subject interest, after the discount for lack of control, but before the discount for lack of marketability);
2. Expected appreciation on base value over the holding period;
3. Expected dividend yield over the holding period;
4. Expected growth rate in dividends over the holding period;

5. Assumed length of the holding period in years; and
6. Required rate of return to hypothetical investor over the holding period

Variations of the QMDM can incorporate additional factors, such as interim cash flows, compensation to officers (including over-compensation), taxes, etc. However, the model can become very complicated with the introduction of additional variables.¹²⁷

As to prevalence in the valuation profession, the Job Aid states:

This approach has seen minimal use by outside valuation professionals as the primary basis for the DLOM. More recently, QMDM has been presented as additional support ('sanity check') for a DLOM estimated using methods other than the QMDM.

From the perspective of originator of QMDM method: At the September 18, 2008 DLOM Summit in San Diego, Chris Mercer, the originator of QMDM, argued in favor of this approach, stating that his firm still uses the QMDM (although he mentioned that E&G tax valuations were not a significant portion of his firm's case work). He further stated that, despite some Court rulings involving the QMDM approach, he (and his firm) has not been rebutted in Court for using the QMDM.¹²⁸

The Job Aid addresses the view of the courts as follows:

Prior to the QMDM, the Courts had criticized appraisers for a lack of quantitative basis for their DLOM determination (e.g. arbitrarily selecting a 35% DLOM). The QMDM appeared to be an answer, but *Weinberg v. CIR* (T.C. Memo. 2000-51) and *Janda v. CIR* (T.C. Memo. 2001-24) suggest otherwise. In each of these cases, the QMDM was criticized:

Weinberg v. CIR: 'We disagree with the discount computed by Dr. Kursh on the basis of the QMDM model because slight variations in the assumptions used in the model produce dramatic differences in the results.'

Janda v. CIR: 'We have grave doubts about the reliability of the QMDM model to produce reasonable discounts...'¹²⁹

For Mercer's response to court case criticisms, see Addendum 5 on pages 49-50, where Jim Hitchner asked Chris Mercer to answer this question: "We hear that the QMDM has not been accepted by the courts or others. Is that true?"¹³⁰

PARTNERSHIP PROFILES (PARTNERSHIP SPECTRUM)¹³¹

Job Aid Background and Summary

Partnership Profiles (aka 'Partnership Spectrum' or 'Direct Investments Spectrum') is a quarterly publication (soon moving to an online database [www.partnership-profiles.com or www.dispectrum.com]) that summarizes data on re-sales of minority interests in Real Estate Limited Partnerships ('RELPS'). Partnership Profiles reportedly tracks more than 300 different RELPS. Data for each re-sale includes a pro rata net asset value attributable to each RELP interest being sold (see Addendum 6 on page 51 for a list of publications). On that basis, a 'discount' from pro rata net asset value can be inferred from each re-sale.

Partnership Profiles is primarily used as the basis for lack of control discounts on minority limited
Continued on next page

¹²⁴ IRS DLOM Job Aid, p. 54.
¹²⁵ IRS DLOM Job Aid, pp. 54-55.
¹²⁶ IRS DLOM Job Aid, p. 55.
¹²⁷ IRS DLOM Job Aid, p. 55.
¹²⁸ IRS DLOM Job Aid, pp. 55-56.
¹²⁹ IRS DLOM Job Aid, p. 56.
¹³⁰ *Financial Valuation and Litigation Expert*, Issue 11.
¹³¹ IRS DLOM Job Aid, pp. 62-65.

partnership interests. However, the RELP re-sale market is so small (i.e. 'thinly-traded') that Partnership Profiles data arguably reflect some additional consideration for lack of marketability. With respect to lack of marketability, Direct Investments Spectrum has stated:

Although it is not possible to precisely quantify the amount of discount attributable to marketability versus lack of control considerations, it is the opinion of Direct Investments Spectrum, along with many appraisers, that most of the overall discount is due to lack of control issues.

[The reference for this quote is in Job Aid footnote 47, p. 62, 'May/June 2004 issue of *Direct Investments Spectrum*, at www.directinvestmentspectrum.com.]

NOTE: Real Estate Investment Trusts (aka 'REIT's') are similar to RELP's, and are also commonly-cited as the basis for lack of control discounts on minority interests. However, REIT's are freely-traded in an active market, and therefore, discounts observed from REIT's are generally assumed to exclude any consideration for lack of marketability.¹³²

Areas of Focus

In discussing this approach with taxpayer's or taxpayer's appraiser, the following areas of focus should be explored:

- Are the Partnership Profiles comparables similar to the subject interest in terms of: a) the type of real estate; b) relative debt ratios; and c) cash distributions yield?
- Has Taxpayer's appraiser been able to verify if the baseline net asset values in Partnership Profiles data were established using actual 'appraisals,' versus management estimates of the values of underlying real estate investments?
- Assuming that Taxpayer's appraiser used Partnership Profiles to esti-

mate the discount for lack of control, and then used another method (e.g. restricted stock studies) to estimate the DLOM, did Taxpayer's appraiser give any consideration to 'lack of marketability' considerations that already exist within Partnership Profiles data (i.e. to avoid double-counting lack of marketability factors)?

- In the case of a Charitable Contribution appraisal, does it appear that Taxpayer's appraiser is trying to minimize the discount (and maximize value) by using Partnership Profiles for a single, combined discount for lack of control and lack of marketability?¹³³

Strengths

- Appraisers who wish to avoid 'over-discounting' might rely on Partnership Profiles data to provide a single 'combined discount' for lack of control and lack of marketability.
- Partnership Profiles data include descriptive factors of the types of RELP investments, debt ratios, and whether or not the RELP has been making regular cash distributions to limited partners. These factors provide specific bases to identify comparables within the data.¹³⁴

Weaknesses

- It has been argued that RELP's referenced in Partnership Profiles are not representative or not comparable to subject interests being valued in appraisal reports (i.e. RELP's are not directly comparable to family limited partnerships).
- The data have also been criticized as being inconsistent with the fair market value standard. One reason is that Partnership Profiles data reportedly reflect remnant RELP's formed in the 1970's under different tax laws. Those RELP's no longer provide the same tax benefits after tax law changes in 1986. On that basis, Partnership Profiles might reflect out-of-favor investments, being sold under distressed

conditions at high discounts to net asset value.

- The pool of RELP's is also reportedly shrinking, creating a potential problem of statistical significance in the quantity of reported sales for each type of RELP.
- Another criticism is that the pro rata net asset values attributed to RELP re-sales might have been arbitrarily reported (i.e. management estimates), and do not reflect thorough appraisals of underlying investment assets within the RELP's.
- Method is logically limited to entities that have substantial amounts of real property assets in their portfolios.¹³⁵

The important parameters are:

1. Types of underlying investments (e.g. real estate, vacant land, etc.);
2. Relative debt ratio; and
3. Dividend yield on net asset value.¹³⁶

The stated prevalence in the valuation community is stated as follows:

Partnership Profiles data are primarily used to estimate lack of control discounts on minority limited partnership interests. In most cases, the appraiser would use Partnership Profiles to estimate the lack of control discount, and then use another method (such as restricted stock studies) to estimate a separate DLOM. However, because of the nature of the data, some appraisers use Partnership Profiles to estimate a single combined discount for lack of control and lack of marketability.

In cases of charitable contributions (e.g. charitable remainder trusts), the appraiser might cite Partnership Profiles as the source for a single, combined discount for lack of

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¹³² IRS DLOM Job Aid, p. 62.
¹³³ IRS DLOM Job Aid, pp. 62-63.
¹³⁴ IRS DLOM Job Aid, p. 63.
¹³⁵ IRS DLOM Job Aid, pp. 63-64.
¹³⁶ IRS DLOM Job Aid, p. 64.

control and lack of marketability (e.g. if an appraiser were seeking to avoid over-discounting).¹³⁷

Court case references are as follows:

In *Estate of W.W. Jones II v. CIR* (116 T.C. No. 11 filed March 6, 2001), the taxpayer's expert acknowledged that:

[A] large discount for lack of marketability is already built into the secondary market discount [from Partnership Profiles data]. The Court agreed and reduced the taxpayer's [separately-determined] lack of marketability discount from 20% to 8%.

In *Estate of Kelly v. CIR* (T.C. Memo 2005-235), the Court stated:

We are also not persuaded by ATI's analyses of PPI's studies regarding minority discounts as ATI admits that these discounts contain some element of discount for lack of marketability, and therefore these studies result in an overstatement of the minority discount.

In *Lappo v. CIR* (T.C. Memo 2003-258), the Court stated:

[M]r. Oliver's reliance on the published RELP market prices seems questionable. The record in the Lappo case further noted that RELP's had very low trading volume, and that the underlying net asset values: '[R]epresent either estimates by general partners, appraised values determined by independent appraisers retained on behalf of the partnerships, or some combination of the two.'¹³⁸

For more recent sources of information from Partnership Profiles, Inc., see Addendum 6 on page 51.

MANDELBAUM FACTORS, JUDGE LARO, 1995¹³⁹

The Job Aid included the discussion of the *Mandelbaum* case and factors in the section titled "Summary of Approaches to DLOM, Benchmark Approaches." We at VPS elected to put this discussion last since it is not really a method, model or database. It is a process for applying other methods, models and databases, where they serve as a starting point. The process then requires several factors to be considered to determine what level of adjustments should be made to the starting point DLOM. In fact, the Job Aid states:

The Mandelbaum Factors [see Sidebar 8 on next page] were set out in a Tax Court case of the same name decided by Judge Laro as an approach to adjusting the discount for lack of marketability achieved by traditional means such as the Benchmark Studies for the specific facts and circumstances of the valuation problem actually being considered. The factors and the analysis that go with them have since been cited in several following court decisions and are considered by many valuers to form a good conceptual basis for thinking about and quantifying DLOM. The courts have emphasized, however, the process defined in Mandelbaum as opposed to the actual quantitative result that was achieved in that case.¹⁴⁰

For more recent insight on *Mandelbaum*, see Ron Seigneur's article, Addendum 7 on pages 52-53, "The Mandelbaum Factors Revisited: A Peek Behind the Curtains," *Financial Valuation and Litigation Expert*, Issue 11, February/March 2008, pp. 14-15.

Areas of Focus

In discussing this approach with taxpayer or taxpayer's appraiser, the following areas of focus should be explored:

- Has Taxpayer's appraiser considered each of the Mandelbaum Factors in the estimation of the discount for lack of marketability?

- On what basis has Taxpayer's appraiser determined the relative importance of each of the Mandelbaum Factors towards the estimation of the discount for lack of marketability?
- On what basis has Taxpayer's appraiser adjusted the average or median discount data for effects from each of the Mandelbaum Factors?¹⁴¹

Strengths

- Raises importance of the skilled application of difference/similarities of benchmark studies to subject company
- Similarity to precepts underlying Rev. Ruling 59-60, 1959-1 CB 237¹⁴²

Weaknesses

- Attempt to cover all ten Mandelbaum factors might be difficult unless experienced
- Insufficient information to analyze and provide opinion on all factors¹⁴³

The Job Aid indicates its prevalence in the valuation community as "Increasingly common; how factors are applied and the magnitude of the effect on marketability discount is [the] problem."¹⁴⁴

Court case references are as follows:

The Mandelbaum approach has received a considerable amount of attention among business valuation practitioners and in the courts. Among the lessons learned are that:

- (1) Detailed data developed first hand by the testifying expert, as opposed to medians cited from studies performed by others, are required to sustain discount opinions

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¹³⁷ IRS DLOM Job Aid, p. 64.

¹³⁸ IRS DLOM Job Aid, pp. 64-65.

¹³⁹ IRS DLOM Job Aid, pp. 27-29.

¹⁴⁰ IRS DLOM Job Aid, p. 27.

¹⁴¹ IRS DLOM Job Aid, p. 28.

¹⁴² IRS DLOM Job Aid, pp. 28.

¹⁴³ IRS DLOM Job Aid, p. 29.

¹⁴⁴ IRS DLOM Job Aid, p. 29.

SIDEBAR 8

MANDELBAUM FACTORS¹**Job Aid Summary**

Per Judge Laro, the following factors should be addressed as they pertain to a discount for lack of marketability for the subject company.

1. Private vs. public sales of stock

In the event that a company has observable transactions between third parties that involve both their publicly traded stock and restricted shares, this point has important application. If the subject shares do not have a publicly traded counterpart, review of the restricted stock studies can serve as an important reference.

2. Financial Statement Analysis

Financial statement analysis would include historical and projected trends in profitability, leverage, distributions, liquidity, and volatility of these and other measures.

3. Company's Dividend Policy

Investors in non-marketability securities prefer distributions as they provide elements of capital recovery and capital gain

4. Nature of the Co. (History, Position in Industry, Economic Outlook)

Investors gravitate to positive results and shy away from risk

5. Company's Management

Intangibles such as management contribute to operational and financial success and help to ensure favorable returns

6. Amount of Control in Transferred Shares

Control or related influence will typically be perceived as reducing risk

7. Restrictions on Transferability of Stock

Specific clauses that are viewed as unattractive and tend to increase discounts:

a) Right of First Refusal – many limited partnership agreements provided that a limited partner can only sell and transfer an interest subject to first offering to sell that interest to the partnership or its partners. These provisions are onerous as they impair an interest's marketability by discouraging third party offers.

b) Transferee Restrictions – such as limits on transfer to "permitted transferees" reduce the universe of potential buyers and generally lengthen the time horizon to liquidate the investment

8. Holding Period for Stock

The key is whether such holding period is discretionary or mandated. Restrictions on holding are clearly perceived as negative by investors. But for non-marketable securities, the loss of vital timing in being able to liquidate an investment can be regarded as a substantial negative to a prospective investor that is faced with an uncertain time horizon and outlook, including impacts of overall capital markets

9. Company's Redemption Policy

Put rights or expectations of near term monetization events reduce the risk to an investor

10. Costs Associated with Making a Public Offering

While public offerings are under the control of the corporation or majority owner, these provisions only related to marketability. Even marketable securities can be impacted by severe liquidity discounts during bear markets.

¹ IRS DLOM Job Aid, pp. 27-28.

(2) The courts recognize there are reasons to go above or below the medians, but they will do so only when presented with soundly reasoned and empirically supported arguments

(3) One size discount should not apply to all

(4) Blanket approaches using historical averages are not sustainable; a case-specific analysis is needed

For example, in the *Estate of Jelke v. Commissioner*, T.C. Memo 2005-131, reversed and remanded, 507 F.3d 1317 (11th Cir. 2007), cert. den. 129 S. Ct. 168 (2008), the court said that they found the factors considered in Mandelbaum to be a helpful guide to determining the marketability discount and in structuring their own Mandelbaum-type analysis. Thus, the court followed a Mandelbaum process but did not blindly endorse the original Mandelbaum result.¹⁴⁵

OTHER MODELS, DATABASES AND STUDIES (not reviewed in detail in this article)

As previously mentioned, we have not reviewed the following methods, models and databases from the Job Aid because they are either not directly relevant and/or much less seen in practice or business valuation courses concerning DLOMs for private companies, particularly smaller private companies. Some of the areas are newer and could gain greater visibility or acceptance in the future. However, we have included some selected discussions from the Job Aid.

COST OF FLOTATION¹⁴⁶

The flotation cost approach quantifies the discount for lack of marketability in terms of the costs required to achieve marketability.

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¹⁴⁵ IRS DLOM Job Aid, p. 29.

¹⁴⁶ IRS DLOM Job Aid, pp. 25-26.

The DLOM is thus the cost to underwrite a public offering of the stock as a percentage of the estimated traded price that would result from such an offering.

The approach is easily applied and a wealth of data is available. However, it does not reflect the risk associated with the uncertain holding periods that are typical for an illiquid investment in private equity and therefore, does not quantify the entire DLOM. It is also not applicable to minority interests which are the most frequent interests in question when a discount for lack of marketability is to be estimated.¹⁴⁷

BID-ASK SPREAD METHOD TO DETERMINE DLOM¹⁴⁸

The bid-ask spread is the difference between the price asked for the business by the seller ('ask price') and the price offered for the business by the buyer ('bid price'). The illiquidity is measured as the percentage difference between the bid and the ask price. In most markets, there is a dealer or market maker who sets the bid-ask spread to cover its costs of holding inventory, processing orders and trading with more informed investors. The spread has to be large enough for the dealer to cover his costs and yield a reasonable profit.¹⁴⁹

- This approach provides an illiquidity discount only. Other factors such as restrictions on marketability need to be considered to get to DLOM
- The bid-ask spreads of publicly traded stocks must be related to variables that can be measured for a private business
- Considerable subjective judgment is still required on the part of the valuator.¹⁵⁰

This approach is not seen very often for estimating DLOM for a privately held company.

This approach has not been vetted in any meaningful way by the courts.¹⁵¹

ASHOK B. ABBOTT¹⁵²

Abbott studied empirical methods for estimating marketability and liquidity discounts. He defines marketability as the ability to sell a block of securities in an established and efficient public capital market, with relatively low transaction costs, and with minimal effect on that security's public market price. Liquidity is then seen as the ability to convert a block of securities into cash. Per Abbott, marketability refers to a right and liquidity is a measure of speed.¹⁵³

Variables indicated by Abbott as potentially significant factors in liquidity and marketability include

- block size,
- overall market capitalization,
- availability of hedging opportunities,
- anticipated holding period of market participants and
- the general need for liquidity in the economy in general.¹⁵⁴

Abbott cautions as to the risks involved in using public stock-based discounts for stocks that are not publicly traded on any recognized exchanges. His strengths are mostly conceptual rather than of a nature that would necessarily lead to a reliable numerical estimate for either DLOL or DLOM.¹⁵⁵

Abbott's results have been mostly presented in academic and valuation society environments and have not been properly vetted by either practitioners or the courts. It is doubtful that his work could serve as a primary approach to marketability quantification as of the present time.¹⁵⁶

There has been no use of the results that he has generated as a basis for discounts that would properly serve as a foundation for an overall valuation.¹⁵⁷

The Abbott analyses and findings have had no vetting in the courts.¹⁵⁸

NICE (WILLIAM FRAZIER)¹⁵⁹

According to Howard, Frazier, Barker, Elliot, Inc. (www.hfbc.com), a Texas-based valuation firm, firm principal William Frazier authored an article, 'Nonmarketable Investment Company Evaluation (NICE),' that appeared in the November/December 2006 issue of *Valuation Strategies* (Vol 10, No 2, published by Warren, Gorman & Lamont, RIA Group, Boston MA).

NICE is a valuation system under the income approach designed to determine the fair market value of equity interests in closely held investment entities. NICE uses investment returns to calculate value.¹⁶⁰

According to the article in *Valuation Strategies* (see above for citation reference):

[NICE] is a valuation system under the income approach to value. It is designed specifically to determine the fair market value of equity interests in closely held investment entities, such as family limited partnerships, S corporations, and limited liability companies. NICE does not use [lack of control and lack of marketability] discounts in its operation. Instead, lack of control and lack of marketability are viewed as investment risks embodied in the required rate of return for the subject interest.¹⁶¹

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¹⁴⁷ IRS DLOM Job Aid, pp. 25-26.
¹⁴⁸ IRS DLOM Job Aid, pp. 36-38.
¹⁴⁹ IRS DLOM Job Aid, pp. 36-37.
¹⁵⁰ IRS DLOM Job Aid, p. 37.
¹⁵¹ IRS DLOM Job Aid, p. 38.
¹⁵² IRS DLOM Job Aid, pp. 50-53.
¹⁵³ IRS DLOM Job Aid, p. 50.
¹⁵⁴ IRS DLOM Job Aid, p. 52.
¹⁵⁵ IRS DLOM Job Aid, p.52.
¹⁵⁶ IRS DLOM Job Aid, p. 52.
¹⁵⁷ IRS DLOM Job Aid, p. 52.
¹⁵⁸ IRS DLOM Job Aid, p. 52.
¹⁵⁹ IRS DLOM Job Aid, pp. 56-59.
¹⁶⁰ IRS DLOM Job Aid, p. 56.
¹⁶¹ IRS DLOM Job Aid, p. 56.

The key issue is that incremental rates of return for lack of control and/or lack of marketability need to be estimated. Such estimates can begin to appear subjective, depending on the availability of adequate information.¹⁶²

The NICE method specifically states that it should not be used when the holding period is either known or can be reasonably estimated. According to the article, the method assumes a 'very long-term and illiquid investment'... (T)he liquidation date can be a very distant event, with a practical range of no less than ten years.¹⁶³

Thus, the NICE method would tend to lead to an elevated estimate of total discounts for an interest that did not meet these assumed conditions.¹⁶⁴

- The method assumes a holding period well-in-excess of 10 years (upwards of 50 years in some examples). However, it could be argued that 'predicting' a liquidation date 50-years into the future is just as speculative as subjectively estimating a DLOM.¹⁶⁵

The NICE or Frazier method has not been seen in valuation reports we have reviewed. However, valuation reports have used rate-of-return methods to value closely held investment interests (or as 'sanity checks'), but the terms NICE or Frazier were not cited.¹⁶⁶

No Court references were found for the NICE or Frazier method. If presented to a Court it is likely that the Court will criticize this method as relying upon subjectively-estimated incremental rates of return for lack of control and lack of marketability unless some definitive market evidence were provided in support of these rates.¹⁶⁷

NERA (DAVID TABAK)¹⁶⁸

NERA (National Economic Research Associates) is a consulting firm. Dr. David Tabak, a Senior Vice President with NERA, published an in-house working paper entitled: 'A CAPM-Based Approach to Calculating Illiquidity Discounts.' The working paper is dated November 11, 2002, and is posted for free on NERA's website (www.nera.com).

According to the NERA website (www.nera.com):

In this working paper, Dr. Tabak provides a review and analysis of existing studies and theories on calculating appropriate illiquidity discounts for restricted stock. Dr. Tabak discusses how existing studies have limited applicability in calculating an appropriate discount because they generally present only median or average results.

As an alternative, Dr. Tabak offers a theoretical model based on the CAPM, or capital asset pricing model, that allows for a quantification of the illiquidity discount based on objective criteria specific to the asset under consideration. This equity risk premium-based model is the first approach to apply the CAPM to the process of calculating illiquidity discounts, and offers a number of benefits over using simple average discounts or any of the other methodologies discussed in this paper.

The result is a framework for measuring illiquidity discounts that vary over time and depend on the length of the restriction and the riskiness of the illiquid asset. Perhaps most importantly, Dr. Tabak's new model is less subjective than the analysis often used in practice today.¹⁶⁹

- The method requires that a number of variables be either measured from market activity, or estimated

from market comparables. Estimates based upon selected market comparables can introduce subjectivity into the valuation analysis.

- Additional estimates with respect to holding period can introduce further subjectivity into the valuation analysis.
- The model is theoretical in nature and there is no sound way to calibrate its results against the market. Tabak has run a number of analyses against S & P 500 stocks for various years and has used the old benchmark study averages to provide a sanity check on his results.¹⁷⁰

Of particular significance to the use of this method, the working paper (see above for citation reference) states:

To begin, assume that these quantities are all measurable...[T]his theory will still require a somewhat subjective analysis if one or more of these quantities, typically T, the time of the restriction, must be estimated based on qualitative data.

This suggests (from Dr. Tabak himself) that there are inherent weaknesses in the method.¹⁷¹

We have not seen the NERA or Tabak methods, per se. However, some appraisals have used CAPM-based methods to estimate a risk-adjusted rate of return for non-marketable securities (or as 'sanity checks').¹⁷²

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¹⁶² IRS DLOM Job Aid, p. 57.
¹⁶³ IRS DLOM Job Aid, p. 57.
¹⁶⁴ IRS DLOM Job Aid, p. 57.
¹⁶⁵ IRS DLOM Job Aid, p. 58.
¹⁶⁶ IRS DLOM Job Aid, p. 58.
¹⁶⁷ IRS DLOM Job Aid, p. 59.
¹⁶⁸ IRS DLOM Job Aid, pp. 59-61.
¹⁶⁹ IRS DLOM Job Aid, p. 59.
¹⁷⁰ IRS DLOM Job Aid, pp. 60-61.
¹⁷¹ IRS DLOM Job Aid, p. 61.
¹⁷² IRS DLOM Job Aid, p. 61.

No Court references were found for the NERA or Tabak method. It is deemed likely that the Courts might criticize this method as being overly-complicated, and/or relying upon subjectively-estimated variables.¹⁷³

PUBLIC VS. PRIVATE P/E RATIOS IN ACQUISITIONS (MERGERSTAT)¹⁷⁴

A dataset published in annual editions of *Mergerstat Review* sorts transactions into categories of ‘public’ versus ‘private’ companies being acquired [see *Mergerstat Review, FactSet Mergerstat, LLC, 2007 (and earlier) edition(s), Table 1-12, page 20*].

The table compares the ‘Median P/E’ offered for public versus private companies, over a number of years. In general, Median P/Es offered in each year were higher for public companies (those whose shares were publicly traded at time of offer) than for private companies (those whose shares were NOT publicly traded at time of offer).

Based upon a premise that all data involved similar control conditions (all of the companies were being acquired), it would be reasonable to infer that the observed ‘premium’ paid for public versus private companies reflected public company sellers’ ability to liquidate their shares elsewhere—since a public market existed for those shares.¹⁷⁵

Observation of lower relative purchase prices for shares of private companies versus public ones implies a discount for lack of marketability (‘DLOM’).¹⁷⁶

As a last consideration, these data reflect ‘control’ conditions (all of the companies were being acquired). It could be argued that these data might be inappropriate for evaluating lack of marketabili-

ty on ‘non-controlling’ interests. Therefore, reliance upon these data for analyzing lack of marketability on a minority interest implies a condition that factors of ‘control’ and ‘marketability’ are effectively separable.¹⁷⁷

- Method is dependent upon specific companies acquired by public companies in a given year, and might not be reflective of DLOM levels in private transactions.
- The transactions summarized by *MergerStat* are control transactions, rather than minority interest transactions. This presents the question: ‘Is it reasonable to assume that the same P/E percentage comparison would apply to smaller traded interests?’¹⁷⁸

The use of *Mergerstat* for DLOM has been seen a few times, but generally only as additional support for an overall DLOM analysis that used additional methods of estimating the DLOM. One possible explanation for its infrequency of use is that *MergerStat Review* is so commonly cited as the source of data for lack of control discounts. Another citation of *MergerStat Review* in the DLOM area of the valuation analysis might be confusing to the reader.¹⁷⁹

No Court references were found regarding the use of *MergerStat* specific to estimating the discount for lack of marketability (there are Court rulings where *MergerStat* was used for the discount for lack of control). It is likely that the Courts will criticize this approach as being over-simplified and/or lacking comparability factors to support an opinion of the DLOM for a given subject interest (in cases where these data were used as the sole method for estimating the DLOM).¹⁸⁰

JOB AID EVALUATION AND RECOMMENDATIONS

Toward the end of this Job Aid there is a section titled “Evaluation and Recommendations.” We will quote salient information by subsection.¹⁸¹

APPROACHING MARKETABILITY DISCOUNT AS A REVIEWER

In considering the discount for lack of marketability as a reviewer, you will be presented with an approach and be concerned with judging its reasonableness, its reliability, its adherence to the prevailing facts and circumstances of the valuation problem at hand, its general acceptance within the valuation community and the treatment that the approach has received at the hands of the Courts. Hopefully, the taxpayer and/or the taxpayer’s appraiser will have offered arguments for the approach or approaches chosen and for the numerical result decided upon. These arguments will need to be considered in detail and judged upon their merits. If the taxpayer or the appraiser has not offered any real analysis but rather simply presented a numerical result without substantial backup that does not automatically make the result achieved wrong or unsustainable. You will need to analyze the result in the light of the prevailing facts and circumstances to determine whether it is reasonable or unreasonable.

If the result is considered unreasonable as a result of your review, you will likely be called upon by the client to produce an alternative

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¹⁷³ IRS DLOM Job Aid, p. 61.
¹⁷⁴ IRS DLOM Job Aid, pp. 65-67.
¹⁷⁵ IRS DLOM Job Aid, p. 65.
¹⁷⁶ IRS DLOM Job Aid, p.65.
¹⁷⁷ IRS DLOM Job Aid, pp. 65-66.
¹⁷⁸ IRS DLOM Job Aid, p. 66.
¹⁷⁹ IRS DLOM Job Aid, p. 67.
¹⁸⁰ IRS DLOM Job Aid, p. 67.
¹⁸¹ IRS DLOM Job Aid, pp. 68-77.

independent estimate of DLOM based on your own analysis of the valuation problem. Your estimate should be constructed so as to not exhibit the same weaknesses found in the appraisal being reviewed. If the taxpayer or appraiser has used a valid approach or approaches but reached an unreasonable result you may be able to simply discuss what makes that result unreasonable and why you believe that your analysis yields a more reasonable result. If the taxpayer or appraiser has not used a valid approach in your view then you will have to start from scratch in preparing your opinion.¹⁸²

APPROACH MARKETABILITY DISCOUNT AS A VALUATOR

If you are approaching the question of DLOM fresh, either as a reviewer confronted with an unreasonable taxpayer position based on invalid approaches or as a valuator charged with making your own valuation discount decisions, it is often helpful to start with a basic question as relates to DLOM. That question is: ‘Under the prevailing facts and circumstances and considering the nature of the interest to be valued why is the DLOM not zero?’ By enumerating the factors that would lead to a conclusion that some DLOM at all is appropriate you will be building a framework as to how substantial a discount for lack of marketability might be reasonable. This process will give you a reality check on DLOM amounts that you might ultimately derive using some of the approaches discussed in this job aid.

For example, if you have a very small minority interest in a non-publicly traded entity which has little or no history of interest sales and where shareholders are bound by a very restrictive shareholder’s agreement, you could reasonably believe at the outset that a DLOM

is appropriate and that it could be substantial. On the other hand, if you have a somewhat larger interest in a non-publicly traded entity that has a relatively large and active shareholder base with no restrictive shareholder agreement and where the potential seller holds a put right back to the corporation at fair market value then very little DLOM might be reasonable.

A common mistake among valuers considering DLOM (and discounts for minority interests) is to concentrate almost exclusively on the viewpoint of the hypothetical buyer who will be pushing at all times for larger discounts while ignoring the viewpoint of the hypothetical seller. In proposing a DLOM amount the valuator needs to ask whether this is an amount that a hypothetical seller could accept under the prevailing facts and circumstances and whether there is a reasonable chance that an arms-length negotiation between buyer and seller could arrive at such a discount amount. A fair market value determination requires the consummation of a hypothetical sale. If the analysis relies too heavily on the needs of the buyer it is likely that no such sale would occur and that this underlying premise of fair market value would be violated.¹⁸³

For additional information on this concept of downgrading or ignoring the willing seller, see Jim Alerding’s article, “The Mysterious Willing Seller,” Addendum 8 on pp. 54-55.

DEALING WITH MARKETABILITY DISCOUNT IN A REPORT REVIEW UNDER CERTAIN SPECIFIC SITUATIONS – TYPICAL REPORT LANGUAGE FOR GETTING STARTED

Report reviewers frequently see the use of DLOM studies inappropriately. What follows is sample report language to use when these

situations are encountered:

- a) Use of Pre-IPO studies to support DLOM
- b) Use of simple average or median from Restricted Stock Studies
- c) Use of analytical study results without getting behind the data
- d) Use of study results not supported by market data
- e) Reliance solely on court decisions

a) Use of Pre-IPO studies to support DLOM

The pre-IPO studies cited (Emory, Willamette or Valuation Advisors) examine the difference between pre-IPO stock transactions and their IPO price. When companies register for an IPO, they are required to disclose all transactions within three years prior to the offering. The pre-IPO studies observe transactions in privately-held companies that eventually completed an IPO. The private transaction price was compared to the public offering price, and the percentage discount from the public offering price is considered a proxy for the discount for lack of marketability.

These studies [are] overstate DLOM and are unreliable for assessing the size of a discount for lack of marketability for many reasons:

- Because study data includes only successful IPO’s, it artificially inflates the discount by ignoring unsuccessful IPO’s
- The discount reflects more than lack of marketability—it includes risk that an IPO may not occur
- Almost always involve related-party transactions with employees or service providers who are compensated by a bargain price
- Pre-IPO transactions tend to be under priced as IPO’s frequently involve high growth companies

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¹⁸² IRS DLOM Job Aid, p. 68.

¹⁸³ IRS DLOM Job Aid, pp. 68-69.

which are rapidly evolving (difference in pre & post company)

- Not contemporaneous – too much time gap exists between pre-IPO transaction and public offering
- There are indications that the *Willamette Management Associates Studies* 1999 and 2000 data may be skewed due to the *dot.com* ‘bubble’

Add if appropriate:

A business with the reputation, size and long history of profitability, such as _____ would likely have the option of becoming publicly traded with total floatation and registration costs significantly lower than the claimed _____% discount. Such an event would minimize any discount for marketability.¹⁸⁴

b) Use of simple average or median from Restricted Stock Studies

Restricted stock studies are a common source of market data on lack of marketability. One of the original studies, the SEC Institutional Investor Study (‘SEC Study’), compared the market prices paid for stock of publicly-traded companies with the prices paid for ‘restricted’ shares of stock in those same companies.

The restricted shares were generally sold in private placements, or similar transactions, under conditions which prevented them from being re-sold for some period of time (generally two years for the SEC Study). Observed price differences between sales of restricted stocks and their immediately salable equivalents (in those same companies) imply a discount for lack of marketability.¹⁸⁵

SEC Study

Table One in the Job Aid presents summary information about the SEC Institutional Investors Restricted Stock Study. The source is *Quantifying Marketability Discounts*, by Z. Christopher

Mercer, ASA, CFA, Peabody Publishing, LP, 1997, Exhibit 2-1, page 70. The Job Aid presents the following observations:

- 1) The data indicate that illiquid shares generally sold for less than liquid shares, suggesting an average discount for lack of marketability of 26%;
- 2) The range of variance was significant, however, with groupings ranging from a negative discount of -15% (thus, a premium for lack of marketability), to high-end groupings upwards of an 80% implied discount for lack of marketability; and,
- 3) Greatest weighting of transactions occurred within the ‘15%’ and ‘25%’ implied discount groupings. This suggests a most-common discount for lack of marketability of 20%. $[(15\% + 25\%) \div 2 = 20\%$, see note [4] of Table 1.]

Data in Table 1 are presented in regards to the issue of lack of marketability. However, significant variance in implied discounts for lack of marketability throughout the dataset suggests that factors, other than exclusively marketability, contributed to observed price differences between restricted and unrestricted shares of stock.¹⁸⁶

Management Planning Study

The Job Aid presents Table Two, which is a summary of the data used in the Management Planning (MPI) Restricted Stock Study. The source is *Quantifying Marketability Discounts*, by Z. Christopher Mercer, ASA, CFA, Peabody Publishing, LP, 1997, Figure 12-1, page 346.

According to the source reference, these data are more recent than the SEC Study, and reflect 49 transactions over the years 1980 through 1995.

In regards to Table 2, the following observations are noted:

- 1) Figures in the ‘Average Discounts’ column suggest that dis-

counts for lack of marketability *decrease*, as company size (in annual revenues) *increases*;

2) However, figures in the ‘Range of Discounts’ columns indicate significant variance within each grouping, with even the smallest companies (under \$10 million in annual revenues) reflecting implied discounts for lack of marketability ranging from a low of 2.8% to a high of 57.6% (see note [2] of Table 2); and,

3) While figures in the ‘Average Discounts’ column *decrease* as company size *increases*, low-end figures within the ‘Range of Discounts’ columns for each grouping do not follow this trend. Instead, the lowest discounts observed within the entire range (2.8% and 0.0%) occurred within the smallest and largest company groupings, respectively.

Data in Table 2 are presented in regards to the issue of lack of marketability. However, significant variance in implied discounts for lack of marketability throughout the dataset (including lack of trend for lowest discounts within each grouping) suggests that factors, other than exclusively marketability, contributed to observed price differences between restricted and unrestricted shares of stock.¹⁸⁷

Other Factors

Restricted stock studies have been criticized as being inconsistent with the Fair Market Value standard. Restricted stock sales reportedly reflect transactions among a select group of individuals, with particular motivations for buying/selling under specific conditions. For example, some criticisms argue that discounts on restricted stock and/or private

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¹⁸⁴ IRS DLOM Job Aid, pp. 69-70.

¹⁸⁵ IRS DLOM Job Aid, p. 70.

¹⁸⁶ IRS DLOM Job Aid, p. 71.

¹⁸⁷ IRS DLOM Job Aid, pp. 71-72.

placements represent 'compensation' to specific investors who provide guidance and assistance to the company's management. This suggests that other factors might have affected observed discounts in prices from 'marketable' shares of those same stocks.

Other criticisms argue that 'blockage' or other 'price-pressure' effects might contribute to observed discounts. As one example, suppose a publicly-traded company needed to raise additional capital, but management believed that issuing new public shares would depress the market price (assume a market price of \$20/share). A large private placement of restricted shares might then occur at a below-market price (assume a restricted price of \$15/share). This presents the question: Is it appropriate to infer a 25% discount for lack of marketability by comparing the \$15 restricted price to the \$20 market price (\$20 - 25% = \$15)?

All else equal, the market price in this example would have decreased below \$20/share if new public shares had been issued. On that basis, the value of the company's comparative 'liquid' shares is perhaps less than \$20/share. And therefore, in this example, comparing the \$15 restricted price to the \$20 market price might overstate the implied discount for lack of marketability.

This example also illustrates that restricted stock studies data could reflect transactions of varied buyer/seller motivations. All else equal, the buyer in this example might demand a below-market price to offset risks of investing in a company that was having difficulty raising additional capital. While the seller (the company) might demand restrictions on the new (below-market) shares to protect existing shareholders from a

potential drop in stock price.

Observers of this example transaction might then ask themselves...

Were the shares priced below-market because they were restricted?...

Or were the shares restricted because they were priced below-market?

This example illustrates the importance of understanding that observed 'discounts' from the market prices of assumed comparative 'liquid' shares might include consideration of factors other than exclusively marketability.¹⁸⁸

On Excluding Other Factors

In regards to excluding other factors, the Bajaj Study [Bajaj, Denis, Ferris, and Sarin, 'Firm Value and Marketability Discounts,' Vol. 27, No. 1, *Journal of Corporation Law*, pp. 89-115, Fall 2001] explored separation of lack of marketability from other factors believed to affect observed price differences between sales of restricted and unrestricted shares of stock.

The following citation from the Bajaj Study suggests a 7.23% discount for 'lack of marketability':

Therefore, controlling for all other factors influencing private placement discounts, an issuer would have to concede an additional discount of 7.23% simply to compensate the buyer for lack of marketability.

This statement supports a premise that market data commonly relied upon for estimating discounts for lack of marketability include consideration of other factors.¹⁸⁹

Summary - Use of Simple Average or Median from Restricted Stock Studies

An appropriate discount for lack of marketability should not over-

state the effects of marketability upon the otherwise determinable pro rata value. The appraiser should use judgment when applying discounts derived from summary median or average data sources to a specific company or subject interest.¹⁹⁰

c) Use of analytical study results without getting behind data

Business valuers will often refer to one or more of the analytical studies and quote certain of the statistics from the studies. For example, a statement may be made that Wruck found a discount for lack of marketability of 17.6%, Hertzelt & Smith found a discount of 13.5% for lack of liquidity or that Bajaj et al determined that the discount for lack of marketability should be 7.23%. These quotations are then used to build a discount for lack of marketability pertinent to the valuator's assignment or to justify a discount already determined by some other method. Sometimes, one of these figures is simply adopted as representing the appropriate discount for lack of marketability in a given assignment.

It should be remembered that these figures are the result of statistical analysis of a specific data set as chosen by the researcher. The data set in question contains those transactions chosen for one reason or another by the selector and is pertinent to a given time period. Wruck pulled her data from 1979 - 1985, Hertzelt & Smith studied 1980 - mid-1987 while Bajaj utilized 1990 - 1995. In each case, the sample size was small (128 transactions for Wruck, 106 for Hertzelt & Smith and 88 for Bajaj). Further, the selection methodology was not well docu-

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¹⁸⁸ IRS DLOM Job Aid, pp. 72-73.

¹⁸⁹ IRS DLOM Job Aid, p. 73.

¹⁹⁰ IRS DLOM Job Aid, p. 73.

mented and, in each case, relied upon certain assumptions as to registration status and appropriate measurement date. Finally, these studies were all conducted for academic purposes rather than tax purposes investigating various facets of capital formation and shareholder behavior. Although Bajaj eventually extended his study for tax use in his Tax Court testimony it was not originally intended for that purpose.

A valuator should not use the results from any of the analytical studies without getting behind the data that was used in the various analyses. With respect to Bajaj this is what the Tax Court attempted to do in *McCord*. Rather than accepting the 7.23% discount presented to it in the direct testimony, the Court looked at the data itself and instead determined a discount of 20% for use based on the average discount attributable to Bajaj's middle group of individual transaction results. The Court justified its approach by noting that the transactions in this middle group most closely represented the transaction with which it was confronted in the *McCord* case. In so doing the judge distinguish the present valuation problem from the postulated circumstances attendant to both the highest and the lowest discount groups from the Bajaj study. Whether one accepts the Court's logic in *McCord* or not this is the kind of analysis that needs to be undertaken if one or more of the analytical studies is to be used in framing an opinion on the proper level of marketability discount for a given situation.¹⁹¹

d) Use of study results not supported by market data

It is not uncommon for a valuator to propose a theoretical model as the basis for the determination of a discount for lack of marketability. Having put in chosen parameter values, the model then cranks out

a percentage loss in value or a reduced value that can be used to calculate a percentage discount for shortcomings in liquidity or marketability. Although the model may seem conceptually sound in the abstract, there is no attempt to validate the model using actual current market data. For this reason, there is no way for the reviewer to perform a reality check on the model results. Examples of this approach may involve the application of the Quantitative Marketability Discount Model, one of the models based on option theory or one of the analytical approaches based on a limited data set.

The discount for lack of marketability must be firmly based on current market evidence. This point was brought out clearly in the recent summit [Sept. 18, 2008] on DLOM held in San Diego and organized by Judge David Laro and Mel Abraham. No matter how conceptually sound a model may appear to be, unless it can be demonstrated that it produces results that can be verified with market evidence, it remains a theoretical construct that assumes a negotiation pattern between willing buyers and sellers rather than being based on the results of such a pattern. A valuator must remember that a discount for lack of marketability or for anything else is but a step towards arriving at fair market value. Thus, without a verifiable basis in the market, the valuator is asking the audience to take his result on faith based on what sounds reasonable rather than on what has been empirically demonstrated.¹⁹²

e) Reliance solely on court decisions

Sometimes a valuator will base a decision as to the choice of marketability discount on previous court decisions. For example, the valuator will review the results of several cases such as *McCord*,

Lappo and *Peracchio* and then base the choice of discount on the discounts accepted by the court in the reviewed cases. For example, the range of court discounts might have been from 20% to 25% so the valuator chooses 22.5% with the rationale that his valuation subject is similar to the subjects under consideration in the cases cited. Judges are sometimes found to adopt this approach as well. The judge will look at *McCord* with its 20% discount and add a factor of say 3% based on his analysis of the special factors of his case to arrive at a chosen DLOM level of 23%.

It must be remembered that judges are not valuers and are not constrained to the environment in which professional valuers operate. A judge can adopt any approach that is considered useful and can arrive at any result that seems reasonable in his or her view based on all the considerations of the case which often go well beyond the discount for lack of marketability. In addition, a judge will often select one discount over another simply based on the ability or lack thereof that the two sides of the dispute display in arguing their respective cases. The court is a trier of fact and need not, if that is its choice, go beyond what is presented to it. If one side argues persuasively while the other side disappoints the court for one reason or another a discount may emerge without any real justification for why it has been chosen. In fact, the discount selection may not be based on any clear valuation logic at all.

The courts are an excellent source of information when legal precedent is in question but can be a very questionable source when valuation guidance is desired. If the decisions from various court

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¹⁹¹ IRS DLOM Job Aid, pp. 73-74.

¹⁹² IRS DLOM Job Aid, pp. 74-75.

deliberations are to be utilized in the selection of valuation methods or parameters such should be looked at for the underlying reasoning applied and the logic and flow of the judge's thinking not for the results that were finally reached. No two valuation assignments are identical. Therefore, basing one's results on the results of another assignment whether litigated or not is a failure of proper diligence with regard to the assignment presently at hand.¹⁹³

JOB AID SUMMARY AND CONCLUSIONS¹⁹⁴

The Job Aid ends with a summary and conclusions section as follows:

This job aid was prepared to assist IRS valuers understand the numerous studies and approaches used by valuation professionals to determine DLOM. We have addressed restricted stock studies, the eldest type of study having been developed in the early 1970's. As the need increased to better quantify DLOM, newer approaches are introduced, such as Liquistat (2007). While many of the newer approaches are not currently used in professional practice, the profession's reliance could change in the future. In total, the job aid has information on 23 different DLOM approaches.

DLOM has been defined as well as the factors that impact DLOM on a specific interest. Sample IDR questions are provided. We have summarized each approach, provided references, identified strengths and weaknesses, how the Tax Court has ruled on the approach, and how prevalent its use in practice. In addition, the job aid offers discussion points to use with Taxpayer appraisers to focus on a specific method.

As is always the key, facts and circumstances surrounding the subject interest are what determine the

level of DLOM, if any. DLOM studies, methods and models can be complex, can indicate widely diverse conclusions, and may be appropriate in only certain limited situations. The business valuation profession does not identify acceptable or unacceptable methods for estimating marketability discounts, although some individual practitioners have their own preferences and frequently disagree as to the best approach.

This job aid does not provide guidance on the best DLOM approaches, but is meant to help the reader understand and make an informed decision about DLOM. It is current as of the date of this writing.

For recommendations on the content included in this job aid, please contact any of the members of the DLOM Team who were the developers.¹⁹⁵

EXHIBIT C- ANALYTICAL APPROACH REVISITED¹⁹⁶

Exhibit C includes a discussion of other reviewed studies.

An introduction to the analytical approach to estimating the discount for lack of marketability was provided in the main body of this job aid. This Exhibit provides summaries of six additional studies that utilize an analytical approach. These summaries are included herein for the interested reader who may want a further background in this growing area of analysis into understanding the mechanics of corporate capital formation.

The authors and dates of the included studies are:
 John D. Finnerty – 2003
 Michael J. Barclay, Clifford G. Holderness and Dennis P. Sheehan – 2007
 Phyllis Keys and Norris Larrymore – 2004

Armando Gomes and Gordon Phillips – 2005
 Stanley Jay Feldman – Undated
 Espen Robak – 2007
 The study summaries are followed by a commentary on the strength and weaknesses of these types of studies. However, these studies are basically academic in nature and are not traditionally used by the valuation community to set discount numbers. Nor have they been vetted in any meaningful way by the courts.¹⁹⁷

The Job Aid also presents general strengths and weaknesses of Exhibit C studies.

The studies all suffer from the same kinds of weaknesses that make the actual numerical results achieved difficult to rely upon. These weaknesses result from problems in sample selection, problems in sample point classification, problems in discount measurement point selection, problems in variable selection, problems in variable estimation and the use of certain proxy variables with a binary quantification attribute. The various models also result in less than impressive data fits as measured by such things as R². In many cases the number of available data points is small and large time frames are required to yield an adequate number of data points for analysis. Many of the studies do not consider factors that would seem from a common sense point of view to have significant impact on discounts such as required holding periods and the volatility of the stock as publicly traded. Finally, although the fact that the studies were not made for tax pur-

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¹⁹³ IRS DLOM Job Aid, pp. 75-76.

¹⁹⁴ IRS DLOM Job Aid, p. 78.

¹⁹⁵ IRS DLOM Job Aid, p. 78.

¹⁹⁶ IRS DLOM Job Aid, pp. 98-105

¹⁹⁷ IRS DLOM Job Aid, p. 98.

poses was cited as a possible strength, it is also a potential weakness in that it is dangerous to apply the results of a study made for one purpose to entirely different purposes.¹⁹⁸

Please note that Espen Robak and his associates have been active in the DLOM area since the 2007 study referenced in the Job Aid, Espen Robak, 2007, *Discounts for Illiquid Shares and Warrants: The LiquiStat Database of Transactions on the Restricted Securities Trading Network*, Pluris Valuation Advisors White Paper, January 2007. For example, the Pluris Valuation Advisors LLC website www.pluris.com contains additional information on the LiquiStat database as well as the Pluris DLOM database.

Bob Duffy's article, Addendum 1 on pp. 40-41, discusses the increased visibility and use of option models including Finnerty.

OTHER INFORMATION

For additional information on various models, see John Stockdale's articles, "A DLOM Computational Model," *Financial Valuation and Litigation Expert*, Issue 11, February/March 2008 (Addendum 9 on page 56); and "Other Evidence about Discounts for Lack of Marketability (DLOMs)," *Financial Valuation and Litigation Expert*, Issue 25, June/July 2010 (Addendum 10 on pages 57-59).

CONCLUSION

We at VPS believe that this IRS DLOM Job Aid will have a large impact on

DLOM analyses within the valuation profession. While many of the strengths and weaknesses of the various models, databases and studies have been known within the valuation profession, nowhere has there been such an organized and detailed IRS critique that reviews most of the DLOM tools that valuation analysts use. Furthermore, now that valuation analysts have the ability to learn how the IRS views this important information, we hope there is less tension in resolving DLOM disputes. This is a big step forward for all who have to understand, calculate, defend and review DLOM analyses. Again, we give a sincere thank you to the IRS for taking the time to put this document together. 

¹⁹⁸ IRS DLOM Job Aid, p. 105.

Why Finnerty's Put Option Model is the DLOM Model of Choice

Why is John Finnerty's put option model the discount for lack of marketability (DLOM) model of choice for many Big 4 practitioners? Is it because:

- Groupthink is alive and well;
- Finnerty uses an Asian option and people dig Asian options;
- Who cares about the Big 4, it's what that 5th firm does that counts; or
- Finnerty's model is often thought of as the "Goldilocks Solution"?

Before we can select the correct answer, we should quickly revisit the other DLOM put option models.

CHAFFE MODEL

David B. H. Chaffe III may have been the first one to publish a paper on using put option models as a proxy for DLOM. In his December 1993 article,¹ Chaffe posited that purchasing a European option on a restricted stock (i.e., one that is exercisable only at the end of the option period) would reasonably replicate the lapsing of Rule 144 restrictions. Therefore, his model assumes marketability is attained only at the end of the presumed holding period. Since an option that can be exercised only at the end of the holding period (versus one that can be exercised at any time during the period) is a less valuable option, the implied DLOM, as Chaffe put it, "Will therefore err to the less discount or the minimum applicable discount."

Chaffe's end-of-period assumption also highlights one of the main arguments against protective puts being a reasonable proxy for DLOM – that buying a put truncates downside risk and leaves an unrestricted upside. Subsequent articles have suggested that, to adjust for this, the discount implied by the put should be offset by the value of a "sold" call with the same terms as the put.

LONGSTAFF MODEL

Two years after Chaffe, Frances Longstaff published his 1995 article² on using option theory to estimate DLOMs. Longstaff took his model to the other extreme from Chaffe. Rather than using an end-of-period European option, Longstaff used what is referred to as a look-back option. His model presumed perfect market timing and perfect hindsight. Therefore, the holder of the option was presumed to have exercised it at the optimum point during the restriction/holding period. An option that allows its holder to look back over the restriction period and exercise the option at the optimum time is a very valuable option to own. Accordingly, Longstaff concluded that his put option model results in an estimate of the "upper bound" of the potential DLOM.

So, we have Chaffe promoting a DLOM model based on a European put option that results in what he believed was a minimum applicable DLOM. As mentioned, this might be further reduced by assuming the sale of a call. Then, we have Longstaff at the other end of the spectrum with a put option model that results in the "upper bound" of a reasonable DLOM. It seems like one bowl of porridge is too hot and one is too cold.

FINNERTY MODEL

In 2003, John D. Finnerty wrote a paper³ on using an arithmetic average strike, Asian Put option as a means to estimate DLOM. His model presumes that the holder of the stock has no special timing ability (i.e., no ability to "look back") and is equally likely to sell the stock at anytime during the restriction/holding period. The exercise price of the option is equal to the arithmetic average stock price over the option term. The assumption of no special timing ability coupled with



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averaging the strike price results in DLOMs that fall in what many consider a reasonable range. The porridge may not be "just right" but it is a more comfortable temperature than the other choices, especially when the pre-IPO and restricted stock studies are considered. The feeling of comfort with Finnerty's arithmetic average strike model is also due to the fact that the payoffs from this type of put tend to correspond to the risks and opportunities faced during the holding period. Finnerty also tested his model against approximately 80 restricted stock transactions. This test demonstrated that, for relatively short holding periods and non-extreme volatilities, his model had reasonably predictive powers.

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expert TIP

While Finnerty's model may provide a more reasonable DLOM estimate than the other option models, it still suffers from the criticisms associated with all option models. Despite these criticisms, Finnerty's (and the other) option models are still one of the few available techniques to actually quantify a lack of marketability discount.

The profession has been using Finnerty's DLOM model for years, and it was not until 2009 that Stillian Ghaidarov (then at Grant Thornton) noticed there were at least two errors in Finnerty's model. Finnerty agreed that there was one error and published an updated model in 2009 at the Boston ASA conference. If you use Finnerty's model to bolster your DLOM analysis, make sure you are using the updated model.

We have now reviewed the three most popular DLOM option models. Based on the porridge analogy, you've probably guessed that the answer I am looking for is "D", the Goldilocks solution. Please remember, though, that while Finnerty's model may provide a more reasonable DLOM estimate than the other option models, it still suffers from the criticisms associated with all option models. These include:

- Put option models truncate downside risk but leave upside benefit unchanged. By purchasing a put option and holding the stock, you have changed the investment performance characteristics of what you own, not cured lack of marketability. Finnerty's model mitigates but does not eliminate this criticism.
- Options are short-term hedging instruments and are not meant to address long-term securities.
- For most subject securities, put options are not available; this approach to estimating DLOMs is theoretical and has a number of judgemental inputs.

Despite these criticisms, Finnerty's (and the other) option models are still one of the few available techniques to actually quantify a lack of marketability discount. 

¹ Chaffe, David B. H. "Option Pricing as a Proxy for Discount for Lack of Marketability in Private Company Valuations," *Business Valuation Review*, December 1993.

² Longstaff, Francis A. "How Much Can Marketability Affect Security Values?" *The Journal of Finance*, Volume L, No. 5. December 1995.

³ Finnerty, John D. "The Impact of Transfer Restrictions on Stock Prices," Unpublished working paper: Fordham University, 2003. Published: Financial Management Association International, 2008 FMA European Conference (revised November 2007 and corrected October 2009).

**“SUMON C. MAZUMDAR’S
CONFERENCE POWERPOINT
SLIDES”**

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Topics

- 1) Overview: the economic principles underlying the application of a lack of marketability (LOM) discount.
- 2) Methods of calculating the LOM discount:
 - A) Critique of the IPO and Longstaff look-back put option approaches.
 - B) The restricted stock approach: the Bajaj et al. study.
- 3) Conclusions: The relationship between discounts for impairment of control, marketability and liquidity.

1. Overview: Definition of ‘Fair Market Value’

For gift or estate tax (and various other) purposes, fair market value is defined as:

- the price at which the property would change hands between a willing buyer and a willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having *reasonable knowledge of relevant facts*.
 - Court decisions frequently state in addition that the hypothetical buyer and seller are *assumed to be able, as well as willing, to trade and to be well informed* about the property and concerning the market for such property. [emphasis added]
- Revenue Ruling 59-60 Section 2.02

1. Overview: Calculating ‘Fair Market Value’ of a Minority Equity Interest in a Private Entity

1) It is important to consider whether the valuation technique utilized (e.g., the market or the discounted cash flows approach) preliminarily calculates the subject interest’s value (‘base value’ before discounts) on a marketable and/or

a controlling basis or not.

2) If the subject interest’s base value is on a fully marketable basis (e.g., calculated based on publicly traded firms’ market transactions data), it may be appropriate to apply a lack of marketability discount to calculate the interest’s fair market value.

- However, if the base value already reflects a discount for lack of marketability observed in comparable transactions (e.g., if a house is valued by considering recent comparable home sale prices), then a marketability discount may not be appropriate.

3) Similarly, if the subject interest’s base value was based on the values observed in minority interest transactions in entities with comparable governance protection, then no lack of control discount may be warranted in calculating the interest’s fair market value.

- However, if the corporate governance protection afforded to the subject minority interest is relatively less than in the comparables selected, a lack of control discount may be appropriate.

4) Marketability and lack of control discounts may be interrelated and the magnitude of these discounts depends on economic analyses of the relevant facts and circumstances.

2. Calculating the Lack Of Marketability Discount: the Initial Public Offerings (‘IPO’) approach

• Under the IPO approach, the Lack Of Marketability (‘LOM’) discount is estimated by comparing a stock’s price after it has successfully completed an IPO (the ‘IPO price’ when the stock is arguably ‘marketable’) to pre-IPO transaction prices (when the stock was relatively non-marketable).

• This approach suffers from a self selection bias.

- Ex ante, investors do not know for sure if a company will successfully go public.

- Hence, pre-IPO transaction prices reflect the risk that the company may fail to go public, not simply an impairment of liquidity until the stock is publicly listed.

• IPO approach results implausibly large marketability discounts.

2. IPO Approach: ‘self-selection bias’ example

• Suppose two firms are in a technology development race; both firms have equal odds of success in say six months.

• The successful firm will go public at \$20. The unsuccessful firm will go bankrupt (i.e., its stock price would drop to zero).

• Both firms can therefore sell stock to their key employees at \$10 per share today, which would be the ex ante fair market value of the shares.

• To calculate the LOM discount, the IPO approach would only consider the winner’s IPO price (\$20) six months later and claim that its \$10 pre-IPO price reflected a 50 percent LOM discount.

• In fact, the \$10 pre-IPO price was fair, and not discounted in any fashion, given the uncertainty regarding the firm’s future at the time.

2. The ‘self-selection bias’ in the IPO Approach

• By only considering the winner’s IPO price, the IPO approach suffers from a survivorship bias.

• The IPO approach is analogous to comparing the price of lottery tickets before the winner was announced to the prize paid to the winning lottery ticket (the winning ticket’s value ex post) and arguing that the difference represents the LOM discount in pre-announcement lottery ticket prices.

2. LOM Discount: the Longstaff (1995) approach

• Certain practitioners have proposed using the Longstaff ‘look-

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back' put option method to quantify the lack of marketability discount. [Longstaff, Francis A., 1995. 'How Much Can Marketability Affect Security Values?' *The Journal of Finance*, Vol. L, No. 5, pp. 1767-1774.]

- Such an estimate would be speculative and unreliable for several reasons:

1) As Longstaff recognizes, his method only provides an upper bound for the lack of marketability discount.

2) The estimate is based on the unrealistic assumption that the hypothetical investor has perfect market timing ability and, absent sale restrictions, could sell the stock at its peak to a future 'buyer.'

3) However, if such a buyer also knew that the stock has just peaked and was not under any compulsion to buy the stock then he would be unwilling to purchase the stock at its peak. That is, Longstaff's paradigm is inconsistent with the fair market value standard and not a reliable quantification of the LOM discount for most real-world purposes.

2. LOM Discount: early restricted stock studies

- Private placements of stocks with accredited investors (instead of being offered to the public at large) can be done with or without registration rights attached ('registered' or 'unregistered'/'restricted' stock, respectively).

- Unregistered privately placed stock can be resold to the public provided conditions stipulated in SEC Rule 144 are met.

- The early restricted stock studies examined restricted stock issues only. They did not distinguish between registered and restricted (unregistered) private placements.

- Therefore, such studies, by construction, were incapable of distinguishing between the two possible causes of the discount.

2. LOM Discount: problems with early restricted stock studies

- However, subsequent academic studies by Hertzal and Smith (1993) and Bajaj et al. (2001) (see citations below) compared restricted stock to similar issues of registered shares, and accounted for other factors that could explain the overall private placement discount.

- Hertzal, Michael and Smith, Richard L., 1993, 'Market Discounts and Shareholder Gains for Placing Equity Privately,' *The Journal of Finance*, Vol. XLVIII, 2, 459-485 (Hertzal and Smith). Bajaj, Mukesh, David Dennis, Stephen P. Ferris and Atulya Sarin, 2001, 'Firm Value and Marketability Discounts,' *Journal of Corporation Law* (22), Fall 2001, pages 89-115 (Bajaj et al.). **Note: Much of the following information is taken from or based on these two articles.**

2. LOM Discount: the results of the Bajaj et al. study

- Even if an analyst properly incorporates issue and issuer characteristics, it is premature to label the resulting discount as entirely a 'marketability discount.'

- As Hertzal and Smith and Bajaj et al.¹ discuss, the discount observed in private placements could also reflect compensation to the private placement investors for:

- anticipated contributions of advice, oversight, capital support or additional capital commitments to the firm after the placement is made

- or the costs of gathering information before entering into the placement.

2. LOM Discount: the Bajaj et al. study

- On average, privately placed shares were issued at a discount of 22.21 percent relative to the market price of the firm's publicly traded shares.²

- But (in 38 of 88 cases), the private

placement involved registered shares. Registered shares can be transacted freely, and the fact that the firm was publicly traded meant there was a ready market for these shares. Yet, despite their marketability, registered shares were also placed at discounts averaging 14.04 percent.³

- Hertzal and Smith (1993) similarly found registered private placements had an average discount of 15.6 percent in their sample.⁴

- Thus, the Bajaj et al. study confirmed that the discounts on private placements are generated, at least in part, by factors that are distinct from contractual restrictions on the marketability of these issues.

- The average discount in the case of private placements of unregistered shares was 28.13 percent.⁵

- This is about 14.09 percent higher than the average discount on registered placements.⁶

- But this differential average discount across registered and unregistered private placements does not represent lack of marketability alone.

- **Reason:** Other economic factors that contribute to private placement discounts (because they impact the cost of assessing the firm and monitoring it after the placement) are not identical across the registered and unregistered issues sub-samples.

- The discount is expected to be an increasing function of:

- *The Fraction of Total Shares Offered in the Placement:* Growth-oriented firms that are harder to assess typically issue larger fractions of their equity in private placements.

- *Business Risk and financial distress:* Riskier businesses (measured by the stock's volatility) or firms with higher signs of financial distress (or lower Z-scores) are harder to assess and may require greater subsequent monitoring.⁷

Continued on next page

- The discount is expected to be a decreasing function of:

- *Total Proceeds from the Placement*: The larger the scale of the new private placement, the easier it is to absorb the fixed cost portion of information gathering costs. Therefore, the larger the proceeds of the private placement, the lower the discount on the issue ought to be.⁸

- Such factors do influence the level of discounts on private placements as Bajaj et al. Table 6 (top right) shows.

2. LOM Discount: the Bajaj et al. study (registration indicator)¹¹

- In order to isolate the impact of lack of marketability on the observed private placement discount versus the impact of the other factors mentioned above, the Bajaj et al. study conducted a multivariate regression, which included a Registration Indicator as an explanatory variable.

- The indicator variable captures the incremental discount associated with the issuance of an unregistered stock through a private placement compared to a registered stock private placement issue with the same firm- and issue characteristics.

- This incremental discount was estimated to be 7.23 percent.¹² *It is important to note that this estimate holds economic characteristics (such as the fraction placed, financial health and risk of the issuer) constant.*

2. LOM Discount: the Bajaj et al. study regression results (Table 8, bottom right)

Mr. Hall's Flawed Criticism of the Bajaj Method

- Mr. Hall incorrectly asserts that the Bajaj method is flawed because of its 'underlying premise that registered stock is liquid.'

Table 6: A Comparison of Firm Characteristics by Private Placement Discount

Mean (median) values for characteristics of firms in each of these groups. The groups are obtained by ranking the sample transactions in ascending order according to the percentage discount. The sample includes 88 private placements of equity between Jan. 1, 1990 and Dec. 31, 1995.⁹

Characteristics	Low Discount		Medium Discount		High Discount	
	Mean	Median	Mean	Median	Mean	Median
Discount	2.21%	3.49%	20.36%	20.59%	43.33%	40.32%
Proceeds (\$ mil)	12.26	10.00	17.06	9.85	9.90	4.96
Shares Issued	11.53%	10.05%	15.16%	14.59%	20.76%	17.49%
Volatility	3.74%	4.15%	4.47%	4.44%	5.90%	5.25%
Z-Score	21.93	3.56	10.14	5.42	3.24	1.85

Table 8: Cross-Sectional Regression Results Explaining Price Discounts for the Sample of Private Placement Transactions

Estimates from ordinary least square regressions of price discounts on explanatory factors. The sample includes 88 private placement transactions spanning the period Jan. 1, 1990 to Dec. 31, 1995. 't-Statistics' are computed using White's adjustment for heteroskedascity.¹⁰

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	4.91	5.526399	0.889140	37.65%
Percentage of shares issued	0.40	0.204315	1.999084	4.89%
Z-Score	-0.08	0.032588	-2.519890	1.37%
Registration Indicator	-7.23	3.278803	-2.205249	3.02%
Standard Deviation of Returns	3.13	0.799971	3.92454	0.02%
R-squared	35.38%			
Adjusted R-squared	32.27%			

- He argues that the 'the average block size of the registered shares' in the Bajaj Paper is 13.1 percent, and therefore these shares would be subject to Rule 144 dribble-out provisions that apply to control securities (blocks of 10 percent or more).

- The Bajaj et al. study does not report the average block size of the registered shares. The 13.1 percent number that Mr. Hall refers to is the average 'fraction of (registered) shares issued.'

- There is no basis to assume that these shares were necessarily held in blocks of 10 percent or more and hence subject to Rule 144 dribble out provisions.

- Further, Mr. Hall is incorrect because the estimated discount is the incremental discount due to contractual restrictions on mar-

ketability, holding fraction issued (and other relevant factors) constant.

3. Conclusions: Summary of the Bajaj et al. study's results

1) The Bajaj et al. study concluded that the incremental discount for illiquidity per se was about seven percent.

2) The difference in the average discount across all privately placed unregistered and registered shares was about 14 percent.

3) The medium discount group average discount was about 20 percent.

4) The overall discount in private placements is a function of expected information gathering and monitoring costs and compensa-

Continued on next page

tion to the private placement investors for future contributions they are expected to make to the firm as its significant investors.

3. Conclusions: the relationship between discounts for liquidity, marketability and control

Q: Should the average private placement discount (e.g., 20 percent for the medium discount group) be used as a measure of the LOM discount?

A: That is a matter for the Court to determine. From an economics perspective, it should be noted that this overall discount reflects compensation to investors for (a) information gathering and (b) monitoring.

- Information gathering costs:
 - The FMV definition assumes that buyers and sellers have 'reasonable knowledge of relevant facts.'
 - However, acquiring such knowledge is costly for the prospective buyer for a private company (compared to the costs associated with gathering information for a publicly traded firm).
 - Therefore it is for the Court to decide if such incremental information gathering costs should be precluded from the overall valuation discount because potential buyers are assumed to have already acquired all 'reasonable knowledge,' or not.
- *Monitoring costs* are greater if investors hold a minority interest (other factors being held constant).
- However, a discount for lack of

control (or for holding a minority interest) is generally separately calculated.

- So, from an economics perspective, it is important to recognize that there is an interaction between lack of control and marketability discounts.

3. Conclusions: Relationship between control and marketability

- The impairment in value that may result from lack of marketability can be mitigated when investors have full control of the entity's underlying operations, but the absence of control can magnify the cost of illiquidity.
- The scope for expropriations from minority investors and the potential dangers of maintaining an illiquid position in a closely held company or partnership are determined by the nature of its corporate governance structure, and the allocation of cash flow rights and control rights amongst investors.

3. Conclusions: Relationship between illiquidity and control

- Any LOM discount is determined based on the assumption that the subject company's governance structure, and the allocation of cash flows and control rights within the company is comparable to other public entities whose minority shares are publicly traded, after an appropriate lack of control discount has been separately made.

- But if the governance structure and allocation of cash flow rights and control rights within the subject company are significantly dissimilar to those of publicly traded entities then reliable adjustments for lack of control and marketability to arrive at a fair market value may not be reliably concluded from a market approach.
- For instance in certain partnerships, by design an interest with cash flow rights of a mere 0.01 percent could garner virtually 100 percent of all control rights.
- The subject interest, with cash flow rights in excess of 99.9 percent, would have virtually no control rights.
- While such a partnership may survive given personal relationships between the partners, such a governance structure is unlikely to be viable in arms'-length arrangements.
- Hence the fair market value paradigm contemplated in the tax code may not be tenable because there would be no 'willing buyer' for such a subject interest. 

¹ Bajaj et al., pp. 98-99, 107-108; Hertz and Smith, pp. 459-469, 484.
² Bajaj et al., p. 107.
³ Ibid.
⁴ Bajaj et al., p. 107; Hertz and Smith, p. 479.
⁵ Bajaj et al., p. 107.
⁷ Bajaj et al., p. 108-109.
⁸ Bajaj et al., p. 109.
⁹ Bajaj et al., p. 110.
¹⁰ Bajaj et al., p. 113.
¹¹ Bajaj et al., p. 111-114.
¹² Bajaj et al., p. 114.

In *Financial Valuation Applications and Models*, 2011, Hitchner and his coauthors present the Bajaj critiques and also the rebuttals from Dr. Shannon Pratt of Shannon Pratt Valuations and Lance Hall of FMV Opinions:

Recent Criticisms of the IPO Studies¹

Certain analysts, most prominently Dr. Mukesh Bajaj, have recently raised questions regarding perceived shortcomings in the pre-IPO methodology. (For additional information, see the discussion from Dr. Mazumdar’s presentation in Addendum 4 at www.wiley.com/go/FVAM3E. The article is from *Financial Valuation and Litigation Expert*, Issue 15, October/November 2008. This entire issue is devoted to DLOMs. Some of these criticisms have received favorable comment in the U.S. Tax Court; see, for example, the discussion of the *McCord* and *Lappo* cases in Chapter 15).

However, other practitioners have presented the case for the continuing validity and relevance of the pre-IPO studies. Dr. Shannon Pratt wrote a valuable article on this subject, rebutting Dr. Bajaj’s criticisms.

Dr. Bajaj suggested that a 50 percent discount for lack of marketability in a transaction occurring six months before an IPO would imply a 200 percent annualized return, which would ‘. . . appear to be implausibly large.’²

Dr. Pratt, however, notes that this ‘implies that investors in pre-IPO stock can gain liquidity at the time of the IPO, which is not generally true. Most underwriters will not register selling shareholder stocks on the IPO. Those that do register it generally have an extended “lockup” period before the existing shareholders can sell.’

Dr. Pratt also notes that by annualizing the return, the argument ‘. . . implies that a comparable investment opportunity will be available to and recognized by the investor immediately.’ This is almost never true.³

Dr. Bajaj suggested that ‘buyers of shares prior to the IPO are likely to be insiders who provide some sort of service to the firm . . . part of the discount may reflect equilibrium compensation for these services rather than compensation for the lack of marketability’⁴

On this point Dr. Pratt writes that ‘the Willamette studies attempt to eliminate insiders. The Emory and Valuation Advisors studies contain a substantial amount 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 are convertible preferred stock, which of course is more valuable than the common stock with which its price is compared. Also, many of the institutional investors demand “put” rights. These factors would result in a downward bias in the calculated discounts.’⁵

Finally, Dr. Bajaj suggested that ‘. . . the IPO approach is subject to a serious sample selection problem. Firms will choose to issue shares through an initial public offering when their prospects improve. . . . Once an IPO takes place, this uncertainty is resolved and only the successful (and hence higher valued) firms issue shares.’⁶

Dr. Pratt replies that ‘. . . the effect of this bias is minimal. Only about 20% of companies that file for IPOs fail to have them when scheduled. Some are merely delayed, and oth-

ers are acquired. Still others remain as viable private companies. Very few actually become worthless.’⁷

Recent Criticisms of the Restricted Stock Studies⁸

Dr. Mukesh Bajaj and others have questioned the traditional interpretation and application of the data derived from the restricted stock studies. Lance Hall wrote an article with regard to Dr. Bajaj’s view of the restricted stock studies.

Bajaj suggested that the observed discount on restricted stock private placements from the related freely traded public price may represent other factors in addition to lack of marketability. Because some level of discount from the public price is also often observed in private placements of registered unrestricted shares, Bajaj and others argue that factors other than liquidity are at play in the restricted stock studies. The assumption is that such registered shares are liquid: ‘Registered shares can be transacted freely, and the fact that the firm was publicly traded meant there was a ready market for these shares.’⁹

Hall observes, however, that this assumption is faulty:

‘. . . on average, the registered shares in his [Bajaj’s] study were in fact restricted under Rule 144, and had significantly limited marketability. Moreover, the study fails to examine the underlying trading volume of the private placement companies. As private placement companies, in general, are smaller and have less trading volume, it is likely that, even if the registered shares were not subject to the dribble-out provisions of Rule 144, the registered shares would not be as liquid as the typical small block sales that set the public price. In other words, the

Continued on next page

public price reflects a significantly more liquid security than the registered shares in Bajaj's private placement study.¹⁰

Hall further notes that all restricted share blocks are not equally illiquid. Given the dribble-out provisions of Rule 144 and a particular security's trading volume, a 30 percent block is significantly less liquid than a 1 percent block, even though the restricted stock investments are in the same publicly traded company. 'The discount accorded these two blocks must reflect the differences in their respective relative lack of liquidity.'¹¹ Investments in closely held businesses are typically less liquid than even large blocks of restricted securities.

Bajaj et al. have also opined that part of the discounts in the restricted stock studies are compensation for '(1) assessing the value of the investment, (2) monitoring the investment, (3) a promise of future funding, and (4) management advice to the company,' and that ... 'it is often the case that private equity investors commit to provide the issuing firm with advice and oversight following the private placement of equity. Moreover, these investors often commit

to providing capital in the future.' Citing various academic articles, Bajaj also suggests that '. . . discounts are required . . . to serve as compensation for the higher information and monitoring costs associated with the investments.'¹²

In reply, Hall states that 'the very act of monitoring presupposes one can do something about the investment. In other words, if one monitors a liquid investment, and things change, the investor can decide to sell. . . . However, if one monitors an illiquid investment, and things change, that investor cannot sell the investment and the investor's alternatives are severely limited.'¹³

Further, Hall notes that a legal promise of future investment is part of the terms of a private placement purchase and should therefore be disclosed and available for analysis. Finally, regarding the idea that part of the discount is a return for advice provided to management, Hall notes that this is speculative and without apparent foundation in the underlying data, adding that '. . . it is interesting to note that this speculation has an interesting flip side. If it is assumed that advice is given by an investor, it also must be assumed

that the investor expects the advice to be taken. . . . Advice taken suggests the restricted stock investment carries with it aspects of influence or control. Accordingly, because influence and control are also valuable to an investor—especially in an illiquid investment—the investor will pay more for his or her investment to exercise such influence or control. Therefore, the actual discount for lack of marketability is greater. . . . In other words, because shares with influence and control are more attractive than shares without such rights, the discount for lack of marketability for shares lacking influence and control should be greater than the discounts typically reflected by the restricted stock private placements having influence or control.'¹⁴

¹ Hitchner, James R., editor, *Financial Valuation Applications and Models (FVAM)*, third edition, Wiley, 2011, pp. 389-391.

² Mukesh Bajaj, et al., "Firm Value and Marketability Discounts," *Journal of Corporation Law* (October 2001).

³ Shannon P. Pratt, "Rebuttal to Bajaj: Answers to Criticisms of Pre-IPO Studies," *Shannon Pratt's Business Valuation Update* (June 2004).

⁴ Mukesh Bajaj, et al., "Firm Value and Marketability Discounts," *Journal of Corporation Law* (October 2001).

⁵ Shannon P. Pratt, "Rebuttal to Bajaj: Answers to Criticisms of Pre-IPO Studies," *Shannon Pratt's Business Valuation Update* (June 2004).

⁶ Mukesh Bajaj, et al., "Firm Value and Marketability Discounts," *Journal of Corporation Law* (October 2001).

⁷ Shannon P. Pratt, "Rebuttal to Bajaj: Answers to Criticisms of Pre-IPO Studies," *Shannon Pratt's Business Valuation Update* (June 2004).

⁸ Hitchner, (FVAM), pp. 389-391.

⁹ Bajaj, et al.

⁹ Hitchner, (FVAM), pp. 409-410.

⁹ Hitchner, (FVAM), pp. 409-410.

¹⁰ Lance S. Hall, "Counteracting the New and Winning IRS Approach to Determine Discounts for Lack of Marketability," *Valuation Strategies* (March/April 2004).

¹¹ Hall.

¹² Hall.

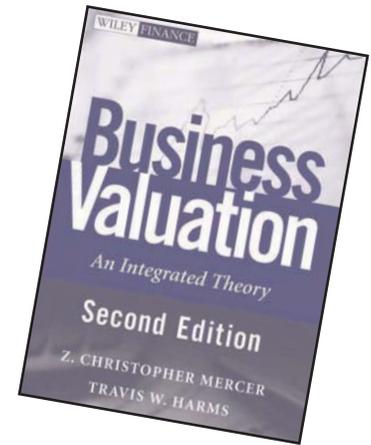
¹³ Hall.

¹⁴ Hall.

An Integrated Theory, second edition,

Z. Christopher Mercer and Travis W. Harms, John Wiley & Sons, Inc., 2008

Review by James R. Hitchner, CPA/ABV, ASA



As I started reading the second edition of this insightful book, I immediately noticed a difference from the first edition; the second edition was easier to read. Mercer and Harms have done a great job explaining how business valuation is not about separate approaches, methods, procedures and applications. It is about how they are all connected and how they relate to each other.

The first chapter, "Discounted Cash Flow and the Gordon Model: The Very Basics of Value," is anything but basic. It makes you think about the relationships among earnings, cash flow, reinvestment, dividend payout ratios, rates of return and the different types of growth. This chapter alone makes it worth buying the book. However, there is much more to read, learn and think about.

Chapter three, "The Integrated Theory of Business Valuation," and chapter four, "Adjustments to Income Statements: Normalizing and Control Adjustments," explain the authors' views on levels of value, including minority marketable, financial control, strategic control and nonmarketable minority. They also dive into normalizing adjustments and the nature and source of control premiums and whether or not they are useful.

Chapters seven, eight and nine introduce the Quantitative Marketability Discount Model (QMDM), its assumptions and application. Mercer and Harms have expanded this section from the first edition and deliver a thoughtful presentation of this model. At its foundation, the QMDM is "...a shareholder level discounted cash flow model..." and "...a valuation method within the income approach." They also state that "the QMDM inputs are analogous to those used in traditional enterprise level

discounted cash flow models."

"Although the QMDM directly values the subject nonmarketable minority interest, it is not used in isolation, but rather in conjunction with a contemporaneous valuation of the subject enterprise because the shareholder expectations regarding cash flows, risk, and growth are inextricably linked to the corresponding expectations with respect to the enterprise."

One criticism you often hear about the QMDM is that it is very sensitive to assumptions and inputs to the model. Mercer and Harms answer that criticism head on:

Appraisers and many users of appraisal reports are well-aware of the sensitivity of value indications based on the enterprise level DCF valuation method to changes in key assumptions such as projected margins (and interim earnings growth), the discount rate, the capital structure assumption, and the expected growth in earnings (or the multiple selection) for the terminal value estimate. Sensitivity to assumptions in valuation is simply a fact of life. What is important is to make reasonable assumptions given the pertinent facts and circumstances. Because QMDM is a shareholder-level discounted cash flow model, sensitivity to significant changes in assumptions is no surprise.

Another controversial area the authors address is required holding period returns and the use of investor-specific risk premiums for the investment. The authors state:

Ultimately, holding period premiums are analogous to the company-specific risk premium used to derive enterprise discount rates. Most appraisers are comfortable estimating such company-specific

risk premiums. There are no studies to help appraisers make such estimates. Nevertheless, appraisers make reasonable assumptions in the context of their experience, judgment, common sense, reasonableness, and comparisons with alternative returns available in the marketplace...It would be inconsistent to accept appraiser judgments in enterprise discount rate development but to criticize them in shareholder-level discount rate development.

It seems that the authors are saying that many assumptions and inputs in valuation are based on judgement, and QMDM is no different.

Whether you agree with the authors or not, the bottom line is that two smart appraisers have written an eye-opening book that presents their theories in an understandable manner while also providing detailed applications, models, examples and cases. This book makes you think hard about the mechanics of business valuation and how the many aspects are all connected. 

NOTE: In order to help analysts apply the QMDM, Messrs. Mercer and Harms have compiled *The QMDM Companion, Version 4.0, Explanatory Text to Accompany the Quantitative Marketability Discount Model (QMDM)*. This includes an Excel spreadsheet model to guide the analyst through the steps and the data inputs. This is available at www.mercercapital.com.

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QMDM: A Long but Important Answer to a Short but Important Question

We hear that the QMDM has not been accepted by the courts or others. Is that true?

Answer from Chris Mercer:

I've read the same cases as everyone else. The folks who continue to repeat this "story" seem to think that if they just say it often enough, it will become true— or that there will be some believers. What is the truth?

The truth is that the discounted cash flow (DCF) model is the basic valuation model employed by appraisers— and market participants— today, with the single-period income capitalization model represented by the Gordon Model being a one-period DCF. It is incontrovertible that the *value of a business today* is the present value of the expected future benefits from the enterprise discounted to the present at an appropriate discount rate. The DCF method is described in "BVS-IV, Income Approach to Business Valuation," in the *ASA Business Valuation Standards*.

What about the value of *interests* in businesses? Well, how about DCF? The QMDM is a *shareholder-level* discounted cash flow model. The value of *an interest in a business* is the present value of the expected future benefits of the enterprise that are *attributable to the interest* discounted to the present at an appropriate discount rate. The QMDM is a *shareholder-level* discounted cash flow model that values interests in businesses in the context of appraisals of entire enterprises. In so doing, it determines marketability discounts.

We at Mercer Capital developed the QMDM in the mid-1990s and have used it in thousands of our reports. Our use of the model has never been successfully challenged—at least yet!

Those who talk about the QMDM's "rejection" by the courts never want to acknowledge that I have presented appraisals to the Tax

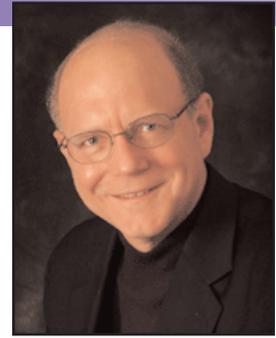
Court containing the QMDM dating back to the mid-1990s. [*B.W. Thompson*, 72 TCM 1036, Dec. 51,605(M), TCMemo. 1996-468, *S.H. Marmaduke Est.*, 78 TCM 590, Dec. 53,584(M), TC Memo, 1999-342, and *H.M. Noble Est.*, 89 TCM 649, Dec. 55,903(M), TC Memo. 2005-02]. There is not a word of criticism of the QMDM in any of these cases.

Instead, the standard criticism implies that the courts have "repeatedly rejected" the QMDM [citing *E.H. Weinberg Est.*, 79 TCM 1507, Dec. 53,753(M), TC Memo. 2000-51; *D.J. Janda*, 81 TCM 1100, Dec. 54,231(M), TC Memo. 2001-24; and *A. Temple*, DC-Tex., 2006-1 USTC 60,523,423 FSupp2d 605 (2006)].

We have addressed every theoretical and practical point about the QMDM in these cases in earlier writings (see our website, www.mercercapital.com). What is important for readers to note is that in *Weinberg*, *Janda* and *Temple*, the courts took issue with the assumptions used in the model— not the model itself. If you or a court disagree with the underlying assumptions used in any discounted cash flow model, the *integrity and validity of the valuation method is not impugned*.

In discussing the QMDM, many fail to cite *Juan Armstrong v. LaSalle Bank National Association*, No. 05-3417 (7th Cir. May 4, 2006) in which the QMDM was mentioned favorably. The court said it well:

There are techniques for calculating a marketability, or illiquidity, discount, see Z. Christopher Mercer, "A Primer on Quantitative Marketability Discount Model," *CPA Journal*, July 2003, www.nysscpa.org/cpajournal/2003/0703/dept/d076603.htm, visited Apr. 6, 2006, but we shall not speculate on what



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they might have yielded if applied to the *Amsted*, or on how far a trustee can deviate from them before he can be adjudged imprudent. These are issues for exploration on remand if it is determined that *LaSalle* did not fail to exercise its discretion.

The QMDM is taught or presented by all of the business appraisal professional associations. It is marketed by *ValuSource*, formerly *Wiley-ValuSource*, as a standalone software product. It has been presented in both written form and in speeches dozens of times at all the major appraisal professional associations. The professionals of Mercer Capital have presented the application of the model in training sessions to the IRS. It has been subjected to peer review. Four books have been published on the subject, and it is discussed in other leading valuation textbooks.

The use of the QMDM to determine marketability discounts is generally accepted in the business appraisal profession. If the model were as flawed as some suggest, it should have been rejected by the business appraisal profession years ago. However, it has not been and, in fact, has spawned the development of other quantitative, rate-of-return models by other valuation experts (Dr. David Tabak, "A CAPM-Based Approach to Calculating Illiquidity Discounts," Nov. 11, 2002;

Continued on page 18

William H. Frazier, ASA, "Some Thoughts on Restricted Stock Studies and the Lack of Marketability Discount," *ASA BV E-Letter* 8-17 (2004); "Further Thoughts on the DLOM," *ASA BV E-Letter* 8-30 (2004). The fact that many valuation experts use the QMDM and other quantitative methods further supports its legitimacy.

The QMDM is also an ideal tool to assist business appraisers in meeting the new analytical requirements found in *USPAP 2006 Standards Rules* 9-4(c) and 9-4(d). Neither the Appraisal Standards Board nor the Appraisal Foundation has endorsed the QMDM or any other model for conducting the new, required analysis of Standards

Rules 9-4(c) and 9-4(d). However, it is difficult to see how this new analytical requirement can be met absent the QMDM or similar tools. If readers are interested in specific cites that support this information, download a copy of the *QMDM Fact Sheet* from www.mercercapital.com

Better yet, purchase *Business Valuation: An Integrated Theory*, second edition, published by Wiley Finance (and available on our website and elsewhere) and a copy of the *QMDM Companion*, the spreadsheet companion to the QMDM, which is described in detail in the book. Use the QMDM to "back-test" some of your marketability discounts and see what results you get.

Don't listen to anyone who tells you that there are problems with *any* valuation method if they don't back up their statements with facts.

Finally, would you rather defend a marketability discount using the QMDM, where you can make specific assumptions about the expected cash flows pertaining to subject interests and calculate a range of marketability discounts from which to make a final judgment, or would you rather point to tired, stale restricted stock studies with tired, stale transactions, which have been "rejected" by several courts? 

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Partnership Profiles, Inc. 2010 Executive Summary Report ¹ New Product

Please be aware that, beginning with 2005, we [Partnership Profiles] no longer publish the Partnership Re-Sale Discount Study as a stand-alone report as we did in the past in the May/June issue of the Direct Investments Spectrum newsletter. This year's survey is available, however, in the form of a 20-page Executive Summary Report provided with the Minority Interest Discount Database package. This complete package includes the following:

2010 Executive Summary Report on Partnership Re-Sale Discounts.

This 20-page report provides a detailed analysis of the current state of price-to-value discounts based on the prices at which minority interests in real estate partnerships traded in the secondary market in the first half of 2009, together with a historical look at discounts. This summary reports price-to-value discounts for each partnership included in the survey as well as average price-to-value discounts for the entire group of partnerships and based upon five categories including: (i) Equity - Distributing

(low to no debt); (ii) Equity - Distributing (moderate to high debt); (iii) Equity - Non-Distributing; (iv) Undeveloped Land; and (v) Triple-Net-Lease.

2010 Detailed Partnership Data.

Contains detailed reports on all of the programs featured in the 2009 Executive Summary Report on Partnership Re-Sale Discounts. Information for each program includes specific property holdings, cash distribution history, debt levels, key operating statistics and much more. Property types include virtually all categories of income-producing real estate.

2010 PartnerDisc.

This CD-ROM disc includes the most recent annual and quarterly report for virtually every publicly registered, non-publicly traded limited partnership and REIT operating today.

2010 Partnership Profiles Minority Interest Discount Database.

This interactive database, which is accessible via the Partnership Profiles website for a period of one year from

time of purchase, provides access to valuable market data compiled from 1994 to 2009 in connection with Partnership Profiles' annual Partnership Re-Sale Discount Surveys. Includes an interface enabling appraisers to quickly access market data on more than 340 real estate partnerships. Select the attributes that are most comparable to the FLP or other minority interest you are valuing and the database will locate and display those partnerships that match your criteria. If you need comparables for valuations, here's your source!

¹ Partnership Profiles, Inc., <http://www.partnership-profiles.com/excerpt.asp>, accessed July 23, 2011.

The *Mandelbaum* Factors Revisited: A Peek Behind the Curtains

In a general session interview I conducted with U.S. Tax Court Judge David Laro at the recent AICPA National Business Valuation Conference in New Orleans, he was kind enough to discuss the thought process behind his rendering of the *Mandelbaum*¹ decision. In this important case, he made reference to the merits of being deliberate and thorough in one's work as a means of supporting key elements such as the discount for lack of marketability (DLOM). In my mind this is another strong argument for the need to spend sufficient time and attention to the qualitative and quantitative aspects of our work as a means to bridge the gaps on our expressions of professional judgment that obviously play a key role in areas such as DLOM determinations. Judge Laro was cautious that no one method stands out over another, but given the focus he has provided in rendering this decision, it certainly warrants attention as a logical framework for this aspect of our work. With this in mind, I thought it would be a good time to revisit this important case.

All else being equal, an interest in a business enterprise that is readily marketable is worth more than one that is not, because investors prefer liquidity to lack of liquidity. The challenge to the appraiser of a private company, then, is to quantify for the effect of marketability, or lack thereof, in terms of its impact on the value of the business interest being considered. The concepts of minority interest discount and marketability are related in that, even after discounting a minority interest for its lack of control, it is still usually much harder to sell a minority interest than to sell a controlling interest in a closely held enterprise. Many of the empirical studies used by valuers as a resource for determination of appro-

priate DLOMs indicate a range of discounts at and around 30-45 percent for a minority privately held stock.

In *Mandelbaum*, the sole valuation issue under consideration was the determination of an appropriate discount for lack of marketability. This is considered by many to be a landmark case in that the court devoted considerable attention to an evaluation of the detailed support submitted by two very experienced experts representing both the petitioner and the Internal Revenue Service. The court then rejected both measures in favor of an analytical process used by the court to derive the appropriate discount. The court established ten factors in conjunction with its determination of the appropriate discount for lack of marketability based on common attributes that the court thought should be evaluated and considered.

At issue in this matter was the appropriate DLOM to apply to the fair market value of the stock of Big M, Inc. (Big M), a New Jersey-based, privately owned S corporation, operating in the women's retail apparel sector. The company was founded by three Mandelbaum brothers who had begun to transfer shares of Big M to their children. The company had 122 stores with all three brothers and their children being active in the business. The as-if freely traded value of the Big M shares was stipulated at trial, with the determination of an appropriate DLOM being the only issue. The IRS expert placed the DLOM at 30 percent, while the taxpayer's expert opined that a 70 to 75 percent discount was appropriate. Both experts utilized the traditional restricted stock studies in support of their opinions, while the taxpayer's expert also used the IPO studies, in addition to conducting interviews with a number of investment banking firms to deter-



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mine a reasonable return for an investment in a company similar to Big M. The IRS expert relied only on the SEC Institutional Study, the Moroney Study and the Maher Study.

In *Mandelbaum*, the court allowed a DLOM of 30 percent after consideration of the following ten factors that it thought were important:²

1) PRIVATE VS. PUBLIC SALES OF THE STOCK

This factor is considered by analyzing the sales of similar interests in like companies via the various marketability studies. In producing its opinion, the court found the ten total studies used by the family's expert to be more encompassing than the three used by the IRS expert, concluding that the restricted stock study median discount of 35 percent and the IPO study median discount of 45 percent could be used as benchmarks;

Continued on next page

expert TIP

Many of the empirical studies used by valuers as a resource for determination of appropriate DLOMs indicate a range of discounts at and around 30-45 percent for a minority privately held stock. ■

2) FINANCIAL STATEMENT ANALYSIS

The evaluation of this factor includes consideration of the results of annual operations, year-end status as determined by the balance sheet, relevant footnote disclosures, the opinion of an independent CPA, the strength of the company's capitalization, evaluation of recognized financial ratios, including assets to liabilities, net worth, future earnings power, quality of earnings, and an assessment of the company's goodwill (*Note: Many of these factors are considered in the pre-discount value*);

3) THE COMPANY'S DIVIDEND POLICY

An evaluation of this factor focuses on the economic returns the investor can anticipate receiving on his or her investment. The fact that a company pays little or no dividends may not always affect the company's marketability, as an investor may aim for capital appreciation instead of dividend income;

4) NATURE OF THE COMPANY, ITS HISTORY, POSITION IN THE INDUSTRY AND ITS ECONOMIC OUTLOOK

Quite similar to the tenants of Rev. Ruling 59-60, the position of a company in its industry, and the factors needed for success in the industry need to be considered when determining the magnitude of discounts applicable. The stock of recognized market leaders will usually be determined to be more valuable than those that lag behind (*Note: Many of these factors are considered in the pre-discount value*);

5) STRENGTH OF THE COMPANY'S MANAGEMENT

Strength of company management is a factor to consider when determining the worth of a company's stock. A proven and experienced management team can positively affect a company's value, while weaker, less experienced management may suppress value (*Note: Many of these factors are considered in the pre-discount value*);

6) AMOUNT OF CONTROL IN TRANSFERRED SHARES

Control reflects a shareholder's ability to direct a corporation in its daily operations. Control of a closely held corporation represents an element of value that justifies a higher value for a controlling block of stock. The court, in this instance, points out the tie between marketability and the related issues associated with the discount for lack of control;

7) RESTRICTIONS ON TRANSFERABILITY OF STOCK

Investors will consider transferability restrictions as a factor in determining the worth of a security. Whether an agreement specifies a transfer price or a formula for determining a transfer price are important factors for consideration;

8) HOLDING PERIOD FOR THE STOCK

Investments that must be held for a prolonged period to achieve the desired profit are less marketable. Market risk increases and marketability decreases as the holding period gets longer. This is a key element to consider given the importance of holding period assumptions when using alternative models such as QMDM, and as referenced in USPAP;

9) COMPANY'S REDEMPTION POLICY

Whether a company redeems its stock is another important factor to consider in conjunction with a determination of marketability or lack thereof. In the instance of Big M, there was a prior redemption that the court considered favorable in its overall assessment;

10) COSTS ASSOCIATED WITH MAKING A PUBLIC OFFERING

An above average discount may be warranted if the buyer bears the cost of registering a private stock. The discount is lessened if the buyer can minimize his or her registration costs. The costs of registration in relation to the base cost of the security is also a factor.

A key learning point from the *Mandelbaum* case and the 10 factors identified by Judge Laro is the ability to effectively use a benchmarking method in support of the ultimate discount for lack of marketability that is applicable in a specific instance. Much has been debated recently about the merits of the various available models and methodologies to determine and support a DLOM determination, but as of yet there appears to be no strong consensus on what has the strongest support. 

¹ *Estate of Bernard Mandelbaum v. Commissioner*, T.C. Memo. 1995-255, affirmed 91 F. 3d 124(3rd Cir, 1996).

² Many analysts disagree with parts of these factors.

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The Mysterious Willing Seller

Who is the mysterious willing seller? She arises in the context of the Fair Market Value Standard of Value. But like the lady in waiting she often lurks in the background with an unknown presence – until she becomes the focal point.

Most business valuations focus on the willing buyer(s). The valuation analyst takes great care to analyze and consider that vast universe of hypothetical willing buyers. There are financial buyers, strategic buyers, institutional buyers and other classes of these potential buyers to consider when valuing a business. They can be graphically presented as dots with a trend line through them for purposes of describing the process of their consideration.

Many times that is all that is needed – a careful consideration of the universe of buyers – to arrive at a conclusion of value of an interest in a business. However, just as the analyst must consider the three major approaches to business value, she or he should also consider the “hypothetical willing seller” before arriving at a conclusion.

What is often missed in analyzing the willing seller is that the concept of Fair Market Value (FMV) assumes that a sale takes place. To refresh, here is the definition from the *International Glossary of Business Valuation Terms*:

Fair Market Value – the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.¹

In most interpretations of FMV the willing buyer and willing seller are hypothetical persons dealing at arm’s length, rather than a particular buyer or seller.² There is general agreement

that the parties have the ability as well as the willingness to sell. So the market represents all the potential buyers and sellers of like businesses or assets.³

In many valuation situations this concept of a willing seller is taken for granted. If my client wishes to know the value of her business so that she can sell it, there is a presumption that she is a willing seller. While the analyst must still consider the universe of hypothetical sellers, in this case the owner is normally considered to be a good example of the universe of sellers. In fair value cases, where there is a determination of value for, say, shareholder dissent or oppression there is obviously a sale contemplated and the seller may not be willing.

Where it does arise frequently is in the area of tax related valuations and marital dissolutions.

Let’s take a look first at tax valuations. The tax arena has much of the history of FMV valuation and certainly has perhaps the largest body of decisions on FMV. As in all cases of determining FMV, the sellers are hypothetical and they are willing to sell. In other words, there is an assumed transaction which allows the valuation analyst to determine what the value of the business interest or asset would be without having to consider the biases of the particular seller. This is because the purpose of the willing buyer and willing seller construct is to create a “hypothetical market based on hypothetically frequent arm’s-length transactions for the subject property.”⁴ Further amplifying this concept, the market can be described as :

[A] “market” itself presupposes enough competition between buyers and sellers to prevent the exigencies of an individual from being exploited. It may well imply that the goods have several possible buyers, so that a necessitous seller shall not be confined to one; and that there are several possible sellers of the same goods or their substantial equivalent, so that a



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hard-pressed buyer shall not have to accept the first offer.⁶

In order for tax-related valuations to exist freely it is necessary for this hypothetical market construct to exist. Judge Laro has highlighted in at least one case and speaks frequently about the need for consideration of the willing seller in a tax-related valuation. So the free transfer of the business interest or asset is something the valuation analyst cannot ignore when valuing such for tax purposes.

So is the seller, then, devoid of any attributes so that he/she is simply not just “willing” but a part of the equation to be ignored?

Let’s now take a look at the marital dissolutions situations. Some states do not consider that a sale has to take place in determining the value of a business or business interest in a divorce. Obviously in these instances the issue of the willing seller does not

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expert TIP

Just as the analyst must consider the three major approaches to business value, she or he should also consider the “hypothetical willing seller” before arriving at a conclusion.

arise. However, the majority of states do consider that a hypothetical sale has occurred in determining the value for the marital estate. How often have you heard from a client, "But I am not willing to sell my business right now so the value is zero. I am not a willing seller." As mentioned above, this cannot be used to determine the value under the FMV Standard because even the willing seller is a hypothetical person and not the particular owner of the investment. In fact, it is usually considered that a sale *will* take place in determining FMV.

This creates some interesting situations in divorce because in most cases there is not an actual anticipated sale of the business or business interest. Many divorce cases revolve around family-owned businesses that often have multiple entities and relationships. These entities and relationships are usually set up for tax or operating purposes. In that regard they serve their purpose, but in the context of a divorce case, they can cause problems. The willing seller concept often is problematic in these cases. The assumption, explained above, that a hypothetical willing seller (or sellers) must exist in order to get to FMV puts the family relationships front and center. So the statement, by the owner, that "I am not willing to sell that interest" is in reality likely a true statement in many situations. So for the valuations analyst, that is the first hurdle to overcome in determining a value.

So let's say, as the analyst, you are over that and you are assuming that there are "hypothetical willing sellers." Easy from there, right? Not so fast. Once the analyst now focuses on the valuation and is past the willing seller issue, she or he now has to look at the actual facts of the relationship(s) in determining the actual value of the business. Take this example:

Business A is owned 100% by Mr. Big. A is a manufacturer. A has a contract with Mr. Big that gives the exclusive right to Mr. Big to negotiate sales of A's product to A's largest client, Crazy Z, and provides a commission to Mr. Big for

the sales made to Crazy Z. The contract is long term and is assignable by either party. Mr. Big has a long-time relationship with Crazy Z's founder and owner, Buster. Without the sales to Crazy Z, A's value is significantly negatively impacted.

At this point, let's focus on the value of the contract instead of the value of Mr. Big's relationship to Crazy Z. Since a seller is assumed in FMV, we must assume that Mr. Big or his hypothetical proxy is willing to sell the contract to a hypothetical buyer. Once we have crossed the hurdle of having to assume a willing seller, it is easy to see that the seller would be willing to sell for the present value of the anticipated future cash flows of the contract. The contract is assignable so what A feels about the sale is a non-factor also in determining FMV of the contract. At this point, then, doesn't the focus shift back to the buyer? So we have not ignored the "willing seller" but what we have really accomplished is setting him up as somewhat of a straw man to effect this hypothetical transaction. At this point about all we can look to is the seller's resistance to sell for a number of reasons – family relationships, desire to stay in the business, sentimental reasons, etc. But do those really change the pricing in a FMV determination? They might put some pressure on the buyer to take a somewhat lower return in order to effect the transaction but not much else. (NOTE: At this point we are ignoring the relationship of the seller to Crazy Z).

The willing-seller concept, then, is really a construct to "make" FMV happen in the sense of an assumed transaction. Absent the willing-seller concept there would always be the obstacle of the "unwilling seller" and no effective FMV could be determined. So having determined that there now exists both a willing buyer and a willing seller, it has been my observation that other than as stated above the impact of the thinking of the willing seller is of little consequence in determining the FMV of the subject interest. The focus shifts to the buyer and what

the buyer perceives as an appropriate return on his or her investment to determine the ultimate FMV of the subject interest.

So while it is important to give consideration to the "hypothetical willing seller" it is, in my view, simply a way of getting to the assumption that a transaction will take place and not much "value" is given to the attributes of the willing seller.

Before leaving the subject, it should be pointed out that there might be other considerations that do not relate directly to the "hypothetical willing seller." In my example above, Mr. Big has the relationship with Crazy Z. If we presume that Crazy Z would not buy from A except for the relationship with Mr. Big then the true value of the contract might be zero because of the "personal goodwill" that Mr. Big has in this relationship. But the zero value is really determined not by the construct of the "hypothetical willing buyer" and "hypothetical willing seller" but because of the specific relationship of the specific seller – Mr. Big. A transaction is presumed to take place because of the FMV construct, but in my example the transaction "value" is negated by the personal relationship. This is a very hard concept to display. Do we first ignore the relationship in presuming that there is a willing seller who does not have that relationship and then reduce the value by the measure of the personal goodwill or do we assume the value of the transaction to be zero because of the personal relationship? While it sounds as though one should end up at the same answer (i.e., zero value) that is not always the case, especially in marital dissolution cases. 

¹ Statement on Standards for Valuation Services No. 1, AICPA (2007), p. 44.

² *Valuing a Business* (The Analysis and Appraisal of Closely Held Companies), 5th Edition, Pratt & Niculita, McGraw Hill (2008), p. 42.

³ *Ibid.*

⁴ *Business Valuation and Taxes*, 1st edition, Laro and Pratt, Wiley & Sons, 2005, p.11.

⁵ *Ibid.*, p. 10.

⁶ *Helvering v. Walbridge*, 70 F.2d 683,684 (2d Cir. 1934), cert. denied, 293 U.S. 494 (1934).

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A DLOM Computational Model

A determination of a discount for lack of marketability (DLOM) can be improved if it includes both a computational method and supporting data from studies such as restricted stock or long-term equity anticipation securities (LEAPS). This process parallels the use of an income approach and a market approach in the overall valuation process. The use of a computational model can add critical support to judgments made using only data from studies. In the recent *Litman et al. v. U.S. et al.* case (U. S. Court of Federal Claims, Nos. 05-956T, 05-971T & 06-285T), the prevailing expert used this general approach. He used both a Black-Scholes and a CAPM-based mathematical model supported by restricted stock data in the form of the Hertz/Smith ("Market Discounts and Shareholder Gains for Placing Equity Privately," *The Journal of Finance* June 1993) and Silber ("Discounts on Restricted Stock: The Impact of Liquidity on Stock Prices," *Financial Analysts Journal* July-August 1991) studies. The CAPM-based model is based on the work of Lisa K. Meulbroek as discussed in "Company Stock in Pension Plans: How Costly Is it?" *Journal of Law and Economics*, Volume 48, number 2 (October 2005), pages 443-474.

The model is based on the assumption that the holder of a stock bears a risk/return penalty when forced to hold a single stock rather than being able to invest in a portfolio. In the Meulbroek article, it is a participant in a pension plan who holds company stock that suffers such a penalty. Relative to the discount for lack of marketability, the seller suffers the return penalty during the period he attempts to, but cannot sell the stock, as he attempts to locate a buyer.

The model is based on the well-known formula to compute a present value: $DLOM = 1/(1+R)^n$. Here, R represents a rate of return, but it is not the entire rate of return but only the incremental portion of the return resulting

from being forced to hold a single stock instead of being able to invest in a portfolio. It is the non-diversifiable risk associated with a specific stock. This return is computed using the following formula, $r = \text{market risk premium} \times (\sigma_s / \sigma_m - \text{market beta})$. σ_s is the standard deviation of return of the stock and σ_m is the standard deviation of return of the market. This return is the incremental rate of return resulting from being forced to hold onto one stock instead of a portfolio.

σ_s / σ_m is sometimes called the whole risk beta. That is, it is the beta based on the entire risk of the company. The beta, of course, is the standard beta measuring non-diversifiable risk. The risk-free rate of return in the CAPM formula drops out because it influences the rate of return when both a whole beta and a standard beta are used to compute rate of return.

The formula suffers from the usual problem of requiring a time to sale. This can be partially overcome by combining the formula with a probability of sale function as I have previously discussed in my article, "Time is of the Essence: A Proposed Model for the DLOM," *Business Valuation Review* Fall 2006.

In order to carry out the formula, it is necessary to compute both the volatility of return of the stock and the beta. For a restricted public stock, this can be done relatively easily using data obtained from a source such as Yahoo! Finance. For a private company, determining these factors becomes much more challenging. In some cases, overcoming these factors may be enormously difficult. For others, reasonable comparisons to public companies may be possible. For example, certain public REITs may be appropriately used for some private real estate holding companies.

The CAPM model is only one of several models currently available.



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Others include those developed by John D. Finnerty ("The Impact of Transfer Restrictions on Stock Prices," available on the Internet, Francis Longstaff ("How Much Can Marketability Affect Security Prices?" *The Journal of Finance* December 1995) [see article on page 6] and David Tabak ("A CAPM-Based Approach to Calculating Illiquidity Discounts," 2002 NERA Working Paper, available at www.NERA.com). Also, the computation of a put option may be considered. Each of these models has its own strengths and limitations. The use of multiple models can further strengthen support for the discount selected.



expert TIP

Computational models are starting to gain more visibility in determining DLOMs. ■

Other Evidence about Discounts for Lack of Marketability (DLOMs)

The SEC reduced the required holding period for restricted stock from one year to six months, effective February 2008. Analysis of transactions from the FMV Restricted Stock database shows that this action had a dramatic impact on the restricted stock discount. Since this change went into effect, the average discount has been 9 percent. The average discount from the time when the SEC one-year holding period was in effect was 21 percent, and the average discount from the time when the SEC two-year holding period was in effect was 23 percent.

The data since this new holding period went into effect is statistically different from the previous periods and does not appear to be reasonably comparable to discounts generally expected for interests in privately held companies. Although this preliminary result is based on only 43 transactions, there is a risk that it indicates a future long-term trend. The data from previous time periods with longer SEC-required holding periods remains a good source of evidence but this data may become dated over time and new sources of data are needed.

A relatively new source of restricted stock discounts was recently published by Trugman Valuation Associates. In the Fall 2009 issue of *Business Valuation Review* there was an article by TVA that showed restricted stock transactions for 2007 and 2008. The average discount in this study was 18 percent. The 2007 discount was 18 percent and the 2008 discount was 20 percent. This study does not show the same steep drop as the FMV data. One reason for the higher discount in the TVA study is a result of a difference in the base freely traded value. The average TVA discount is based on the stated discount if available and if not, the discount is based on the average of the high and low price of the freely traded price during the month of the transac-

tion. The average discount reported above for the FMV database is based on the stated discount if available and if not, the average daily price. This difference illustrates the importance of the base used to compute the discount in a restricted stock study. The BVR article includes all of the underlying transactions in the TVA study.

There are other available sources of data about DLOMs that can be helpful. This article will focus on four of them. These are the LiquiStat database, pre-IPO data, LEAPS analysis, and Public Funds Investing in Private Equity.

The LiquiStat database offers a different take on restricted stock data. This database uses restricted stock discounts observed in a secondary market called Second Market. In Second Market, transactions between buyers and sellers of the restricted issue are directly observed. These transactions differ from the traditional restricted stock transactions, which occur between the company and the investor. The transactions in this database appear to provide a direct indication of the fair market value of restricted stock because the buyers and sellers are unrelated to the company and more closely resemble the hypothetical buyers contemplated in the fair market value definition.

A January 2007 *Valuation Strategies* article by Espen Robak about LiquiStat shows a median discount of 31.7 percent, with an inter-quartile range of 15.7 percent to 44.1 percent. The range of discount is somewhat higher than the traditional restricted stock studies. In addition, these discounts involve a relatively short period of restriction. The median days of restriction left is 115 days, which is much shorter than that which is normally assumed for the restricted stock studies. ValuSource (www.valusource-software.com) has just sent notice that



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access to this database can be purchased through them.

One type of evidence you should reconsider is pre-IPO studies. In this type of study, a private transaction prior to an IPO is compared to the IPO price. In these studies, the amount of the discount is measured by the IPO price minus the price in a private transaction preceding the IPO. In the past, this form of evidence has been strongly criticized. One criticism that appears valid is that there is pricing and completion risk for the IPO and this factor will be considered by the purchaser in the private transaction. One measure of this risk is the time between the transaction and the IPO. The shorter the period of time between the transaction and the IPO, the less valid these criticisms become.

One source of pre-IPO data is the Valuation Advisors database. As of January 2010 it had 433 data points for
Continued on next page

expert TIP

There are other available sources of data about DLOMs that can be helpful. These are the LiquiStat database, pre-IPO data, LEAPS analysis, and public funds investing in private equity.

ADDENDUM 10 - Discounts for Lack of Marketability by John Stockdale, continued

private transactions that occurred 0-2 months before the IPO and the average discount for that group was 23 percent, which is similar to the typical discount for restricted stocks from the FMV database. A graphical comparison of the two sources of data shows that the pre-IPO data is somewhat more spread out. It is less concentrated around and just below the mean and has a few more premiums. However, the distributions of the data from the two sources have strong similarities. Further, a statistical test shows that the mean and variance of the Valuation Advisors 0-2 month data is not statistically different from the FMV Restricted Stock Study database one- and two-year SEC holding-period data. However, for the Valuation Advisors three-month and longer periods, the discount is higher and the data is statistically different than the FMV Restricted Stock data. This indicates that the shorter term pre-IPO data is a useful supplement in situations where the restricted stock data is also useful. The IPO market, itself, has declined in activity in recent years, particularly for smaller companies. However, this source of data may continue to provide some new evidence concerning the size of DLOMs. Business Valuation Resources (www.bvresources.com) publishes the Valuation Advisors database, which is available for a subscription fee.

Another source of historical pre-IPO data is the Emory Business Valuation studies. These have not been updated since 2000 but are freely available at EmoryBizVal.com. There are 90 transactions in the 0-60 day category. For the Emory data, a statistical test similar to that for the Valuation Advisors data was conducted. The mean discount for this group is 38 percent and this mean and the variance are statistically different from the FMV data. Unfortunately, this means that this source cannot be used as a reasonable substitute for the restricted stock data.

A third type of evidence comes from LEAPs. LEAP stands for long term equity anticipation security, which is a long-term option. In a LEAP

LEAP initiation	Fall 2005	Fall 2006	Fall 2008	Fall 2009
LEAP expiration	Jan 2008	Jan 2009	Jan 2011	Jan 2012
Average discount	30.2%	31.2%	53.7%	35.4%

study, a LEAP put is assumed to be the right to sell the stock. In a DLOM, it is the difficulty of selling that is the source of the discount. The theory is that the value of the LEAP put divided by the value of the freely traded stock is an indication of the discount for lack of marketability. This is the same concept that is embodied in the Chaffe, Finnerty and Longstaff computational option models. The LEAPs are sold in the fall of the year and Ronald Seaman conducts studies at that time of the DLOM indicated by the LEAP put. His studies show that the size of the DLOM indicated by LEAPs gets larger as the company gets smaller and that the indicated discount varies substantially from year to year. The table at the top of this page summarizes some of his results for companies under \$500 million in revenue.

An issue that may require adjustment in these studies is that even the largest companies, which should be the most liquid, have an indicated discount using this method. Presumably the small lots involved with these large companies would have no liquidity or marketability problem. Yet, if the computational option models were applied to this situation, they would all show a discount even though none appears to be applicable. A possible interpretation of this situation is that the option is a theoretical measurement of a restriction. It is measuring the discount as if there were a restriction in place.

Another possible way to look at this situation is that the option is measuring risk factors besides illiquidity and these factors are present in options for companies of all sizes. If this view is correct, one way to account for this issue is to deduct the indicated discount for the group of larger companies from that for the group of smaller companies. In the two studies in which data are available for the under \$100

million revenue companies, the excess over the \$1-\$10 billion revenue companies was 20 percent and 21 percent, which appears to be in line with the discount from the FMV and Valuation Advisors data discussed above.

The LEAPs data is assembled by Ronald Seaman and is freely available on the Internet at www.dlom-info.com

A third type of evidence can be found in publicly trading companies that hold investments in private equity. These public companies periodically report the net asset value of the investments they hold. By comparing the freely trading price to the reported net asset value, an indication of a DLOM can be obtained. The indicated discount is the difference between the reported net asset value of the company and its freely traded price. This discount is a combined discount which includes both a discount for lack of control and lack of marketability.

The discount includes elements of control because the minority interest would not have the ability to liquidate the company to obtain the net asset value. The net asset value is the result of judgment applied by the management of the company or the management of the underlying funds rather than a market indication of value. Information concerning four such companies is provided below and on the next page. Data concerning these companies is available on the Internet.

See below for discounts using
Continued on next page

Discount on Day After Reporting 12/31/09	
Company	NAV
EQS	50.7%
CCAP	41.6%
SVI	34.4%
PIP	43.8%

the most recent year end reported net asset values. The market values used to compute the discount are from the day after the net asset value was reported.

These discounts are combined discounts which include an element of control. It is difficult to separate the magnitude of the two discounts from the combined discount. One possible method to remove the element of control would be to deduct the estimated discount for lack of control indicated by an analysis of closed-end funds. On April 1, 2010, (the day used to measure the EQS discount), the average closed-end fund discount for 11 closed-end funds that did not have a managed distribution policy was 13.9 percent. As an example, this could be deducted from the EQS total discount of 50.7 percent to get an indicated DLOM of 36.8 percent.

The discounts on these funds illustrate another point. There is growing evidence that the discount varies over time and the variation can be substantial. The following table shows the discount based on the reported year end net asset value for Equus. It varies significantly from year to year. As might be expected, it was very high at the end of 2008. This illustrates that current conditions need to be considered when determining DLOM. The LEAPs data discussed above shows a similar pattern. Liquidity theory holds that the effect of illiquidity should vary over time. Public companies with private equity holdings and LEAPs provide evidence to support this notion and provide an indication of how much market conditions are affecting DLOMs. 

NAV Date	EQS Discount
12/31/09	50.7%
12/31/08	71.8%
12/31/07	43.7%
12/31/06	23.4%
12/31/05	38.3%

EQUUS TOTAL RETURN, INC.

Equus Total Return, Inc. is a business development company that trades as a closed-end fund on the New York Stock Exchange under the Symbol EQS. It can be found in the General Equity Section of Closed-End Funds in the *Wall Street Journal*.

CONVERSUS CAPITAL

Conversus Capital, L.P. (Euronext Amsterdam: CCAP) is a permanent capital vehicle and the largest publicly traded portfolio of third party private equity funds. Conversus' objective is to provide unit holders with immediate exposure to a diversified portfolio of private equity assets, access to best-in-class general partners and consistent NAV returns that outperform the public markets.

SVG CAPITAL

SVG Capital (London Stock Exchange: SVI) is a private equity investor and fund management business established in 1996. SVG Capital's investment objective is to achieve capital appreciation by investing principally in private equity funds that are managed or advised by Permira, a leading international private equity specialist

PANTHEON INTERNATIONAL PARTICIPATIONS PLC

Pantheon International Participations (London Stock Exchange: PIP) is an investment trust, managed by Pantheon Ventures Ltd., one of the longest established international private equity fund-of-funds manager, investing in both primary funds and secondary transactions.

EDITOR'S NOTE: Additional information about these subjects will be available in Stockdale's forthcoming book on DLOMs, to be published by Business Valuation Resources.

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PANEL OF EXPERTS



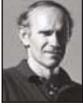
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PANEL OF EXPERTS, cont.



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GUIDE TO ABBREVIATIONS

ABV-	Accredited in Business Valuation, American Institute of Certified Public Accountants (AICPA)
ASA-	Accredited Senior Appraiser, American Society of Appraisers (ASA)
BV-	Business Valuation
CBA-	Certified Business Appraiser, Institute of Business Appraisers (IBA)
CDFA-	Certified Divorce Financial Analyst, Institute for Divorce Financial Analysts
CFA-	Chartered Financial Analyst, CFA Institute
CFE-	Certified Fraud Examiner, Assn. of Certified Fraud Examiners
CFP-	Certified Financial Planner, Certified Financial Planner Board of Standards, Inc.
CIRA-	Certified Insolvency and Restructuring Advisor
CM&AA-	Certified Merger & Acquisition Advisor, Alliance of Merger & Acquisition Advisors
CPA-	Certified Public Accountant
CVA-	Certified Valuation Analyst, National Association of Certified Valuation Analysts (NACVA)
DABFA-	Diplomate of the American Board of Forensic Accounting
FASA-	Fellow of the American Society of Appraisers
JD-	Juris Doctor
MBA-	Masters of Business Administration
MCBA-	Master Certified Business Appraiser, IBA
MST-	Masters of Science in Taxation
MVS-	Masters in Valuation Sciences

*CPA licensure designation regulated by the State of Florida •State of Maine

COST OF CAPITAL CORNER

COST OF CAPITAL CORNER

	<u>Ibbotson decile⁽¹⁾</u>	
	<u>10</u>	<u>10</u>
R_f⁽³⁾	3.9%	3.9%
RP_m⁽⁴⁾	6.7%	6.0%
RP_s⁽⁵⁾	6.4%	6.4%
Cost of Equity⁽⁶⁾	<u>17.0%</u>	<u>16.3%</u>

Duff & Phelps 25th portfolio⁽²⁾

	<u>Equity</u>	<u>Invested Capital</u>	<u>Sales</u>
R_f⁽³⁾	3.9%	3.9%	3.9%
Risk Premium⁽⁷⁾	14.1%	13.9%	12.4%
ERP Adjustment⁽⁸⁾	<u>1.1%</u>	<u>1.1%</u>	<u>1.1%</u>
Cost of Equity⁽⁹⁾	<u>19.1%</u>	<u>18.9%</u>	<u>17.4%</u>

Gross Domestic Product

	<u>Inflation</u>	
Historical (1926-2010)⁽¹⁰⁾	3.0%	3.3%
10 yr. forecast⁽¹¹⁾	2.4%	2.7%

⁽¹⁾ Source: Ibbotson *S&P 500 Valuation Yearbook*. © 2011

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⁽²⁾ Source: Duff & Phelps (D&P) *2011 Risk Premium Report*, average premiums over risk-free rate ©Duff & Phelps LLC. All rights reserved. Used with permission. Available through Morningstar: <http://corporate.morningstar.com/ib> and Business Valuation Resources, www.bvresources.com, and ValuSource: www.valusource.com.

⁽³⁾ Risk-free rate, 20-year Treasury Bond Yield, Federal Reserve Statistical Release, 7/26/11.

⁽⁴⁾ "Risk Premium in the Market," *S&P*, inside back cover historical and supply side.

⁽⁵⁾ "Size Premium," *S&P*, inside back cover.

⁽⁶⁾ Build up method illustration only; excludes industry risk premium and specific company risk, if any. Uses unadjusted data for ERPs.

⁽⁷⁾ Report includes premiums where size is measured by market value of equity, market value of invested capital, 5-year average EBITDA, 5-year average net income, total assets, sales, book value of equity, and number of employees. Each measure for size organized by D&P, gain to 25 portfolio ranks, with portfolio rank 1 being the largest and portfolio 25 being the smallest. Smoothed average premiums are presented here because they are considered a better indicator than actual historical observation for most portfolio groups. Exhibits A-1, A-4 and A-7.

⁽⁸⁾⁽⁹⁾ Adjustment for difference in historic equity (market) risk premium from 1963-2010 of 4.39% and forward estimate of ERP as of December 2010 equal to 5.5%. Source: Roger J. Grabowski, "Developing the Cost of Equity Capital: Risk-Free Rate and ERP During Periods of 'Flight to Quality,'" <http://www.duffandphelps.com/expertise/publications/pages/ArticleDetail.aspx?id=214&list=Articles>

⁽¹⁰⁾ Lawrence H. Officer and Samuel H. Williamson, "Annualized Growth Rate of Various Historical Economic Series," www.measuringworth.com, 2010. Inflation as of 2010; GDP as of 2010.

⁽¹¹⁾ Consensus Median Average, *The Livingston Survey*, Federal Reserve Bank of Philadelphia, June 2011, p. 4.

Editor's Note: I highly recommend that all financial experts who rely on Morningstar and Duff & Phelps data purchase these books/studies and thoroughly understand how the data are compiled and the data choices available.