Determining Discounts for Lack of Marketability

A COMPANION GUIDE TO THE FMV RESTRICTED STOCK STUDY™

To Our Readers:

It is our pleasure to present to you the second edition of The FMV Restricted Stock Study™. We hope you will enjoy this booklet, which is provided to users of our database at www.BVMarketdata.com℠. Before beginning to use the database, we would suggest that you take a moment to review the instructions provided at the end of the booklet.

The study has been designed to meet the needs of anyone who is charged with determining discounts for lack of marketability. When creating the study, we had one particular audience in mind: the expert who, charged with substantiating discount opinions with too little empirical data, finds that the opposing side has much more ammunition to use against him than he has for his defense.

On behalf of FMV Opinions, it is my pleasure to welcome you to browse through and analyze the results of many years of our research. We hope you will find our study useful and profitable.

Sincerely,

FMV Opinions, Inc.

Printed in the United States of America.

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I. Introduction

Since the introduction of the estate tax, valuators have recognized that the ownership of a minority interest in a privately held company is less liquid than an ownership position in a publicly traded company. Accordingly, it has long been accepted practice to take a discount from the "as-if" freely traded value indication to reflect the private company interest's lack of marketability. However, today's discount controversy lies not with the concept, but with the determination. Over time, five primary methods have arisen to aid the valuator in determining the now ubiquitous discount for lack of marketability. These primary methods are:

1) The Discount Allowed in Prior Court Cases;
2) The Benchmark Average Restricted Stock Discount Approach;
3) The Pre-IPO Approach;
4) The Quantitative Marketability Discount Model; and
5) The Restricted Stock Comparative Analysis Approach.

Over the prior ten-years, the Courts have become more demanding in the proof required to support a discount for lack of marketability. It is clear that the Courts are increasingly rejecting the first four of the standard discount methodologies and, instead, are requiring a comparative analysis between the subject company and the companies comprising a database of restricted stock transactions. In an effort to aid the valuation community in determining defendable discounts for lack of marketability, in 2001, FMV Opinions, Inc. ("FMV") introduced The FMV Restricted Stock Study™ ("FMV Study") which was licensed through Business Valuation Resources, LLC ("BVR"). The FMV Restricted Stock Study™ represented the largest database available to valuators for discount determination. Originally published with over 200 restricted stock transactions, The FMV Restricted Stock Study™ now comprises almost 500 transactions with over 40 distinct transaction company characteristics on which comparisons can be made.

Many subscribers to The FMV Restricted Stock Study™ database have been overwhelmed with the wealth of data. For users of The FMV Restricted Stock data, valid and necessary questions arise: Which data is most relevant? How should I interpret the data? What is the best way to use the data? How does FMV use the data? As valuation professionals appropriately dissect the data, many realized that significant time must be invested in order to make appropriate discount determinations: time that clients are generally not willing to pay for. As a result, some valuators invested the necessary time to understand and appropriately use the data, while others looked to other, less time-consuming, discount methodologies. Still other valuators inquired of FMV as to how it uses the data.

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.

II. A History of the Primary Approaches to Determine the Discount for Lack of Marketability

Discounts Allowed in Prior Court Cases

The sheer paucity of data available to the first valuators regarding how to determine a discount for lack of marketability was frightening. As a result, many valuators looked to the marketability discounts determined in prior Court decisions to support a reasonable discount for lack of marketability in a given situation. In fact, most initial challenges by the IRS regarding the discount for lack of marketability still contain a list of prior Court cases and the discount magnitude in each. Depending on what side of the debate the valuator is on, many appraisers tend to emphasize the discounts most suitable to their respective position.

However, through the passage of time, alternative discount valuation methodologies were introduced and the Discounts Allowed in Prior Court Cases approach to determine discounts has fallen out of favor. For the diehards who still rely on this approach, the *LeFrak* Court, echoing other prior decisions, stated "…we must remind the parties that the amount of discount must be decided on the basis of the record in the instant case, and not on what a court found reasonable in another case involving different evidence."[1]

While it remains appropriate for an attorney, in negotiations with the IRS over the magnitude of the marketability discount, to discuss discounts determined in prior Court cases, it is never appropriate for a valuation expert to utilize this approach in a formal appraisal.

Benchmark Average Approach

In 1971, with the publication of the Security and Exchange Commission's Institutional Investor Study, the valuator had a tool, based on empirical evidence, to aid her in determining the now ubiquitous discount for lack of marketability. The Institutional Investor Study examined private placement purchases of otherwise restricted stock of publicly traded companies that occurred between 1966 and mid-1969. This landmark study found that, on average, sales of restricted stock sold at a 24 percent discount to its otherwise identical publicly traded sister stock. It also found that the restricted stock discount was higher for companies having smaller revenue, assets and profits, and if the freely traded sister securities were traded "over-the-counter." For the first time, valuators could point to hard data involving actual "willing buyers" and "willing sellers" to support a discount for lack of marketability.

In fact, the Institutional Investor Study was the catalyst for the IRS's issuance of Revenue Ruling 77-287. Revenue Ruling 77-287 was specifically issued to value "securities that

[1] *Estate of Lefrak*, T.C. Memo. 1993-526 (November 16, 1993)

cannot be immediately resold because they are restricted from resale pursuant to Federal securities laws." The Ruling stated that no automatic formula could be used and that the discounts were a function of the company's earnings, net assets, sales, trading market and any resale agreement provisions.

The Institutional Investor Study marked the beginning of an explosion in other restricted stock transaction studies.[2] However, these studies generally differed from the Institutional Investor Study in three important ways. First, these subsequent studies lacked the detailed background of the Institutional Investor Study that would allow for an analysis of how the characteristics of a given company can influence the magnitude of the discount. Second, the studies involved a very limited number of transactions. Accordingly, even if a comparative analysis could be made, the conclusions would be based on a small data set. And, finally, the studies reported only the average discount. Important too many valuators, however, was these studies, uniformly arrived at substantially higher average discounts than the Institutional Investor Study. As a result, the Institutional Investor Study fell into disuse and valuators focused on the average 33 percent to 35 percent discount reported in the studies. This approach came to be known as the Benchmark Approach or the Benchmark Average Approach.

The following table excerpted from Shannon Pratt's *Valuing a Business: The Analysis and Appraisal of Closely Held Companies* shows the type of discounts arrived at over the years through various restricted stock studies.[3]

Restricted Stock Study	Years Covered	Average Discount
Institutional Investor Study	1966-1969	25.8%
Gelman	1968-70	33.0%
Trout	1968-72	33.5%
Moroney	Not Specified	35.6%
Maher	1969-73	35.4%
Standard Research Consultants	1978-82	45.0%
Willamette Management Associates	1981-84	31.2%
Silber	1981-88	33.8%
Management Planning	1980-96	27.1%

The above table is representative of the Benchmark Average Approach in that, other than the average discount, there are no other characteristics from which a comparative analysis with the subject company can be performed. Recently, the Benchmark Average approach has come under stark criticisms by the Courts. In an appeal for more detailed data, the *McCormick* Court stated, "Respondent relied on third party studies for her…base [discount]. We are unable to analyze the specifics of respondent's base."[4] In other words, the Courts are seeking "first party studies" with sufficient data underlying the discounts available so that the Court may ensure the valuator made appropriate comparisons.

[2] Gelman, Trout, Moroney, Maher
[3] Pratt, Reilly, and Schweis, 4th Edition, 2000
[4] *Estate of McCormick*, T.C. Memo. 1995-371 (August 7, 1995)

This complaint was echoed in *Peracchio* as the Court dismissed the discount determined by the use of the Benchmark Average approach stating, "…[The valuation expert] simply lists the average discounts observed in several such studies, effectively asking us to accept on faith the premise that the approximate average of those results provides a reliable benchmark for the transferred interests."[5] And *Temple* picked up the complaints of the *Peracchio* Court stating, "Rather than taking restricted stock sale data and explaining its relation to the gifted interests, [the Taxpayer's expert] simply listed the studies and picked a discount based on the range of numbers in the studies."[6]

The Mandelbaum Approach

In *Mandelbaum v. Commissioner*, both experts utilized the Benchmark Average Approach in support of their respective discounts. However, the Taxpayer's expert endorsed a 70- to 75-percent discount while the IRS's expert concluded a 30 percent discount.[7] Judge David Laro, one of the most knowledgeable of the Tax Court judges on valuation issues, disappointedly stated that he had "found limited refuge in the opinions of either expert…." As a variation on the Benchmark Average Approach, Judge Laro developed a nine-factor adjustment process to the Benchmark Average. These factors are:

1) Financial Statement Analysis;
2) Company's Dividend Policy;
3) Nature of the Company, Its History, Its Position in the Industry, and Its Economic Outlook;
4) Company's Management;
5) Amount of Control in Transferred Shares;
6) Restrictions on Transferability of Stock;
7) Holding Period for Stock;
8) Company's Redemption Policy; and
9) Costs Associated With Making a Public Offering.

While this nine-step approach was an improvement over the Benchmark Average Approach, the problem remained: without the underlying data, there is no real ability to assess the subject company against the unpublished (and therefore unknown) data underlying the discount averages. In fact, in *Mandelbaum*, one factor Judge Laro interpreted to require a lower discount was the subject company had audited statements. However, as all restricted stock is the stock of publicly traded companies, the statements of the restricted stock companies are most likely audited statements. Accordingly, in *Mandelbaum*, this factor should have been interpreted as "neutral," neither requiring an upward or downward adjustment.

At the end of the day, the so-called Mandelbaum Approach is merely a dressed up version of the Benchmark Average Approach.

[5] *Peracchio v. Commissioner*, T.C. Memo. 2003-80 (Sept. 25, 2003)
[6] *Temple v. U.S.*, No. 9:03-CV-165 (March 10, 2006)
[7] *Mandelbaum v. Commissioner*, T.C. Memo. 1995-255, affd. 91 F.3d 124 (3d Circuit, 1996).

Pre-IPO Approach

In the 1980's, John D. Emory[8] began publishing his annual Pre-IPO Discount Studies that examined the price differential between when a company goes public and prior stock transactions, as a private company, within five months preceding the "going public" date. The discounts observed between the private transaction and the going public price averaged around 45 percent; significantly higher than the restricted stock studies and almost double the Institutional Investor Study. Later, Willamette Management Associates began publishing its own version of the Pre-IPO transaction data, which reported generally larger discounts than the Emory study. In part because of the higher discounts in both the Emory and Willamette studies, many valuators adopted the use of the Pre-IPO Approach as their primary means of determining the discount for lack of marketability. Adding to the perceived benefit of the higher discounts, the Pre-IPO Studies also contained a deep and detailed set of company specific information from which a detailed comparative analysis could be performed between the subject company and the underlying data.

Everything appeared to be going well with the Pre-IPO Approach until 2003's *McCord v. Commissioner*.[9] The opposing expert in *McCord*, Dr. Mukesh Bajaj had co-authored an article which, in part, severely criticized the Pre-IPO Approach.[10] These criticisms included: Implausibly Large Discounts, Insider Transactions, and Sample Selection Problems. Regarding the implausibly larger discounts, Dr. Bajaj, et. al., noted that an investor buying Pre-IPO stock six-months prior to the going public date at a 45 percent discount translates into an annual internal rate of return of 231 percent for the investor. Bajaj, et. al., also noted that many of the Pre-IPO transactions involved service providers and other insiders, thus, he reasoned, the Pre-IPO price probably reflects, in part, compensation to these service providers and insiders. Moreover, the Pre-IPO studies only include companies that went public. Bajaj, et. al., observed that companies go public when their prospects are improving. Consequently, the Pre-IPO studies overstate the discount in that only successful (indicating a higher Pre-IPO discount) went public. According to Dr. Bajaj, "the IPO approach probably generates inflated estimates of the marketability discount. Consequently, it is of limited use in estimating the value of closely held companies."

Based on the testimony of Dr. Bajaj, the *McCord* Court, in an en banc decision,[11] concluded "Dr. Bajaj [the IRS's Expert] offers a compelling criticism of the [Pre-IPO] studies….Dr. Bajaj has convinced us to reject as unreliable [the Taxpayer's Expert] opinion to the extent it is based on the [Pre-] IPO approach." In 2006, the *McCord* Court was overturned by the Fifth Circuit on a technicality and can no longer be cited as binding precedence. However, the Fifth Circuit also stated, "Our failure to address [the discount issue] should not, however, be viewed as either agreeing or disagreeing with the

[8] A valuation expert originally with Robert W. Baird & Co. where he began his Pre-IPO studies, and now President of Emory Business Valuation, LLC.
[9] *McCord v. Commissioner*, 120 T.C. No. 13 (May 14, 2003)
[10] Bajaj, Denis, Ferris & Sarin, "Firm Value and Marketability Discounts," 27 J. Corp. L. 89
[11] An en banc decision is where the entire Tax Court comes together to decide on issues of particular importance and controversy. In *McCord*, one of the items of controversy was the Pre-IPO Discount Approach. While the *McCord* Court had many descents, not one descent dealt with the Court's rejection of the Pre-IPO Approach.

Majority's determination on this point. Rather, as shall be shown, we have no need to reach it." Accordingly, the Tax Court's hostility to the Pre-IPO Approach as reflected in *McCord* remains a valuator's best indication of how the Tax Court, in its entirety, views the Pre-IPO Approach.

Also, importantly, on January 29, 2007, the IRS issued new "Appeals Settlement Guidelines" ("IRS Guidelines"), that address when to apply §6662 penalties. The IRS Guidelines state "The application of the §6662 penalty may be seen in the following examples." Then in Example #2, the IRS states "An independent appraiser is retained and, using an IPO approach…concludes that a lack of marketability discount of …applies." In other words, merely using the Pre-IPO approach may lead to §6662 over- and under-valuation penalties. This decision of the IRS is exacerbated by the greater valuation penalties that may be imposed under the Pension Protection Act of 2006 and the potential of "disbarment" under the Act.

Quantitative Marketability Discount Model

In the mid-1990's, Z. Christopher Mercer, an appraiser based in Tennessee, published a number of books and articles espousing the use of what he names the Quantitative Marketability Discount Model ("QMDM"). The QMDM is a simple discounted cash flow model. "The QMDM is an economic model that attempts to relate the present value of the future returns of an investment in the form of distributions and capital appreciation to the amount an investor is willing to pay for the investment. The QMDM incorporates various factors, including: The expected distribution yield (i.e., the expected annual return through distributions), the expected growth rate of value (i.e., the expected growth in the underlying asset value), the required holding period return (i.e., the rate of return on similar investments), and the assumed holding period."[12]

The QMDM has been the subject of much controversy and criticism.[13] In addition, the Courts have been uniformly unimpressed with the QMDM, with each successive Court opinion displaying a greater and greater hostility toward the QMDM. In *Mandelbaum*, the Court rejected the conclusions arising from the Taxpayer's expert's use of the discounted cash flow forerunner to the QMDM, stating "we have problems with many of the assumptions…relied on to determine the marketability discount."[14]

The next Court to address the QMDM was the *Estate of Weinberg*.[15] In *Weinberg*, the IRS's expert utilized the QMDM to determine a 15 percent discount for lack of marketability. As expressed by the *Weinberg* Court, "We disagree with the discount computed by [the IRS's expert] on the basis of the QMDM model…. …we did not find the QMDM helpful…."

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[12] *Estate of Weinberg*, T.C. Memo. 2000-51 (February 15, 2000)

[13] Also see Hall, *Three Strikes and You're Out*, The Journal of Practical Estate Planning, August/September 2006; Hall, Eckstein and Robak, *The Case of the Black-Box vs. Empirical Data*, Valuation Strategies, July/August 2002; Tabak, *A CAPM-Based Approach to Calculating Illiquidity Discounts*, NERA Economic Consulting, Marsh & McLennan Companies, November 11, 2002; Bajaj, Denis, Ferris and Sarin, *Firm Value and Marketability Discounts*, 27 J. Corp. Law 89 (Fall 2001)

[14] Supra at 2.

[15] *Estate of Weinberg*, T.C. Memo. 2000-51 (February 15, 2000)

A year later, the *Janda* Court released its opinion rejecting the QMDM.[16] In *Janda*, the Taxpayer's expert used the QMDM to determine a 66 percent discount for lack of marketability. The Court disapprovingly noted the wide range of discounts possible under the QMDM. In fact, in a 2006 presentation, Mercer Capital presented a table that showed a range of holding periods from 1 year to 30 years across the top and discount rates ranging from 16 percent to 24 percent on the left. The possible discounts for lack of marketability resulting from these combinations ranged from 1.7 percent to 92 percent.[17] According to the *Janda* Court, "…we have grave doubts about the reliability of the QMDM model to produce reasonable discounts…."

It is important for the reader to note that the Court chooses its words carefully. The Court stated it had "grave doubts" about the QMDM. The first definition of "grave" when used as an adjective in Webster's Dictionary (on-line version) is "obsolete". In addition, "grave" as an adjective means something that is "likely to produce great harm or danger."

Finally, in 2006, the Court closed the door on the QMDM by stating, for a privately held equity interest, "…the Court finds it is inappropriate to assume a particular holding period for the hypothetical willing buyer."[18] This is a fatal blow to the QMDM for the determination of private equity discounts as the QMDM is inoperable without an assumed "holding period."

Despite the universal rejection by the Courts and considerable published criticisms of the QMDM, the QMDM continues to have vocal and combative proponents.

Restricted Stock Comparative Analysis Model

We have now observed that the Courts are increasingly skeptical of the traditional means of determining discounts for lack of marketability: the Benchmark Average Approach; the Pre-IPO Approach, and the Quantitative Marketability Discount Model. It is important to note, however, in *Temple v. U.S.*, the Court was faced with three different discount approaches: the Benchmark Average Approach; the QMDM and the Restricted Stock Comparative Analysis Approach. The *Temple* Court rejected both the Benchmark Average Approach and the QMDM. However, the *Temple* Court responded favorably to the Restricted Stock Comparative Analysis Approach ("RSCAA"). Regarding RSCAA, the Court stated, "As for the lack of marketability discount, the Court finds [the IRS's expert's] methodology to be correct. …The Court finds reliability in the fact that [the IRS's expert] endeavored to understand and incorporate the market dynamics of restricted stock sales." …. "The better method is to analyze the data from the restricted stock studies and relate it to the gifted interests in some manner, as [the IRS's expert] did."

Accordingly, the Courts have come to a conclusion: The preferred discount methodology is the Restricted Stock Comparative Analysis Approach. In order to use this approach,

[16] *Janda v. Commissioner*, T.C. Memo. 2001-24 (February 2, 2001)
[17] Mercer, Chris, "Discounts for Lack of Marketability, The Debate Continues," BV Resources, May 30, 2006, pg. 18.
[18] *Temple v. U.S.*, No. 9:03-CV-165 (March 10, 2006)

two things are necessary: (1) a sufficient database of restricted stock transactions, including specific characteristics of the underlying companies, and (2) an in-depth understanding of restricted stock and its governing Rule 144.

III. Understanding Restricted Stock and Rule 144

In order to effectively use The FMV Restricted Stock Study™ and to understand The FMV DLOM Analyzer™, it is important the valuation expert understands what restricted stock is and how it can become liquid. The term "restricted stock" is often used synonymously with "unregistered stock" or "letter-stock," and most of the available restricted stock studies involve private placements of unregistered stock. The stock is typically not restricted from resale by contractual arrangement between buyer and seller, but rather by the securities laws and regulations thereunder.

After the stock market crash of 1929 which is widely credited with leading to the Great Depression, the Federal government sought ways to prevent the crash from happening again. One important concern was the manipulation of stock prices through the buying and "dumping" of large blocks of stock. While the government understood that periodically legitimate long-term investors may want to sell their shares, the government sought to limit the ability of short-term speculators to do the same. Accordingly, the passage of The Securities Act of 1933, the government sought registration for any transaction in almost any security, unless an exemption from resale could be found under the Act. Every sale of a security, even in the public markets, must either be a registered transaction or an exempt transaction in order to avoid violating the Act. Private placements are exempt under Section 4(2) of the Act. The exemption most commonly used for resale of unregistered stock in the public markets is Section 4(1) – transactions not involving issuers, underwriters, or dealers. The language in Section 2(11) defining an underwriter is quite broadly worded to include anyone who participates in a distribution or who "has purchased from an issuer *with a view to* … distribution" (emphasis added). Anyone who purchases securities from an issuer in a private placement, for example, and then wishes to sell the stock to the public, will need to show that he or she is not an underwriter in order to qualify for this exemption from registration.

Early History of Restricted Stock: Subjective Intent

Before the adoption of Rule 144, when the SEC and the Courts needed to prevent the resale of unregistered securities, they were required to delve into the subjective intent of the purchaser to reach a conclusion. In other words, they needed to ascertain that the purchaser did not buy stock with a view to distribute it. Otherwise the registration requirements of the Act could have been avoided through a two-step public distribution: a private sale from the company to an investor exempt under Section 4(2), followed by an immediate resale to the public exempt under Section 4(1). Over time, this subjective test evolved in the courts into a complicated set of rules, focusing on how long the purchaser had held the securities and whether the purchaser had undergone a change of circumstances that might force a sale. Needless to say, unregistered securities had severely limited marketability under this regime.

Rule 144: Objectivity

This complex and unpredictable situation was unsatisfactory to issuers, investors, and the SEC alike. Consequently, in January 1972, the SEC adopted Rule 144 as an objective safe harbor for the resale of restricted securities and securities held by an affiliate of the issuer (an executive, for example). The result was an improvement in the liquidity of restricted stock as the rules surrounding resale became significantly more predictable.

To prevent a seller from purchasing unregistered securities with a view to resale, Rule 144 requires a holding period of some length of time. Under the original version of the rule, all unregistered securities had to be held for at least two years, measured from the time the securities were purchased from the issuer or an affiliate, before any resale. After the initial holding period, unregistered securities could be sold only by complying with certain "dribble out," or volume limit provisions of the Rule. According to these provisions, the total amount of securities sold in any three month period, to qualify for the exemption, could not exceed more than one percent of the total number of the company's outstanding shares or the average weekly reported trading volume during the four weeks preceding such sale. Alternatively, the restricted stock could be sold off the market to another "accredited" investor. Furthermore, the issuer had to have filed all reports (financial and other) required by the SEC and the seller of the restricted stock had to comply with the manner of sale and notice requirements of the Rule.

Rule 144 (k)

In 1983, Rule 144 (k) was added as an amendment, improving the liquidity of restricted stock. It specifies that any person or entity, not an affiliate of the issuer, could sell all remaining securities without volume limits after a holding period of at least three years. The three-year limit is measured from the securities' purchase date. Normal tests apply to determine whether or not an owner is an affiliate. These tests include evidence of any actual control exercised, board seats held, management responsibilities, and the percentage of ownership held by the owner of the restricted stock. (The definition of an affiliate is similar to, but not the same as, the definition of an "insider" under Section 16).

The 1990 Amendment

In 1990, the "tacking" concept of Rule 144 was amended. Prior to the amendment, if a purchaser of restricted stock were to sell his holdings in a privately negotiated transaction (not in the public markets), the required holding period would "restart." The amendment allowed the purchaser of restricted stock to "tack" the holding period of the previous owner (or owners) of these securities to his own holding period, as long as the previous owner was not an affiliate of the issuer. The 1990 amendment also had the effect of increasing the liquidity of restricted stock. Furthermore, the outgrowth of new financial derivatives and trading techniques has similarly impacted the "market" for restricted stock.

The 1997 Amendment

In February, 1997, Rule 144 was again amended to improve the marketability of restricted stock. This time, the rule was amended to shorten the initial holding period from two years to one year and the ultimate holding period for non-affiliates from three years to two years. It is important to note that The FMV Restricted Stock Study™ was performed on transactions taking place both before and after the 1997 amendment.

Rule 144 has become the resale exemption of choice for unregistered and insider-held securities, in particular after the 1983-97 amendments, although other exemptions may be available in certain circumstances. Rule 144 is nonexclusive, and facts and circumstances may allow the Section 4(1) exemption to be used, even though the requirements of Rule 144 have not all been satisfied.

Liquidating Restricted Stock Positions

The owner of restricted stock that wishes to liquidate his position prior to the end of the holding period has several options for doing so, including:

1. Persuading the issuer to register the stock. The restricted stock owner may have obtained this option when negotiating the securities purchase agreement(s) for the private placement (see below: Registration Rights Agreements);
2. An outright sale of the position to an "accredited" investor in most cases. There are "accredited" investors that specialize in purchasing positions in restricted stock at a discount;
3. A hedging transaction where an institution will first write a "collar" on the stock to remove most of the economic risk of the restricted stock position, then lend aggressively against the hedged position; Purchasing a collar means purchasing a put option and writing a call option on the same security. Such a hedging transaction has a cost to the investor and is limited to small share blocks in securities which are widely traded, having significant liquidity and option activity.

Both the hedging and sales transactions described above are practicable mostly for highly liquid stocks, where publicly traded options are available and/or short selling is possible. Prime candidates for such transactions are companies with market capitalization in excess of $500 million and companies whose stock trades relatively actively, more than 100-200 thousand shares per day. The majority of companies in The FMV Restricted Stock Study™ and other published restricted stock studies are not large and liquid enough to be good candidates for such hedging or sale transactions.

Registration Rights Agreements

Even though the resale limitations under Rule 144 have been reduced somewhat over the years, investors still often look for the issuer in a private placement transaction to provide them with a possible liquidity event prior to the end of the holding period. Consequently, investors often require, and issuers often grant, some form of a registration rights

agreement to be signed, either as part of the stock purchase agreement or as a separate side agreement thereto. These registration rights provisions typically require the company to do one of two things:

(1) register the shares or a portion of the shares within some specified time-frame, at either the company's or the investor's expense ("demand registrations"); or,
(2) include the shares or a portion of the shares in any future public offerings that the company makes, if any ("piggyback registrations").

Clearly, the presence of a registration rights agreement tends to improve the liquidity of restricted stock. However, there is no "standard" registration rights agreement and it is difficult to gauge the precise impact that a particular registration rights agreement will have on the marketability of a stock issue, or on the discount for lack of marketability. It is safe to say, however, that any block of restricted stock, with or without registration rights, is less liquid than fully registered unrestricted shares of the same issuer.

Other Forms of Restricted Stock: Rule 145

In certain types of business combinations, while most shareholders receive unrestricted stock, affiliates of the target company will typically receive unregistered stock as well. This stock is restricted from resale, but not under Rule 144. Rule 145, which governs resale of these securities, subjects the owner to the same restrictions as Rule 144 with regard to volume limitations, manner of sale, and reporting requirements, but not the holding period and notice requirements. Furthermore, for non-affiliates (of the surviving entity), all requirements are lifted after one year. Thus, Rule 145 restricted stock is typically more marketable than Rule 144 stock.

IV. The FMV Restricted Stock Study™: Methodology

The FMV Restricted Stock Study™ is a database that FMV Opinions began compiling when the firm was founded in 1991. It includes transactions from 1980 to 2005. Over the years, the number of transactions in our database has grown to almost 500 transactions, in the most current release (2006). (And, as this database is periodically added to, the database will only grow over time.) As far as we know, this is the most comprehensive restricted stock transactions database available anywhere.

The transactions in the study were discovered through searches using a number of sources, including: Security Data Corporation; EDGAR; Dow Jones News Retrieval; Disclosure CompactD; and, S&P Corporate Transactions Records.

Overall, FMV staff reviewed thousands of transactions during the construction of the study. Transactions were eliminated from the study for the following reasons:

1. The transaction was not a private placement, or was announced and later withdrawn;
2. The stock was not traded on a domestic exchange;
3. The stock traded below $1 for the entire month of the transaction;
4. Significant pieces of information were unavailable, to the extent that we were unable to determine the private placement discount. This includes issues where we were unable to determine the reference market price for the fully liquid shares, where the private placement transaction price was unavailable, or issues where only net transaction proceeds to the issuer was reported publicly (net of unknown transaction costs and fees);
5. The transaction was not a "plain vanilla" common stock issue. The stock was either preferred stock, convertible preferred stock, or some kind of hybrid equity-derivative security; or it was issued as part of a stock-warrant unit or had units attached; or detachable units, warrants, or options were issued with the common stock;
6. There were special contractual arrangements between buyer and seller limiting either the economic upside or downside of the buyer;
7. The stock was issued in connection with a merger or acquisition, in exchange for services, or in connection with any other transaction that could cast doubt on what the fair market value of the restricted stock was; and
8. The stock was registered and became fully marketable either prior to the transaction or within thirty-days of it.

This "cleaning" process eliminated over 90 percent of the transactions reviewed, leaving the current database of almost 500 plain vanilla private placements of restricted common stock.

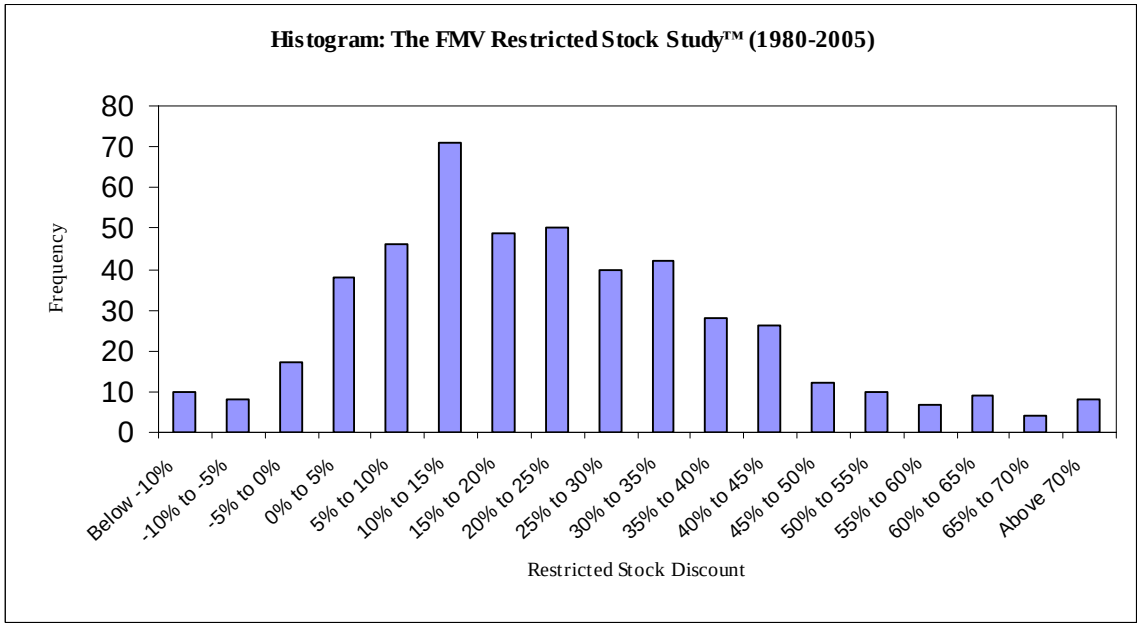
The discount was calculated by dividing the difference between the restricted stock price and the market reference price by the market reference price. The market reference price in The FMV Restricted Stock Study™ is the average of the highest and lowest price for the month of the transaction (the Study only specifies the month of the transaction, not the exact transaction date). (However, information is available to the subscriber should the subscriber wish to use the month prior or subsequent month price.)

There is some controversy in the literature on what the most appropriate market reference price is. Our position is similar to the position taken by Hertzel & Smith in their study, reviewed in Chapter 3 of this booklet. As pointed out in their study, the market reaction to a private placement tends to be positive. Rational investors, knowing that a particular market reaction is expected as a result of a transaction announcement, would tend to take this market impact into account when estimating his or her reference market price. If the ex-post market impact is an unbiased indication of ex-ante expectations, and if the chosen market reference price is an unbiased estimate of the "impacted" market price, then our market reference price selection should not introduce significant bias into our discount calculations.[19] However, the user of The FMV Restricted Stock Study™ should be aware that this, as with most economic data, includes random error.

[19] Clearly, there are numerous potential sources of error introduced by this method of determining the reference price. However, the errors should cancel out over larger samples and not persist in the averages, or impact the conclusions of the analysis. We have determined average discounts using other methods of determining the reference price, including the closing price for the month of the transaction. The average discount was not significantly different using these two methods. The method used is the one we believe is the most likely to minimize both bias and random errors.

V. The FMV Restricted Stock Study™: Overall Sample Description

The overall average discount for the 475 transactions (in its most current release – 2006) in The FMV Restricted Stock Study™ is 22.25 percent and the median discount is 19.45 percent. The sample distribution is shown in the histogram below:



As evident from the illustration, the discounts vary significantly throughout the sample. Clearly, with the wide distribution of discounts, relying on "benchmark" averages when determining a marketability discount is not advisable.

The table below provides collective detail from each of the transactions in The FMV Restricted Stock Study™ over time. As is evident from the table, a significantly larger number of transactions were available for the last 7 years of our study than for similar time periods in prior years. This may indicate that either: (1) transaction data has become more readily available beginning in the 1990s; (2) that a greater number of private placements of restricted stock have taken place after the change in Rule 144 in 1990, or (3) the change from a two-year holding period to a one-year holding period brought more buyers and sellers into the marketplace resulting in more liquidity (see Chapter 2). [20]

[20] The data for this table excludes transactions with registrations rights and transaction premiums resulting in a total sample size of 327 transactions.

Time Period	No. Trans.	Market Value $	Block Size	Discount
2004-05	26	185,938	12.8%	20.89%
2002-03	21	109,496	9.6%	20.72%
2000-01	30	154,737	8.8%	34.55%
1998-99	51	78,952	8.7%	32.47%
1996-97	26	439,117	13.9%	24.60%
1994-95	45	119,137	12.2%	21.80%
1992-93	49	81,537	12.5%	24.78%
1990-91	21	96,818	10.0%	19.78%
1988-89	9	212,222	9.1%	23.46%
1986-87	20	62,863	14.7%	24.16%
1984-85	15	68,870	9.4%	21.30%
1982-83	10	67,264	10.3%	20.98%
1980-81	4	196,108	12.3%	31.31%

The chart above indicates that, by time frame, the data can be divided into two distinct groups: The Discount Above Normal Group and The Discount Normal Group. The Discount Above Normal Group includes the years 1980 – 1981 (31.31 percent discount) and 1998 – 2001 (32.47 percent to 34.55 percent discounts).

It is interesting to note that the higher discounts reflected in the Discount Above Normal Group overlaps periods of economic instability and financial uncertainty. The 1980 – 1981 time period was a time of high inflation. In March of 1981, President Ronald Reagan was shot. In 1981, one of the sharpest recessions in memory began. Inflation was running at 14 percent.[21] The 1998 – 2001 period begins with the Russian currency crisis which led to the collapse of the hedge fund Long-Term Capital. This was soon followed by the dot-com euphoria, collapse and recession. The uncertain time frame was further compounded by the events of September 11, 2001.

Importantly, the higher discounts reflected in the 1998 – 2001 time frame occur despite the dramatic increase in liquidity for restricted stock arising from the change in the holding period under Rule 144 from two-years to one-year. Under normal conditions, given the lower holding period, one would have expected lower discounts, not higher discounts.

As shown in the table below, the average and median discounts do not appear to vary significantly based on the SIC code of the companies in the study.[22] This is not a surprising result. The industry of a company, while important to determining market multiples, should not in itself have a significant impact on the marketability discount. Rather, the main determinants of the lack of marketability discount are the financial risk characteristics (size, profitability, distributions, etc.) of each firm and the degree of liquidity of the security. Indeed, the most likely explanations for the differences we see are differences in financial characteristics between the industry groups. For example, the industry group with the highest median discount, SIC 7000-7999 (28.9 percent) has a

[21] Julie Wolf, "The 1982 Recession," American Experience
[22] Supra at 20

prevalence of technology firms which generally have much higher stock price volatility. The industry group with the lowest median discount is SIC 5000 – 5999. This SIC code is dominated by wholesalers and retailers. We believe the low discount indicated here is a result of the limited sample size – 15 transactions – then a reflection of the industry group itself. The most important implications for marketability discounts for private companies from the FMV Study are (1) the impact of financial risk on the discount and (2) the discount differential between large and small blocks of restricted stock [large blocks are less liquid than small blocks under the dribble-out provisions of Rule 144 (liquidity risk)].

For these reasons, when we determine the *restricted stock equivalent discount* for the subject entity, we use financial risk and liquidity characteristics rather than industry classification for selecting the companies in the FMV Study that we consider the most comparable to the subject entity.

SIC Range	1000's	2000's	3000's	4000's	5000's	6000's	7000's	8000's
No. Transactions	27	39	94	22	15	60	38	32
Average Discount	24.7%	23.5%	26.2%	21.5%	13.2%	21.5%	31.4%	24.7%
Median Discount	22.9%	17.8%	23.6%	17.5%	13.1%	17.8%	28.9%	23.7%

A comparison between exchange-traded and over-the-counter traded equities shows slightly higher discounts for over-the-counter traded securities. The median discount for exchange-traded securities is 18.55 percent, while the median discount for over-the-counter traded securities is 19.64 percent.

VI. The FMV Restricted Stock Study™: Results

The following section will examine The FMV Restricted Stock Study™ in some detail, providing discount estimates for sub-samples based on variables that are believed to be associated with either the risk of the firms in the study or with the liquidity of the privately placed stock.

The Overview: Importance of Risk and Liquidity

The impact of risk on the marketability discount is significant. Smaller, less profitable entities, with a higher degree of balance sheet risk, will tend to have higher discounts. The following table provides a firm characteristic comparison between high-discount transactions and low-discount transactions. The sample is divided into 5 quintiles, based on the distribution of the restricted stock discount, and medians are computed for each group across all parameters.

Quintile	1	2	3	4	5
Discount	**1.6%**	**11.3%**	**19.4%**	**30.4%**	**46.2%**
Market Value	116,090	101,712	72,677	48,937	26,819
Volatility	68.5%	68.8%	72.5%	83.9%	108.9%
MTB Ratio	4.25	5.00	4.71	7.99	8.17
Total Assets	49,379	41,780	22,367	10,716	6,866
Book Value	27,467	19,139	12,063	5,745	3,266
Revenues	18,108	23,501	12,436	5,670	4,168
Percentage Block Size	8.4%	9.8%	10.6%	6.9%	13.7%
Price per Share	$9.63	$8.00	$6.75	$4.00	$2.80

As shown in the table above, both market capitalization and total assets tend to decrease as the discount increases, revenues tend to decrease and the market-to-book ratio tends to increase as the discount increases. Higher risk, which is associated with lower firm size and higher market-to-book ratios, tends to increase the discount. As further detailed in the table above, the median block size is significantly greater for the top quintile discount transactions. Larger blocks as a percent of total shares outstanding tend to take longer to sell under Rule 144 and, thus, are less liquid than smaller blocks, leading to greater private placement discounts. The discount also increases significantly with decreasing stock prices. Price per share is an indicator of firm size and stock price risk. It can also be an indicator of market liquidity. If the stock price drops below certain thresholds ($5 for NYSE stocks, $1 for Nasdaq stocks), the stock is in danger of being de-listed, as many shareholders of dot-com firms learned when the bubble burst. In the remainder of this chapter, when analyzing the impact on the discount of variations in specific variables, we will explore the link between the private placement discount and the risk and liquidity of the block of restricted stock placed.

Registration Rights. As previously discussed in this booklet (Chapter 2), when restricted stock is issued subject to a registration rights agreement, this may allow resale of the restricted stock position prior to the end of the Rule 144 holding period. Thus, stock issued with registration rights tends to be more marketable than typical restricted stock and -- *all else being equal* -- should be sold at a lower discount. As shown in the table below, in The FMV Restricted Stock Study™, however, shares issued with registration rights do not have lower discounts than shares issued without such rights:

	No. Trans.	Market Value	Block Size	Discount	St. Dev.
All Transactions	475	162,566	11.4%	22.0%	19.4%
Without Registration Rights	225	168,194	11.4%	21.3%	16.6%
With Reg. Rights	119	170,151	13.1%	20.1%	19.5%
Insufficient Data ("M")	131	145,847	10.0%	24.7%	23.1%

Note: market values, block sizes, and discounts are averages across the samples.

The average discount is only slightly lower for the transactions with registration rights than for the transactions without such rights. The smaller market values and larger block sizes of the transactions in this sub-sample may explain the seeming anomaly. As discussed below, large block-size transactions and transactions in smaller, riskier firms are made at higher discounts. Also, it is important to note that registered blocks representing more than 10 percent of the public company's total shares outstanding are also restricted under the dribble-out provisions of Rule 144. We believe these factors are the most likely reason for the anomaly seen in the table above.

In the database, there are some transactions that were not clearly indicated as being registered or unregistered. In general, if a placement is registered, we believe that this is an important piece of information that is likely to be reported. Also, given the sizeable discount of the "Insufficient Data" sort, we believe the vast majority of these are unregistered placements.

Stock Price. The pre-transaction price per share of the firm is strongly correlated with the average and median discounts, as shown in the table below:

	Price Per Share			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	$80.0	$17.0	$28.5	53.2%	0.0%	16.0%	13.5%	12.6%
Top Quintile	80.0	11.5	20.9	64.2%	0.0%	18.4%	13.7%	15.2%
Second Quintile	11.3	7.0	9.0	61.5%	0.0%	18.8%	14.5%	13.0%
Third Quintile	7.0	4.2	5.5	84.3%	0.0%	25.4%	24.1%	16.9%
Fourth Quintile	4.1	2.0	3.1	62.2%	0.0%	26.6%	25.9%	14.8%
Bottom Quintile	2.0	0.4	1.3	91.3%	0.0%	37.2%	34.8%	20.6%
Bottom Decile	1.3	0.4	0.9	91.3%	0.0%	43.2%	38.2%	21.2%

As is apparent from the above table, the discount increases significantly with decreasing stock prices, in particular for stocks trading below $10. Price per share is an indicator of size and firm risk. Furthermore, if the stock price drops below certain thresholds ($5 for NYSE stocks, $1 for Nasdaq stocks), the stock is in danger of being de-listed. The

average discount for all issues trading below $5 is 31.8 percent and the median discount for this group of stock issues is 30.4 percent.

Company size

Firm size can be measured across many different parameters. Larger firms are less risky than smaller firms are in general. Therefore lower discounts are expected for larger firms.

Market Value. The market capitalization of the firm is strongly correlated with the average and median discounts. As shown in the table below, investors tend to require higher discounts when acquiring restricted shares from smaller, riskier firms than from large-capitalization firms:

	Market Value ($Mil)			Discount				
	High	**Low**	**Average**	**High**	**Low**	**Average**	**Median**	**St. Dev.**
Top Decile	$5,726.1	$239.5	$762.0	64.2%	0.0%	19.9%	15.7%	14.3%
Top Quintile	5,726.1	140.5	465.7	64.2%	0.0%	17.1%	12.8%	13.7%
Second Quintile	139.7	83.8	108.2	84.3%	0.0%	21.6%	20.0%	15.0%
Third Quintile	83.1	40.1	59.1	70.0%	0.0%	24.3%	23.4%	14.4%
Fourth Quintile	39.5	21.0	29.2	81.0%	0.0%	32.3%	30.9%	21.3%
Bottom Quintile	19.8	2.0	11.5	91.3%	0.0%	31.2%	31.6%	18.0%
Bottom Decile	10.5	2.0	7.4	72.4%	0.0%	33.9%	35.3%	18.1%

Both the median and average discount increases from the top quintile to the bottom decile. In particular, discounts for firms in the fourth and fifth quintile, and tenth decile are very high. The average discount for all transactions in firms smaller than $50 million is 31.3 percent; the median discount for this sub-sample is 30.9 percent. When using this statistic for current valuations, however, note that market capitalizations have increased significantly during the time-frame analyzed in The FMV Restricted Stock Study™ – so a company which appeared relatively large several years ago would appear smaller today, relative to the universe of publicly traded firms.

Revenues. Significant revenues indicate that a firm is large and has developed products or services that have found acceptance in the market place. Thus, higher revenues are normally associated with lower discounts, as shown below:

	Revenue ($Mil)			Discount				
	High	**Low**	**Average**	**High**	**Low**	**Average**	**Median**	**St. Dev.**
Top Decile	$1,791.4	$119.2	$398.6	53.2%	0.0%	17.6%	16.1%	12.9%
Top Quintile	1,791.4	45.5	227.3	91.3%	0.0%	19.6%	16.1%	15.1%
Second Quintile	44.3	12.5	23.7	84.3%	0.0%	21.5%	14.5%	17.5%
Third Quintile	12.5	4.7	8.7	59.2%	0.0%	23.4%	21.6%	14.5%
Fourth Quintile	4.6	0.6	2.3	70.0%	0.0%	31.7%	27.1%	17.0%
Bottom Quintile	0.6	0.0	0.2	81.0%	0.0%	30.3%	28.2%	20.4%
Bottom Decile	0.1	0.0	0.0	70.4%	0.0%	26.5%	26.8%	18.4%

Despite many of the companies in the FMV Study comprising development stage companies (high market value, low to no revenue and losses), in general, the higher the

revenue the lower the discount. For firms less than $10 million in revenue the median discount was 29.6 percent and the median discount 27.0 percent.

Total Assets. Another indicator of firm size is the total assets of the firm, and is strongly correlated with the average and median discounts. This is illustrated below:

	Total Assets ($Mil)			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	$12,471.4	$173.0	$1,699.8	84.3%	0.0%	21.8%	18.4%	17.9%
Top Quintile	12,471.4	67.9	874.5	84.3%	0.0%	16.4%	12.8%	14.3%
Second Quintile	67.4	23.9	42.8	91.3%	0.0%	18.0%	13.0%	15.3%
Third Quintile	23.7	9.4	15.2	70.9%	1.7%	25.0%	23.1%	14.2%
Fourth Quintile	9.4	4.0	6.8	70.0%	0.0%	30.5%	28.9%	16.7%
Bottom Quintile	4.0	0.0	2.3	81.0%	0.0%	36.5%	35.1%	18.9%
Bottom Decile	2.5	0.0	1.3	81.0%	0.0%	41.1%	38.0%	20.8%

As is evident from this table, the discount increases from the top quintile to the bottom decile. Significant assets appear indicative of a lower discount. This is because firms with a significant asset base are both relatively large and have lower balance sheet risk. The average discount for companies with less than $10 million in total assets in the Study had an average discount of 33.2 percent and a median discount of 31.8 percent.

Book values may also indicate a low discount and are discussed in the following section.

Book Value. Firms with high shareholders' equity tend to have particularly low discounts when placing shares privately, as shown in the table below:

	Shareholders' Equity ($Mil)			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	$789.4	$55.0	$198.8	53.2%	0.0%	16.0%	12.0%	12.6%
Top Quintile	789.4	33.2	117.5	84.3%	0.0%	15.2%	12.2%	13.8%
Second Quintile	32.3	10.9	20.1	64.2%	0.0%	19.7%	15.8%	12.4%
Third Quintile	10.6	4.0	6.8	91.3%	0.0%	28.9%	27.1%	18.9%
Fourth Quintile	3.9	1.5	2.7	61.5%	2.3%	30.1%	33.3%	14.7%
Bottom Quintile	1.4	(84.6)	(2.8)	81.0%	0.0%	32.5%	30.2%	20.6%
Bottom Decile	0.2	(84.6)	(6.6)	81.0%	3.0%	31.8%	28.6%	22.1%

As expected, discounts are significantly lower for firms demonstrating significant book value, despite the fact that most publicly traded companies trade at prices significantly above book value. In this data sort, the discounts tend to flatten out by the fourth quintile. For firms showing negative book value the average discount was 32.6 percent and the median discount was 27.3 percent.

Balance Sheet Risk: The Market to Book Ratio

MTB Ratio. We use the market-to-book (MTB) ratio as a direct measure of balance sheet risk. A high MTB ratio indicates that the firm has a low asset base relative to its market value. The MTB of the firm is also correlated with the average and median discounts, as shown below:

	MTB Ratio			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	800.14	35.24	168.97	70.4%	0.0%	29.3%	28.4%	18.4%
Top Quintile	800.14	15.02	93.79	70.4%	0.0%	28.7%	27.1%	15.6%
Second Quintile	14.98	6.71	10.02	72.4%	0.0%	28.6%	27.3%	17.2%
Third Quintile	6.63	3.89	5.16	65.4%	0.0%	22.0%	18.7%	15.8%
Fourth Quintile	3.84	1.72	2.73	84.3%	0.0%	20.6%	17.5%	16.0%
Bottom Quintile	1.71	(16,858.41)	(433.30)	91.3%	0.0%	26.5%	22.1%	21.6%
Bottom Decile	0.59	(16,858.41)	(895.08)	81.0%	0.0%	31.1%	27.3%	22.5%

This ratio is an important addition to the analysis because it represents an indication of balance sheet risk that is not directly associated with firm size. Thus, is can be regarded as a "purer" indication of balance sheet risk. As can be observed in the above data sort, companies having negative book values (and thus negative market-to-book value ratios) have considerably greater discounts than those companies with a market-to-book value ratio of 1.0. The median discount for companies with a market-to-book ratio between 1.0 and 2.0 was 13.0 percent. On the other hand, companies with market-to-book ratios above 10.0 times had a median discount of 27.8 percent. Clearly, for firms with lower levels of balance sheet risk, the required discount for a private placement of restricted stock is lower. In addition to firm size, balance sheet risk is a determinant of firm risk and has an impact on the discount.

Volatility. While a market-to-book value ratio is perhaps easiest to ascertain for a private company, another measure of risk is the volatility of stock price returns. The FMV Restricted Stock Study™ indicates volatility, as measured by standard deviation of stock price is particularly important as is seen in the following table:

	Volatility			Discount			
	High	Low	Average	High	Low	Average	Median
Top Decile	2024.7%	145.3%	298.2%	91.32%	0.0%	45.7%	46.4%
Top Quintile	2024.7%	112.9%	213.2%	91.32%	0.0%	41.3%	38.2%
Second Quintile	112.8%	85.0%	99.2%	58.97%	1.9%	27.6%	28.4%
Third Quintile	83.9%	71.3%	77.0%	64.19%	0.0%	20.7%	17.6%
Fourth Quintile	71.2%	54.0%	61.6%	53.25%	0.0%	19.8%	17.8%
Bottom Quintile	53.9%	2.8%	39.9%	84.26%	0.0%	16.9%	13.1%
Bottom Decile	43.1%	2.8%	32.0%	43.26%	0.0%	13.3%	10.5%

As can be seen above those companies having the highest volatility (top decile) have an average discount of 45.7 percent and a median discount of 46.4 percent. On the other hand, those companies having the lowest volatility as reflected in the bottom decile have an average discount of only 13.3 percent and a median discount of only 10.5 percent.

Profitability

The profitability of a firm is also often used as an indicator of firm risk. The stock of a profitable firm is generally regarded as a less risky investment than the stock of a money-losing firm. However, it is also the case that many development-stage companies, often big money-losers, have high market values.

Net Income. Firms with greater earnings tend to have significantly lower discounts when placing shares privately:

	Net Income ($Mil)			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	$72.7	$3.1	$13.4	84.3%	0.0%	19.5%	14.4%	18.6%
Top Quintile	72.7	0.5	7.2	91.3%	0.0%	20.7%	15.9%	17.9%
Second Quintile	0.4	(1.0)	(0.2)	81.0%	0.0%	28.7%	25.7%	20.2%
Third Quintile	(1.0)	(3.0)	(2.0)	72.4%	3.9%	33.2%	31.8%	16.6%
Fourth Quintile	(3.1)	(9.6)	(5.8)	65.4%	0.0%	26.6%	25.0%	16.5%
Bottom Quintile	(9.7)	(495.0)	(32.3)	58.5%	0.0%	17.4%	14.6%	11.5%
Bottom Decile	(16.5)	(495.0)	(52.4)	41.9%	0.0%	15.2%	12.1%	11.1%

The table indicates that greater income is associated with lower discounts, as low as a median of 14.4 percent for the top decile of net income. However, there is also a significant portion of firms at the very bottom of the profits ranking that have lower-than-average discounts. We believe this is a function of the bright prospects and relatively high market value of these early stage firms.

Net Profit Margin. Firms with high net profit margins tend to have significantly lower discounts when placing shares privately, as shown in the table below:

	Net Profit Margin			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Top Decile	536.4%	8.1%	37.0%	84.3%	0.0%	20.8%	12.8%	20.6%
Top Quintile	536.4%	3.8%	21.5%	84.3%	0.0%	21.0%	16.5%	17.4%
Second Quintile	3.7%	-7.4%	-0.6%	91.3%	2.3%	23.8%	18.4%	16.7%
Third Quintile	-7.4%	-59.0%	-29.2%	62.4%	0.0%	24.1%	21.3%	15.8%
Fourth Quintile	-59.7%	NM	NM	72.4%	1.0%	28.0%	26.3%	17.7%
Bottom Quintile	NM	NM	NM	81.0%	1.7%	31.4%	28.4%	19.0%
Bottom Decile	NM	NM	NM	65.4%	1.7%	29.5%	29.1%	16.9%

The average and median discount for all firms with negative earnings equals 27.1 percent and 24.5 percent, respectively. The average and median discount for firms with positive earnings equals 22.4 percent and 16.5 percent, respectively.

Dividends. Firms that pay dividends also tend to have significantly lower discounts:

	Dividends Per Share			Discount				
	High	Low	Average	High	Low	Average	Median	St. Dev.
Dividend Paying (20 Transactions)	1.90	0.08	0.62	38.0%	0.0%	14.9%	15.9%	11.1%
Non-Dividend Paying (307 Transactions)	0.00	0.00	0.00	91.3%	0.0%	26.0%	23.5%	17.7%

Dividends are important for a few reasons. They may mitigate the illiquidity discount by itself, in addition to the fact that they indicate higher profits and lower risk. Significant dividend payments can be a factor that shortens the duration of the security. Current income tends to lower illiquidity; by "front-loading" some of the economic benefits the security holder can expect to accrue. Also, public companies paying dividends tend to have lower volatility. The median discount for those companies paying dividends was

15.9 percent as compared to those companies not paying dividends having a median discount of 23.5 percent.

The Block Size Affects the Holding Period

With the possible exception of the price per share, the variables discussed previously in this chapter are primarily indicators of firm risk (larger, more profitable firms are less risky). However, The FMV Restricted Stock Study™ also provides data on variables that are directly associated with the expected holding period for the restricted stock sold in each private placement. This data is particularly important to the valuation of privately held entities and the stock of privately held companies.

Chapter 3 provides a discussion of the restrictions contained in Rule 144 that apply to the shares sold in the transactions detailed in The FMV Restricted Stock Study™. Specifically, during the periods analyzed in The FMV Restricted Stock Study™, restricted stock had to be held for 2 years (pre-1997) or 1 year (after 1996) after the transaction date, and then slowly "dribbled out" in the public markets according to the volume limit provisions of Rule 144. These volume limits allow quarterly resale limited to the greater of one percent of the shares held, or for the average weekly trading volume for the four weeks before each such sale.

Under Rule 144, a block of 20 percent or more would take up to 5 years to resell, after the holding period, with the following assumptions:

(1) the block was sold to just one buyer;
(2) the holder of the block was deemed an affiliate under Rule 144 and would therefore be unable to take advantage of the provisions of Rule 144(k); and,
(3) the trading volume of the stock was so low that the most the buyer could hope to sell was only one percent of total shares outstanding.

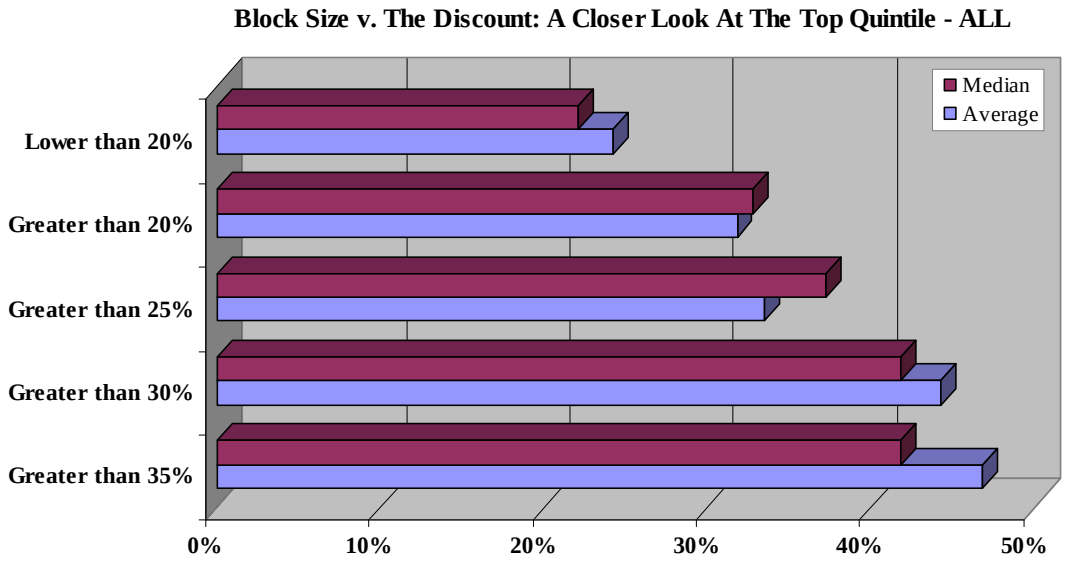
Percentage Shares Placed. The discount is strongly correlated with the size of the block of stock sold in the private placement, as shown in the table below:

	Pct. Shares Placed			Discount				
	High	**Low**	**Average**	**High**	**Low**	**Average**	**Median**	**St. Dev.**
Top Decile	42.9%	22.4%	29.2%	91.3%	1.7%	31.3%	32.8%	22.9%
Top Quintile	42.9%	16.5%	23.9%	91.3%	1.0%	31.6%	25.3%	22.6%
Second Quintile	16.4%	12.0%	14.5%	81.0%	0.0%	23.9%	20.1%	17.6%
Third Quintile	11.9%	7.2%	9.5%	64.2%	0.0%	23.8%	20.0%	15.3%
Fourth Quintile	7.2%	4.3%	5.8%	70.0%	0.0%	22.5%	22.0%	14.2%
Bottom Quintile	3.8%	0.1%	2.1%	62.2%	0.0%	24.6%	24.9%	15.9%
Bottom Decile	2.2%	0.1%	1.1%	61.5%	0.0%	27.6%	26.5%	17.5%

The data indicates that the discount increases with longer holding periods as expressed in terms of larger percentage size blocks. The median discount for block sizes greater than 25 percent is 37.9 percent. As previously mentioned, under certain assumptions blocks greater than 20 percent could be subject to a dribble-out period of more than 5 years in addition to the holding period under the provisions of Rule 144.

Interestingly, the small percentage block private placement discounts are above average. We believe this may be a function of the lower dollar block sizes. As the transaction costs are absorbed by a smaller investment (lower dollar block size), the investor will require a higher discount.

Another way to look at the large block data is the following graph:



Overall, for blocks less than 20 percent, the median discount was 22.1 percent, whereas the blocks greater than 30 percent had a median discount of 41.2 percent, a 20 percentage point differential.

For the valuator using this data to determine appropriate discounts for lack of marketability, the large block restricted stock discounts are especially meaningful as the large percentage blocks are the most illiquid of the restricted stocks. Please keep in mind that differing minority interest blocks in private equity situations generally have identical illiquidity. However, large restricted stock blocks are significantly more illiquid than smaller restricted stock blocks. Therefore, a large block comparison is appropriate for small block private equity valuations because of the more similar illiquidity of each.

Shares Placed to Monthly Trading Volume. The liquidity of a private placement may also be expressed in terms of the prior months trading volume as a percent of the shares placed. Under the dribble-out provisions of Rule 144, a restricted stock investor is allowed to sell greater than one-percent of the total shares outstanding if the average weekly trading volume over the prior four weeks exceeds one-percent of the total shares outstanding. The following table shows had the trading volume may impact the magnitude of the discount.

	Shares Placed/Mo. Trading Volume			Discount				
	High	**Low**	**Average**	**High**	**Low**	**Average**	**Median**	**St. Dev.**
Top Decile	193.8	10.5	34.0	84.3%	0.0%	32.7%	27.3%	25.5%
Top Quintile	193.8	4.1	19.7	91.3%	0.0%	28.7%	21.1%	22.9%
Second Quintile	3.8	1.6	2.4	59.2%	0.0%	22.5%	22.1%	15.1%
Third Quintile	1.6	0.7	1.1	69.2%	0.0%	23.9%	21.1%	15.6%
Fourth Quintile	0.7	0.3	0.5	65.4%	3.0%	24.0%	20.5%	14.9%
Bottom Quintile	0.3	0.0	0.1	70.0%	0.0%	27.0%	26.0%	18.0%
Bottom Decile	0.1	0.0	0.0	70.0%	0.0%	28.6%	26.7%	18.5%

The placements with the highest ratio – most illiquid – have a median discount of 27.3 percent versus 20 percent to 22 percent for the second, third and fourth quintiles. Interestingly, the companies with the lowest ratio also have a relatively high 26 percent median discount as represented by the bottom quintile.

Summary and Conclusions

Our overall conclusion from our analysis is that the riskier the security, and the more severe the marketability restrictions it is subject to, the greater the discount for lack of marketability. The strongest evidence of a connection between the discount and the length of the holding period comes from the large-block data. This data has particular significance to the valuation of the stock of privately held entities, which we will discuss further in the next Chapter of this booklet.

VII. Using The FMV Restricted Stock Study™

We have discussed the "benchmark" averages published in previous restricted stock studies. It is our contention that the averages are of limited usefulness for all valuations and that a more detailed analysis is required. We have also reviewed the other studies and methods used for determining the lack of marketability discount and remain convinced that the restricted stock data is the best available method for valuing almost all non-marketable and limited-marketability equity securities. In some situations, however, other available studies and methods could and should be used to supplement the analysis. The following are guidelines we have developed at FMV Opinions for valuing non-marketable securities:

Restricted Stock

Not surprisingly, the valuation of restricted stock is the area where The FMV Restricted Stock Study™ has the greatest applicability.

1. Analyze the restrictions in detail. The applicable restrictions under the securities laws and rules depend on the valuation date and whether or not the securities are transferable under Rule 144 or Rule 145. Other rules and restrictions may also apply.
2. Analyze specific contractual rights or restrictions that apply to the securities, including registration rights, if any. Also, is the block of stock large enough that it would have to be sold in small increments, even after the lifting of all restrictions? This analysis, combined with the analysis of the legal and regulatory restrictions, should give the analyst a good idea of what the expected holding period is for the subject stock.
3. Describe the trading characteristics of the stock on its exchange or trading system.
4. Determine the risk of the stock. Some important parameters to include in this analysis are the market capitalization of the firm, the market-to-book ratio, and other measures of risk and volatility, such as the standard deviation of the return on the stock.
5. Carefully decide where in the hierarchy of discounts the subject block belongs, based on the discount data and meaningful comparisons between the subject securities and the securities in The FMV Restricted Stock Study™.

Privately Held Operating Entities

The most important difference between the appropriate lack of marketability discounts for restricted stock of public entities and the stock of privately held entities is the risk that the privately held shares will *never* become fully marketable.

Because large blocks of restricted stock are significantly less marketable than smaller blocks, we consider large-block transactions – and the discounts taken in large-block

transactions – to be a better starting-point for the valuation of privately held stock than the overall sample data. In particular, those percentage blocks greater than 25 percent had a median discount of 37.9 percent. In general, due to the dribble-out provisions of Rule 144, the largest percentage blocks are the least liquid. For those blocks under 10 percent in size, the median discount was 23.6 percent.

In summary, the data indicates that very large blocks of restricted stock – blocks that have marketability characteristics that are more similar to those of the stock of privately held firms – have discounts that can be 15 or more percentage-points greater than the average discount for all transactions.

FMV recommends first analyzing the privately held firm vis-à-vis the firms in The FMV Restricted Stock Study™ that represent percentage blocks less than 20 percent in size. These represent the most liquid of the restricted stock transactions. Based upon a comparison of characteristics deemed relevant, the valuator can select an "as if" publicly traded restricted stock discount. The relevant characteristics are likely to include market value, revenues, profit or profit margin, total assets, and book value. In addition, other measures of risk such as volatility or market-to-book ratios should be considered. Based upon the performance and outlook for the subject company, differing weights may be applied to the various relevant comparative characteristics. In analyzing how the subject private firm stacks up against the public companies in the study, a couple of general guidelines apply:

1. Be honest about risk. While the average privately held firm, especially the smaller firm, does tend to be riskier than the average publicly traded firm, keep in mind that the firms in the FMV Study are also significantly more risky than the average publicly traded firm. Carefully analyze where the subject firm fits with the data set across the relevant parameters. For larger privately held companies, the analysis may indicate that the subject company is less risky than the average sample firm, which, in turn, indicates lower discounts.
2. The dividend rate deserves special attention. If a firm pays significant and consistent dividends, this may reduce the lack of marketability discount in addition to any reduction in the appropriate discount due to lower risk. Dividends, in and of themselves, reduce the discount because dividends shorten the duration of the security and provide a form of early liquidity.

Overall, with the significant difference between large-block and average-block transactions, The FMV Restricted Stock Study™ provides meaningful empirical evidence for applying discounts to the stock of privately held operating entities that are significantly larger than the average discount for restricted stock. However, the discount shouldn't always be that much higher and in some rare cases, when dealing with very large, stable, profitable, dividend-paying private firms, the appropriate discount may be lower than the average discount in the study.

Asset-Holding Entities

Asset-holding Entities are generally defined as entities that primarily hold assets, rather than having actual operations. Asset-holding entities can be C or S corporations, limited

and general partnerships as well as limited liability companies. The assets that these companies hold usually come in the form of real estate holdings, marketable security holdings, as well as note receivables and ownership in privately held companies.

When valuing an interest in an asset-holding entity, the analysis is generally based on an adjusted net asset approach. This approach analyzes the balance sheet and replaces the book value of the assets and liabilities with their appropriate current value to arrive at the adjusted net asset value (adjusted assets minus adjusted liabilities). Thereafter, the valuation expert needs to determine the applicable discounts for lack of control and lack of marketability of the subject interest. In most cases the discounts will be applicable to a true minority interest. However, there may also be cases where discounts are applicable to a majority interest that lacks full control or full marketability.

The two most common situations that arise, particularly in the estate-planning context, are the use of family limited partnerships (FLPs), limited liability companies (LLCs) and Subchapter S corporations that hold either real estate or publicly traded securities as its primary asset. In either case, when dealing with the valuation of a minority interest, lack of control and lack of marketability discounts need to be determined for the subject interest. Often, the discounts are determined separately, with one data set supporting the lack of control discount and another data set supporting the lack of marketability discount. The FMV Restricted Stock Study™ study is an excellent data set to support the lack of marketability discount for asset holding entities.

In the analysis of an FLP, LLC or S corporation which holds real property, great care must be taken in utilizing The FMV Restricted Stock Study™. Real estate holding entities tend to make significant distributions, significantly greater than the dividend paying stocks within The FMV Restricted Stock Study™. Additionally, all things being equal, real estate tends to have much lower volatility and is an otherwise "safer" investment asset than operating company equities. Moreover, future cash flows and expenses for real estate entities tend to be far more predictable than for operating companies, due to the contractual nature of most rents. This stability and predictability of real estate, however, can also lead to significant leverage of the underlying real estate, which also must be considered. Leverage will increase the volatility of the underlying asset's cash flows.

When determining the lack of control and lack of marketability discounts associated with a minority interest in an entity holding marketable securities, many valuation experts will look to closed-end fund data to determine control discounts. Then once again, the expert needs to determine the diminution in value resulting from the lack of a public market in the form of a lack of marketability discount. Again, the data in The FMV Restricted Stock Study™ is probably the best available evidence for determining the lack of marketability discount. Special consideration needs to be given to the fact that the underlying asset(s) will in many cases have performance characteristics significantly more attractive than many of the companies in The FMV Restricted Stock Study™. Moreover, when determining the discount for lack of marketability for a portfolio of equity securities, consideration should be given to the generally lower volatility of a portfolio than the individual stocks in The FMV Restricted Stock Study™.