

Using New Resources to Determine and Defend Lack of Marketability Discounts

VPS WEBINAR

May 11, 2017

R James (Jim) Alerding, CPA/ABV, ASA

Alerding Consulting, LLC

jim@alderdingconsulting.com

Josh Angell, CFA

Moore, Ellrich, & Neal, P.A.

josh@mencpa.com

R. JAMES ALERDING, CPA/ABV, ASA

- Owner Alerding Consulting, LLC
- Former Member of the AICPA BV Committee
- Member of the AICPA BV Standards Writing Task Force (VS100)
- AICPA BV Hall of Fame Member
- Testified in over 400 cases
- Coauthor, Financial Valuation Applications and Models
- “Panel of Experts” Financial Valuation and Litigation Expert
- Coauthored a number of courses including the original ABV Review Course and the Original AICPA BV Training
- Published numerous articles and made numerous presentations on valuation related matters

Joshua B. Angell, CFA, ASA

Senior Managing Director, Moore, Ellrich & Neal, P.A. –
Valuation Advisory Services Practice

Graduated Valedictorian Florida State University

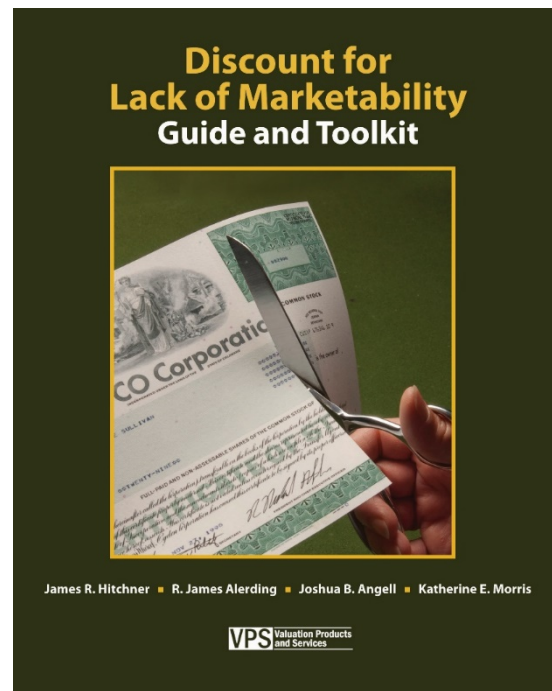
Inductee to NACVAs 40 Under Forty

Published numerous articles and made numerous
presentations on valuation related matters

Testified or was involved in hundreds of business valuation
and litigation related cases

Founder and Chief Investment Officer of The Barrons Group,
LLC and TBG Capital Management, LLC, a value-focused
hedge fund

Discount for Lack of Marketability Guide and Toolkit – Order Now on www.valuationproducts.com



Acknowledgements and/or Citations

Business Valuation Resources, LLC – *Business Valuation Update*

Thomson Reuters/WG&L – *Valuation Strategies*

Valuation Products and Services LLC – ***VPS DLOM Guide and Toolkit***, *Financial Valuation and Litigation Expert*, and various webinars

- Special thanks to Jim Alerding, Jim Hitchner, Josh Angell, and Kate Morris

FMV Opinions, Inc. – *FMV Opinions Restricted Stock Database*

American Society of Appraisers – *Business Valuation Review*

IRS DLOM Job Aid – *Discount for Lack of Marketability Job Aid for Valuation Professionals*

Option Models: Finnerty, Chaffe, Ghaidarov, Vianello, and Longstaff

Mercer's QMDM

Many of the following slides are edited quotes and/or paraphrased for presentation purposes. We encourage the participants to obtain and read each original source for additional information and the exact quotes.

“Most of our so-called reasoning consists in finding arguments for going on believing as we already do.”

James H. Robinson
American Historian

Definitions (Boring but Necessary)

LIQUIDITY

International Glossary of Business Valuation Terms (Glossary): “The ability to quickly convert property to cash or pay a liability.”

ASA: “The ability to readily convert an asset, business, business ownership interest, security or intangible asset into cash without significant loss of principal.”

DLOM Toolkit Authors:

We believe that **actively traded public equivalent** defined as “**instant sale with cash received within three days**” should be the standard to be used in business valuation.

MARKETABILITY

Glossary: “Marketability—the ability to quickly convert property to cash at minimal cost.”

New Labels

Liquid

Marketable illiquid

Nonmarketable

Examples:

- Actively traded public stock
- Control in a private co.
- Minority in a private co.
- Real estate
- Machinery & equipment

Liquid

Marketable illiquid

Nonmarketable

Marketable illiquid

Marketable illiquid

Levels of Value - Newer View

Control strategic (public or private company)

Minority/control standalone liquid (public company)

Control liquid (private company)

Control standalone (private company)

Minority nonmarketable (private company)

Pre-IPO Data

Inconsistency between how companies value the stock (including discounts) in pre-IPO transactions vs. how all the studies/databases determine the discount and, thus, values

Data and calculations based on public SEC reporting documents

Pre-IPO Data

Management Discussion and Analysis Section

Examine the prospectus and/or registration statement materials

The factors that management considered in determining the value of their stock on the pre-IPO transaction date

Includes management's estimates of the DLOM

Discounts reported in the prospectus will often differ materially from the discounts reported in several databases and studies

Management will often provide information relating to the factors that contributed to the increase in the value of their stock between the transaction date and the IPO date

Management may explicitly state that the increase in the fair value of their stock was related to factors unrelated to liquidity, such as improvement in sales or changes in industry conditions

Pre-IPO Data

Facebook IPO and Prior Transactions Calculated

Discounts – Pre-IPO Method:

Days from

<u>#</u>	<u>Date</u>	<u>Price</u>	<u>DLOM</u>	<u>IPO</u>	
1	3/9/2009	\$1.85	95.13%	1165	
2	2/15/2010	\$6.81	82.08%	822	
3	5/11/2011	\$27.58	27.42%	372	
4	7/21/2011	\$30.07	20.87%	301	
5	11/11/2011	\$29.91	21.29%	188	
6	1/27/2012	\$30.73	19.13%	111	
7	5/17/2012	\$38.00	0.00%	0	<--- IPO Date

Pre-IPO Data

Facebook IPO and Prior Transactions

Pre-IPO Method vs. Reported Discounts

Date	IPO Price	Trans. Price	Pre-IPO DLOM	Reported DLOM	Days
May 11, 2011	\$38	\$27.58	27.42%	6.5%	372
July 21, 2011	\$38	\$30.07	20.87%	6.0%	301
November 11, 2011	\$38	\$29.91	21.29%	5.5%	188
January 27, 2012	\$38	\$30.73	19.13%	5.0%	111
May 17, 2012 (IPO)	\$38	\$38.00			0

Pre-IPO Data

Lifelock, Inc.

- On March 29, 2012, approximately 6 months prior to the IPO date, LifeLock, Inc. granted options and determined the fair market value of their stock to be \$5.20 per share, representing a **42% discount from the IPO price** of \$9.00 that occurred on October 2, 2012
- “The initial public offering scenarios assumed that we would conduct an initial public offering in 18 months and were based on our projected EBITDA.”
- **“We also applied a discount for lack of marketability of 20%, after considering a number of factors, including the probability and time to liquidity for an initial public offering of our common stock.”**

Pre-IPO Data

Management provided an explicit estimate of its marketability discount of 20% vs. the measured discount of 42%

Management explicitly stated that the expected date to IPO was 18 months on the transactions date, which compares to the IPO actually occurring in 6 months

Thus, management's 20% estimated discount was for a longer expected holding period as of the date of grant

Management indicated that their stock had increased from the prior period due to a reduction in their cost of capital

Several material events occurred on this date, including a merger and sales of preferred stock

Pre-IPO Data

EPAM Systems, Inc.

On December 31, 2009, approximately 26 months prior to IPO, EPAM Systems, Inc. granted options and determined the fair market value of its stock to be \$5.75 per share

Representing a **52.083% discount from the IPO price** of \$12.00 per share on February 7, 2012

- Based upon a table in the prospectus, **management indicated that a 20% discount for lack of marketability as applied “only in the ‘Continue Private’ scenario,” suggesting an effective probability weighted DLOM of only 1% vs. the 52.083% discount reported**

Date	Class of Stock	Date Valuation Was Completed	Fair Value (per share)	Probabilities of Future Liquidity Events: IPO / M&A / Continue Private	Purpose of Valuation	Discount for Lack of Marketability	Discount Rate
February 19, 2008	Common Stock	June 2008	\$ 7.50	70% / 25% / 5%	Issuance of Series A-2 convertible redeemable preferred stock	20%	19.6%
September 20, 2008	Common Stock	December 2008	4.38	70% / 25% / 5%	Stock option grant	20%	18.9%
December 31, 2008	Common Stock	March 2009	4.25	70% / 25% / 5%	Computation of intrinsic value of employee stock options	20%	18.6%
September 30, 2009	Common Stock	December 2009	4.63	47.5% / 47.5% / 5%	Stock option grant	20%	18.5%
December 31, 2009	Common Stock	March 2010	5.75	47.5% / 47.5% / 5%	Computation of intrinsic value of employee stock options	20%	19.6%
August 31, 2010	Common Stock	October 2010	6.13	47.5% / 47.5% / 5%	Litigation settlement and stock option grant	20%	19.2%
November 30, 2010	Common Stock	December 2010	6.88	47.5% / 47.5% / 5%	Stock option grant	20%	18.8%
June 15, 2011	Common Stock	July 2011	14.00	60% / 35% / 5%	Stock option grant	20%	19.0%
September 15, 2011	Common Stock	September 2011	12.38	60% / 35% / 5%	Computation of intrinsic value of employee stock options	20%	19.0%

Pre-IPO Data

The following illustrates some statements in the EPAM prospectus:

“We believe the increase in fair value was due to the significant growth in revenues and profitability during 2010, **47.9%** and **109.3%**, respectively, compared to 2009...”

“We believe the increase in the fair value was due primarily to the significant growth in revenues and profitability we experienced during the first six months of 2011 compared to the first six months of 2010, such growth being **66.3%** and **69.8%**, respectively...”

“... the primary driver behind the fair value increase at June 15, 2011, was magnified by a **30.6%** increase in the multiple used in the ‘IPO’ scenario (8.5x as of November 30, 2010 compared to 11.1x as of June 15, 2011), as market valuations for our industry comparables gradually improved.”

Pre-IPO Data

“[Moreover], the valuation impact of our substantial period-over-period growth in revenues and profitability, which was the primary driver behind the fair value increase at June 15, 2011, was **magnified by a 30.6% increase in the multiple used in the “IPO” scenario (8.5x as of November 30, 2010 compared to 11.1x as of June 15, 2011), as market valuations for our industry comparables gradually improved.** At the same time, we increased the probability of an ‘IPO’ event to 60% from 47.5%, and decreased the probability of an ‘M&A’ event from 47.5% to 35%, due to our filing of a registration statement on Form S-1 with the Securities and Exchange Commission on June 10, 2011.”

Thus, in this case most of the improvement in price between the transaction date and the IPO date was the result of an improvement in business and industry performance

Consequently, the reported discount of 52.083% was drastically overstated

Pre-IPO Data

Splunk, Inc.

Pre-IPO option transaction on December 27, 2011

This “transaction” occurred at a price of \$4.82 per share, representing a **72% discount from the \$17.00 per share IPO price** that occurred on April 20, 2012

Pre-IPO Data

“We granted stock options with the following exercise prices since February 1, 2011”

Grant Date	Number of Options Granted	Common Stock Fair Value Per Share at Grant Date	Exercise Price
March 17, 2011	1,037,000	\$ 2.14	\$ 2.14
April 21, 2011	500,000	2.14	2.14
April 22, 2011	50,000	2.14	2.14
June 14, 2011	2,299,300	2.94	2.94
July 15, 2011	1,000,000	2.94	2.94
July 28, 2011	582,500	2.94	2.94
September 15, 2011	799,000	3.94	3.94
October 26, 2011	150,000	3.94	3.94
December 15, 2011	1,780,500	4.82	4.82
December 27, 2011	1,547,500	4.82	4.82
February 17, 2012	772,500	5.79	5.79
March 15, 2012	403,500	9.00	9.00
April 4, 2012	1,637,500	12.00	9.00
June 5, 2012	415,613	28.59	28.59

Pre-IPO Data

- Management further described the following in the prospectus regarding the transaction:

“...Our board of directors considered market conditions, especially for technology companies, **our better than anticipated operating performance, our increased revenue forecast, the reduced operating risk in our business, and a shorter time to an expected liquidity event when it determined the fair value of our common stock...**”

- **The board of directors explicitly selected a 13% discount for lack of marketability, which differed significantly from the reported discount of 72%**

Pre-IPO Data

- Overall, alternative explanations include changes in:
 - The level of interest rates
 - The forward-looking equity risk premium
 - The firm's cost of capital
 - The expected long-term expected growth rate
 - The market valuation multiples of comparable publicly traded companies
 - The market valuation multiples of comparable private company transactions
 - National, regional, or industry economic conditions
 - Business fundamentals including expansion in sales, profits, margins, or cash flows

Pre-IPO Data

Other important factors to consider

- Profitability
- Holding period
- Industry concentration
- Size
- Block size
- Types of securities
- Cyclicity of the market
- Number of transactions

Restricted Stock Studies

Many different researchers have collected data on restricted stocks and have compared them to their publicly traded counterparts beginning in 1966

The studies conducted have included various time periods for collecting the data and have generated a number of summary statistics to describe the data

In applying discounts from restricted stock studies, the analyst must understand the particular study and how it may or may not apply to the subject interest being valued

Restricted Stock Studies (Sample) – Oldies but Goodies?

Study – Pre-1990	Discount
SEC overall average (1966-1969)	26%
Gelman (1968-1970)	33
Trout (1968-1972)	33
Moroney (1969-1973)	36
Maher (1969-1973)	35
Stryker and Pittock (1978-1982)	45
Hall and Polacek (1979-1992)	23
Silber (1981-1988)	34
Willamette Management Associates (1981-1984)	31
Pre-1990 mean discount	33%

Restricted Stock Studies (Sample) – Oldies but Goodies?

Study – Post-1990, Pre-2000	Discount
FMV Opinions, Inc. (1980-1997)	22%
Management Planning (1980-1996)	27
Bajaj, et al. (1990-1995)	22
Johnson (1991-1995)	20
Columbia Financial Advisors (1996-1997)	21
Columbia Financial Advisors (1997-1998)	13
Post-1990 mean discount	21%
Overall mean discount	28%

Restricted Stock Studies

Following are the weaknesses of the Restricted Stock Studies as outlined in the IRS DLOM Job Aid:

Lack of Current Market Data

- The most compelling criticism of existing studies is that they rely on historical market data
- With some of the data in the studies reaching back to 1966, it may not reflect the dynamics of current market conditions

Restricted Stock Studies

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

Restricted Stock Studies

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

Restricted Stock Studies

- A Benchmark Study Approach

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
- Adjusting it without a believable explanation

Attention has turned to getting behind the data and deriving an appropriate discount from the data

The **IRS DLOM Job Aid** drives this home

RESTRICTED STOCK STUDIES

- DID YOU KNOW?

- The transactions for the FMV Opinions Study, Silber Study, Moroney Study, Stryker & Pittock Study, Trout Study, Willamette Study, and Gelman Study **are not available** in the published data
- Most of the original studies had **small samples** and the **data is very old**
- There are **conflicting conclusions** in the various studies on some issues, such as:
 - Block size
 - Rule 144
 - Industry
 - Market capitalization

RESTRICTED STOCK STUDIES - DID YOU KNOW?

The original transactions for the Hall and Polacek Studies (1994) are no longer available but they have been rolled into the FMV Opinions Database

The transactions for the Silber Study, Moroney Study, Stryker & Pittcock Study, the Trout Study, the Willamette Studies, and Gelman Study are not available in the published data

Arneson Study not really a study but opinion of the author about other Studies that he reviewed

RESTRICTED STOCK STUDIES - DID YOU KNOW?

Most of the original studies had small samples and the data is very old (relative to today)

Silber has not done any update of his data since his initial study

- He found “marketability” to be statistically insignificant (he measured illiquidity) ...
- Indicating that an additional DLOM might be appropriate for a privately held equity

RESTRICTED STOCK STUDIES - DID YOU KNOW?

MPI conducted two studies

- The second study (published in BVR in Spring 2011) has been verified statistically (using regression models) and has 1,863 transactions
- Caution should be taken in using the first study as a result of the improvements in the second
- The 402 transactions relating to unregistered stock without registration rights is, per the authors, a better yardstick to use in determining the DLOM (22.1% average discount)
- The database is proprietary and not available to the general valuation community

RESTRICTED STOCK STUDIES - DID YOU KNOW?

Columbia Advisors Study shows discounts declined after the change in Rule 144

Johnson Study shows, among other things, that discount is higher for loss companies

There are conflicting conclusions in the various studies on some issues, such as:

- Block size
- Rule 144
- Industry
- Market capitalization

Analytical Methods

- Karen Wruck (1989) (–
 - 128 private sales of equity involving 65 companies
 - 65 on NYSE and 63 on American SE
 - July 1979 through December 1985
 - 17.6% difference between unregistered and registered stock (Median was 10.4%)
 - Due to LOM and increased monitoring costs

Analytical Methods

- Wruck (Cont.)
- Improvement in price due to increased monitoring
- Discounts were compensation for the monitoring

Analytical Methods

- Hertzels & Smith
- Used statistical analysis techniques to identify factors contributing to overall discount
- Unregistered v registered shares – Average 13.5% higher for unregistered shares
- 106 private equity placements – Jan 1980 through May 1987
- 75% OTC Stocks

Analytical Methods

Hertzel & Smith (Cont.)

- Overall discount of 20.14%
- 13.5% = DLOM
- Other Factors:
 - Size of placement
 - Degree of financial distress
 - Nature of placement buyers
 - They used marketability and liquidity interchangeably
- Considered an upper bound because of perceived difference in assessment and monitoring costs between registered and unregistered shares

Analytical Methods

- Bajaj, et al
- Study of 88 Transactions from January 1, 1990 to December 31, 1995
- Discounts: 22% mean; 21% median
- Bajaj noted that discounts on unregistered shares are 14.09% higher than those of registered shares
- To Bajaj this means that there are factors other than marketability at play

Analytical Methods

- Bajaj found four factors statistically significant:
 - Percentage of total shares issued
 - The Z-score of the issuing company
 - Standard deviation of the issuing firm's returns
 - Whether or not the issue is registered
- Based on his analysis of “other factors” Bajaj concluded that he would concede a 7.23% DL0M
- Observation: Those other factors still need to be accounted for so you cannot simply ignore them

Analytical Methods

Ashok B. Abbott –

- Marketability – “...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 – “...the ability to convert a block of securities into cash.”
- “Marketability refers to a right and liquidity is a measure of speed.”

Analytical Methods

- Abbott believes Restricted Stock Studies nor Pre-IPO Studies give very usable results
- More scientific and statistically supportable approach to marketability and liquidity is required.
- Lack of Liquidity indicators per Abbott:
 - In 1996 NYSE most liquid stocks compared to least liquid stocks indicates DLOL range of 35.5%
 - In an IPO Study for 1993 to 2003 avg. trimmed mean DLOL is 6.05% for 7,824 IPOs.

Analytical Methods

Abbott (Cont.)

- In a 2004 IPO Study the range for DLOL was from 3.4% to 9.9% depending on market cap
- Small cap stocks had greater holding periods than large cap stocks (1993-2004)
- Large cap stocks have been as much as 9 times more liquid than small cap stocks in 2001
- Smaller block sizes: DLOL of less than 25%
- 5% block = DLOL of 5% to 15%

Analytical Methods

Abbott (Cont.)

- Significant factors in DLOL & DLOM:
 - Block size
 - Overall market capitalization
 - Availability of hedging opportunities
 - Anticipated holding period of market participants
 - The general need for liquidity in the economy in general

NERA (National Economic Research Associates)

Dr. David Tabak

- Provides a quantitative basis (using the CAPM Model) to incorporate DLOM as an additional “risk” that increases the equity risk premium
- Thus lowering the price (i.e. imbedded discount)
- Objective since it uses volatility of a peer group of companies to determine the impact on the ERP
- Theoretical in nature

Long-Term Equity Anticipation Securities (LEAPS)

Robert Trout (2003) and Ronald Seaman (2005)

- Publicly traded long-term put option with an approximate term of 1.5 to 2.0 years
- Studies examined the cost of purchasing the LEAP puts
- $DLOM = \text{cost of put} / \text{stock price}$

LEAPS

- Benchmark minimum price (i.e. discount) since:
 - The market value of the companies offering the underlying securities was much larger than the value of a privately held company
 - The underlying (LEAPS) securities are publicly traded (i.e. marketable)
 - The LEAPS can be sold at any time during the holding period
 - LEAPS have a know liquidity environment (1.5 to 2.0 years)

Pluris DLOM Database

ValueSource

- Updated quarterly
- Over 3600 RSS from 2001 to the present
- 18 search filter items including:
 - SIC Code Assets Sector
 - Volatility Block size Book value
 - Market cap Deals with warrants EBITDA
 - Revenue Stock price Market to book

Pluris DLOM Database

(Cont.)

- Biggest problem is the way they determine the value of warrants
- Method: Cannot be, or is not, applied consistently across all warrants
- No way to independently determine the value
- If the warrant value is “off”, the DLOM is off
- FMV does not use transactions with warrants

FMV Opinions Restricted Stock Database

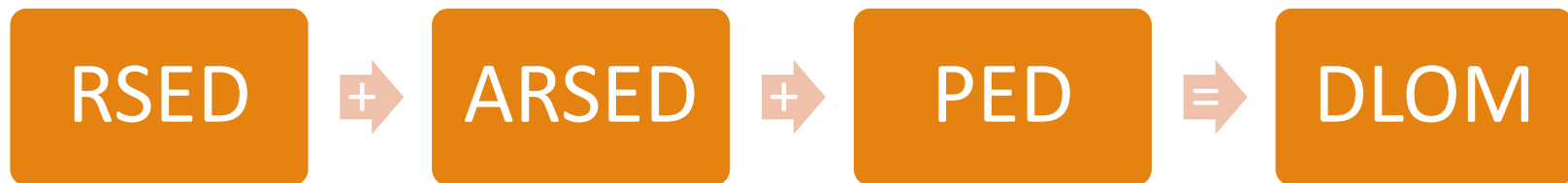
Many valuation analysts are using the FMV Opinions Restricted Stock Database and suggested methodology (“FMV Opinions Method”) to determine a discount for lack of marketability (“DLOM”)*

The suggested methodology is a three-step process

*Espen Robak’s Pluris database is also used by many analysts

FMV Opinions Three-Step Method

- (1) The issuing firm's financial and market risk
 - The restricted stock equivalent discount ("RSED")
- (2) The level of stock market volatility around the transaction date
 - The market volatility adjustment - adjusted restricted stock equivalent discount ("ARSED")
- (3) The degree of liquidity of the securities
 - The private equity discount ("PED")



A New Perspective on the Use of the FMV Opinions Restricted Stock Database

Discounts can vary and be strongly affected by issuer characteristics such as:

- Size, profitability, dividends, volatility, etc.
- The holding period restrictions

The analyst must ultimately develop samples that are most comparable to the subject company

A New Perspective on the Use of the FMV Opinions Restricted Stock Database

Example - VPS DLDM Toolkit

- Developed a relevant sample for the subject company using a quintiles analysis of the FMV Opinions Database
- Match the subject company to a group of restricted stock transactions in the FMV data with similar fundamental characteristics (i.e., revenue, market value, etc.)
- The median discount from each quintile is then utilized as a proxy for a discount applicable to the subject company
- The discounts are further adjusted for qualitative differences
- See the *FMV Opinions Companion Guide* for additional details

Thoughts on Using the FMV Opinions Database: Filtration Examples

Very difficult to develop a large sample of “comparables”

Filtering the database to include only those transactions that (a) are subject to a 2-year holding period, (b) have no registration rights, (c) exhibit positive EBITDA, and (d) are non-dividend paying, we discover that the 764 transactions are quickly reduced to a sample of only 65 transactions

<u>Criteria</u>	<u>DLOM</u>	<u>Count</u>	<u>% of Total</u>
FMV Opinions (Total Database)	15.0%	764	100%
2-Year Holding Period	20.8%	253	33%
No Registration Rights	20.1%	203	27%
Profitable	14.5%	81	11%
Non-Dividend Paying	15.3%	65	9%

Thoughts on Using the FMV Opinions Database: Recommendations for Quantifying DLOMs

Understand the FMV Database

Develop a good “reference” DLOM

- Isolate transactions with similar characteristics

Adjust the “reference” DLOMs

- Dividends
- Illiquidity/Holding Period
- Risk
- Other Factors

Use other methods

- QMDM
- Option Pricing

Perform a reasonableness analysis

- Look at the implied rate of return

Case Study Facts - 12/31/14 Valuation Date

Salient Characteristic of Company

Company Name:	ABC Plastics, Inc.
Industry:	SIC Group 305 – Rubber Components
Revenue:	\$20 million
Pre-tax Profit	\$2 million
After-tax Profit	\$1.2 million
Total Assets	\$5 million
Total Equity	\$4.5 million
LT Debt	None
Market Value	\$7.5 million
Cost of Equity Capital	20%
LT Expected Growth Rate	4.0%
Estimated Volatility:	50% (from public companies)

Case Study Facts (cont.)

- Bill Smith is majority owner (60% of stock)
- Plans to retire in 5-10 years; sell company (holding period 7.5 years)
- Closely held company, small shareholder base
- No distributions, none expected for foreseeable future
- FCFE being retained as excess cash
- Right-of-first refusal (90 days); no offers received

Selected Historical Financial Statement Information			
Year	Revenue	Norm. Inc.	Norm. FCFE
2010	\$17.1 mil.	\$1.03 mil.	\$0.98 mil
2011	\$18.0 mil.	\$1.11 mil.	\$1.02 mil
2012	\$18.6 mil.	\$1.11 mil.	\$1.06 mil
2013	\$19.2 mil.	\$1.15 mil.	\$1.10 mil
2014	\$20.00 mil	\$1.20 mil.	\$1.14 mil
2015 (exp.)	\$20.80 mil.	\$1.25 mil.	\$1.19 mil
CAGR (5 Yr.)	3.99%	3.89%	3.85%

VPS DLOM TOOLKIT METHOD RESTRICTED STOCK DATA FMV Opinions Database

(Some numbers don't tie due to rounding)

Model Inputs		Summary Output								
Subject Company Fundamentals (\$ in 000s)		User Inputs	Quintile	DLOM	Vol. Adj.	HP Adj.	Div Adj.	Fact. Adj.	Adj. DLOM	Weight
Market Value of Equity (Marketable)	7,500.00		5th Quintile	25%	-6%	15%	na	10%	44%	2
Total Revenues	20,000.00		3rd Quintile	14%	-4%	16%	na	10%	36%	1
Total Assets	5,000.00		5th Quintile	28%	-8%	14%	na	10%	44%	3
Book Value of Equity	4,500.00		4th Quintile	26%	-6%	15%	na	10%	45%	2
Market to Book Ratio	1.70		4th Quintile	14%	-3%	17%	na	10%	38%	1
Net Profit Margin (After-Tax)	6.00%		1st Quintile	11%	-1%	17%	na	10%	38%	1
Volatility	50%		5th Quintile	10%	2%	17%	na	10%	39%	3
Valuation Adjustments and Assumptions		Calculation of Median/Average/Wgt. Avg. DLOM								
Select Type of Volatility Adjustment Model	Regression		Median	14%	-4%	16%	na	10%	39%	
Select Type of Holding Period Adjustment Model	Finnerty		Average	18%	-4%	16%	na	10%	41%	
Select Type of Dividend Yield Adjustment Model	None		Wgt Avg.	20%	-4%	16%	na	10%	41%	
Other Salient Statistics										
Expected Holding Period (Years)	7.5		Minimum	10%	-8%	14%	na	10%	36%	
C Corp Equivalent Dividend Yield (%)	0.00%		25th %Tile	13%	-6%	15%	na	10%	38%	
What is your adjustment for other factors (%)?	10.00%		50th %Tile	14%	-4%	16%	na	10%	39%	
Apply registration rights adjustment?	Yes		75th %Tile	26%	-2%	17%	na	10%	44%	
Apply autocorrect option?	Yes		90th %Tile	27%	0%	17%	na	10%	44%	
Select Weighting Method	FMV		Maximum	28%	2%	17%	na	10%	45%	

Model Inputs	
Subject Company Fundamentals (\$ in 000s)	User Inputs
Market Value of Equity (Marketable)	7,500.00
Total Revenues	20,000.00
Total Assets	5,000.00
Book Value of Equity	4,500.00
Market to Book Ratio	1.70
Net Profit Margin (After-Tax)	6.00%
Volatility	50%
Valuation Adjustments and Assumptions	
Select Type of Volatility Adjustment Model	Regression
Select Type of Holding Period Adjustment Model	Finnerty
Select Type of Dividend Yield Adjustment Model	None
Expected Holding Period (Years)	7.5
C Corp Equivalent Dividend Yield (%)	0.00%
What is your adjustment for other factors (%)?	10.00%
Apply registration rights adjustment?	Yes
Apply autocorrect option?	Yes
Select Weighting Method	FMV

Summary Output

Quintile	DLOM	Vol. Adj.	HP Adj.	Div Adj.	Fact. Adj.	Adj. DLOM	Weight
5th Quintile	25%	-6%	15%	na	10%	44%	2
3rd Quintile	14%	-4%	16%	na	10%	36%	1
5th Quintile	28%	-8%	14%	na	10%	44%	3
4th Quintile	26%	-6%	15%	na	10%	45%	2
4th Quintile	14%	-3%	17%	na	10%	38%	1
1st Quintile	11%	-1%	17%	na	10%	38%	1
5th Quintile	10%	2%	17%	na	10%	39%	3

Calculation of Median/Average/Wgt. Avg. DLOM

Median	14%	-4%	16%	na	10%	39%
Average	18%	-4%	16%	na	10%	41%
Wgt Avg.	20%	-4%	16%	na	10%	41%

Other Salient Statistics

Minimum	10%	-8%	14%	na	10%	36%
25th %Tile	13%	-6%	15%	na	10%	38%
50th %Tile	14%	-4%	16%	na	10%	39%
75th %Tile	26%	-2%	17%	na	10%	44%
90th %Tile	27%	0%	17%	na	10%	44%
Maximum	28%	2%	17%	na	10%	45%

Restricted Stock Data: Performing a Quintiles Analysis

Metric	Subject Company (\$000)	FMV Study Quintile	Discount	FMV Suggested Weights
Market Value	\$7,500	5 th Quintile	25%	2
Revenue	\$20,000	3 rd Quintile	14%	1
Total Assets	\$5,000	5 th Quintile	28%	3
Total Equity	\$4,500	4 th Quintile	26%	2
MTB Ratio	1.7	4 th Quintile	14%	1
Net Profit %	6%	1 st Quintile	11%	1
Volatility	50%	5 th Quintile	10%	3
		Wgt. Avg.	20%	
		Average	18%	
		Median	14%	

Restricted Stock Data: Mandelbaum Factor Analysis

Mandelbaum Factor	Subject	Restricted Stock	Impact on DLOM
Public vs. private sale of stock	<ul style="list-style-type: none"> No sales 	<ul style="list-style-type: none"> Already public 	Increase
Financial Statement Analysis (Risk)	<ul style="list-style-type: none"> Profitable Free cash flow positive Growing steadily No debt Strong balance sheet 	<ul style="list-style-type: none"> Negative earnings Negative equity Volatile 	Decrease
Dividend Policy	<ul style="list-style-type: none"> Not distributing 	<ul style="list-style-type: none"> Not distributing 	No effect
Nature of the company, its history, industry, position, and economic outlook (Risk)	<ul style="list-style-type: none"> Established since 1980s Stable position 	<ul style="list-style-type: none"> Short history Risky industries 	Decrease
Company Management	<ul style="list-style-type: none"> Hoarding excess cash 	<ul style="list-style-type: none"> Board of Directors 	Increase
Amount of control transferred in stock	<ul style="list-style-type: none"> Minority transfers 	<ul style="list-style-type: none"> Minority transfers 	No effect
Holding Period for the stock	<ul style="list-style-type: none"> Expected 5-10 years 	<ul style="list-style-type: none"> Approximately 1.3 yrs. Registration rights 	Increase
Company's Redemption Policy	<ul style="list-style-type: none"> No formal policy 	<ul style="list-style-type: none"> No formal policy 	No effect
Costs associated with public offering	<ul style="list-style-type: none"> Expensive 	<ul style="list-style-type: none"> Already public 	Increase
Other Factors	<ul style="list-style-type: none"> Less reliable financials Small shareholder base Smith family controls Limited buyer pool 	<ul style="list-style-type: none"> None 	Increase

Restricted Stock Data: Mandelbaum Factor Analysis

Total Adjustment	20%?
Indicated Discount (Wgt. Avg.)	40% (i.e., 20% + 20%)
Indicated Discount (Low)	30% (i.e., 10% + 20%)
Indicated Discount (High)	48% (i.e., 28% + 20%)
Indicated Discount (Average)	38% (i.e., 18% + 20%)
Indicated Discount (Median)	34% (i.e., 14% + 20%)

Restricted Stock Data: Understanding the Characteristics of the Sample Data

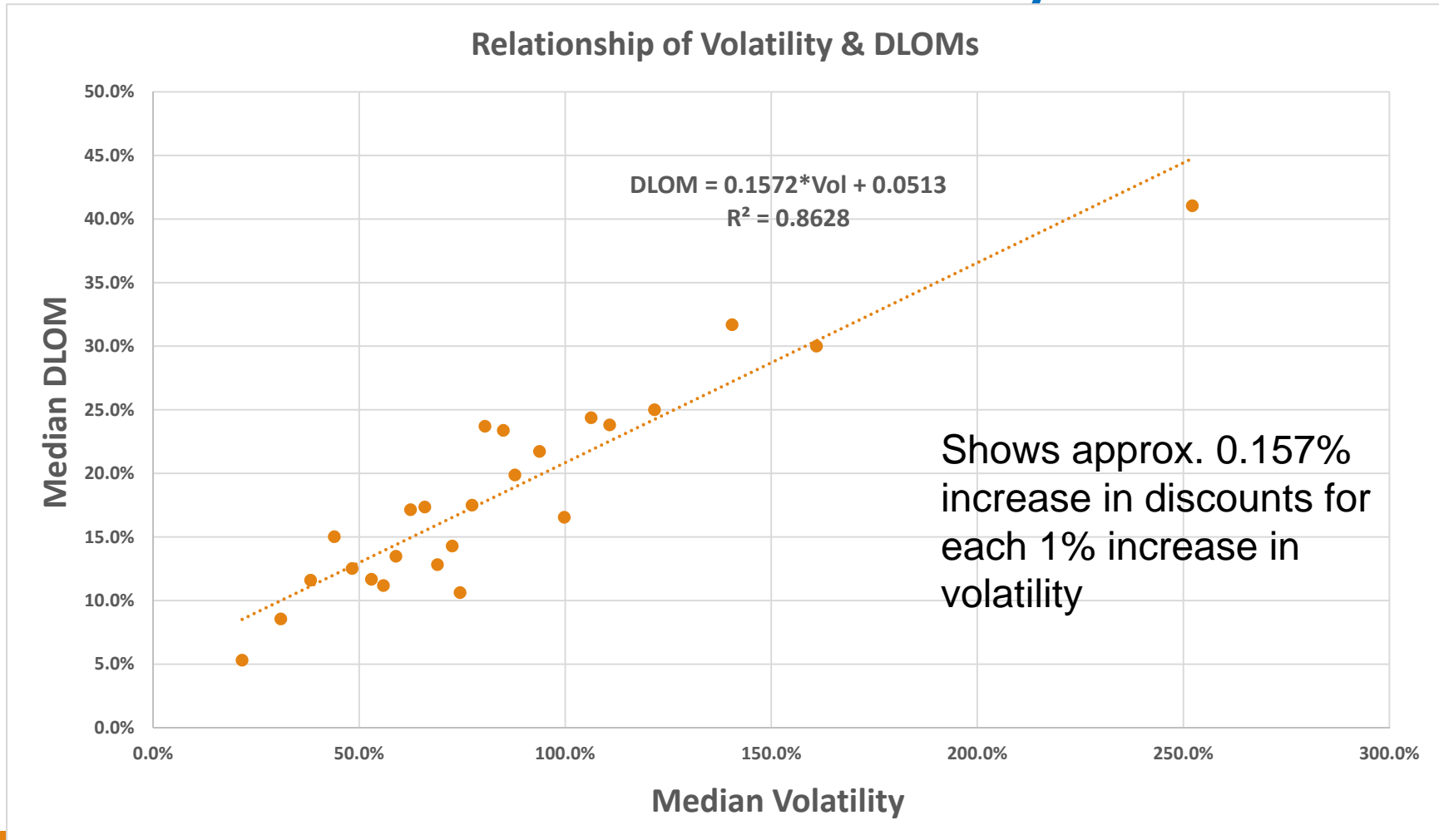
Primary Inputs Subject Company Fundamentals	Summary Output						
	Quintile	DLOM	Vol	HP	%Neg Profit	%Div	%Reg
Market Value of Equity	5th Quintile	25%	89%	1.3	67%	4%	29%
Total Revenues	3rd Quintile	14%	73%	1.3	62%	5%	42%
Total Assets	5th Quintile	28%	104%	1.4	86%	0%	22%
Book Value of Equity	4th Quintile	26%	86%	1.4	75%	0%	34%
Market to Book Ratio	4th Quintile	14%	69%	1.2	51%	19%	51%
Net Profit Margin (After-Tax)	1st Quintile	11%	55%	1.2	0%	29%	63%
Volatility	5th Quintile	10%	38%	1.3	37%	30%	57%

Restricted Stock Data: Understanding the Characteristics of the Sample Data

Salient Characteristics of Quintiles (Ranked by Volatility)

Primary Inputs Subject Company Fundamentals	Summary Output						
	Quintile	DLOM	Vol	HP	%Neg Profit	%Div	%Reg
Total Assets	5th Quintile	28%	104%	1.4	86%	0%	22%
Market Value of Equity	5th Quintile	25%	89%	1.3	67%	4%	29%
Book Value of Equity	4th Quintile	26%	86%	1.4	75%	0%	34%
Total Revenues	3rd Quintile	14%	73%	1.3	62%	5%	42%
Market to Book Ratio	4th Quintile	14%	69%	1.2	51%	19%	51%
Net Profit Margin (After-Tax)	1st Quintile	11%	55%	1.2	0%	29%	63%
Volatility	5th Quintile	10%	38%	1.3	37%	30%	57%
Average (Mean)		18%	73%	1.3	54%	12%	43%
Median		14%	73%	1.3	62%	5%	42%
Subject Company		?	50%	7.5	Profits	None	N/A

Restricted Stock Data: Adjusting for Differences in Volatility

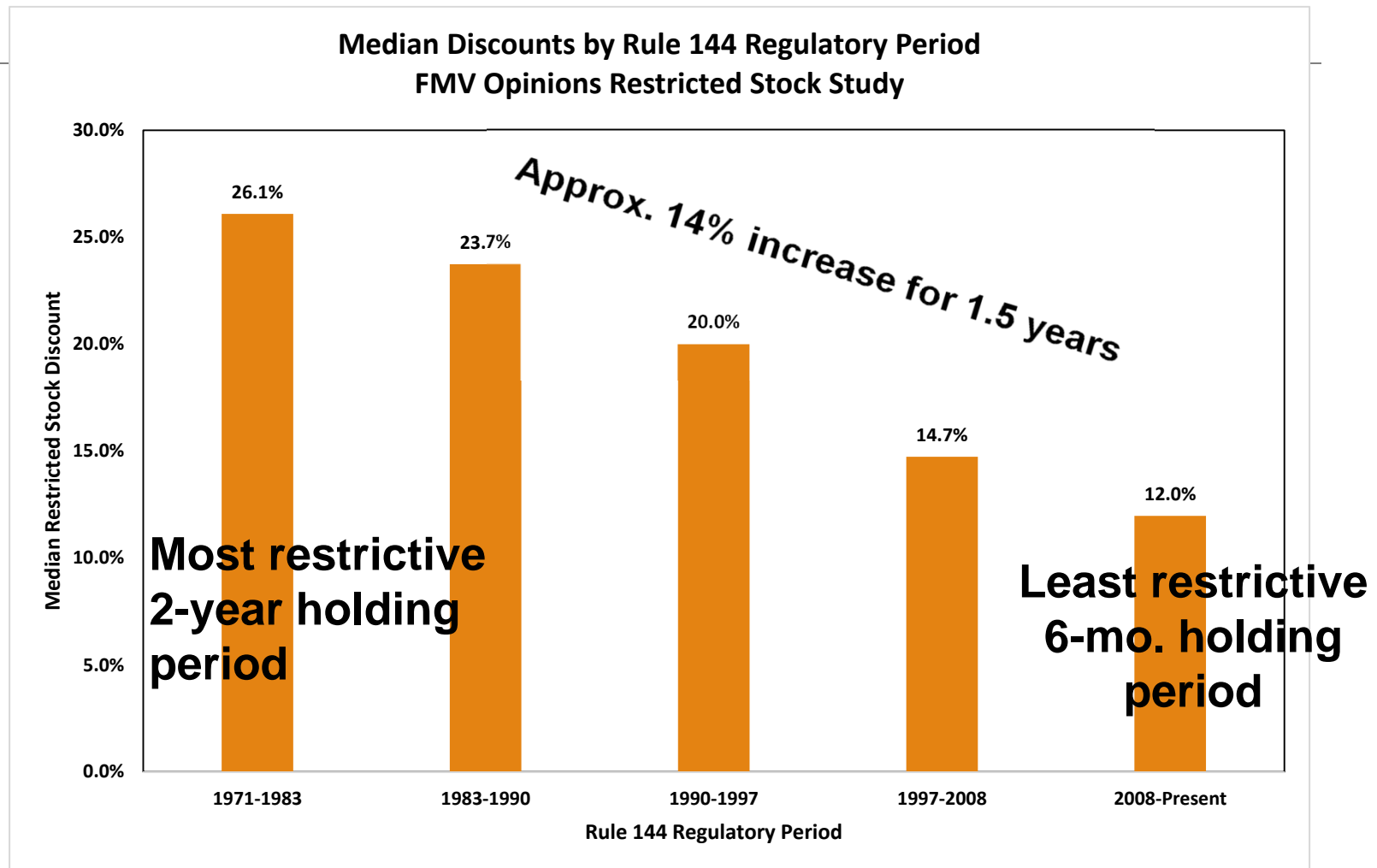


Restricted Stock Data: Computing Volatility-Adjusted Discounts

Summary of Key Model Assumptions

Fundamental Metric	Quintile DLOM	Quintile Volatility	Subject Volatility	Volatility Difference	DLOM Vol Adj.	Adj. DLOM
Market Value	25%	89%	50%	39%	-6%	19%
Revenue	14%	73%	50%	23%	-4%	10%
Total Assets	28%	104%	50%	54%	-8%	20%
Book Value of Equity	26%	86%	50%	36%	-6%	20%
Market to Book Ratio	14%	69%	50%	19%	-3%	11%
Net Profit Margin	11%	55%	50%	5%	-1%	10%
Volatility	10%	38%	50%	-12%	2%	12%
Average (Mean)	18%	73%	50%	N/M	N/M	15%
Median	14%	73%	50%	N/M	N/M	12%

Restricted Stock Data: Adjusting for Differences in the Holding Period



Restricted Stock Data: Adjusting for Differences in the Holding Period

Summary of Key Model Assumptions			
Fundamental Metric	Adj. DLOM	HP Adj.	HP Adj. DLOM
Market Value	19%	14%	33%
Revenue	10%	14%	25%
Total Assets	20%	14%	34%
Book Value of Equity	20%	14%	35%
Market to Book Ratio	11%	14%	26%
Net Profit Margin	10%	14%	25%
Volatility	12%	14%	26%
Average (Mean)	15%	14%	29%
Median	12%	14%	26%
Wgt. Avg.			30%

Restricted Stock Data: Adjusting for Differences in the Holding Period (Option Models)

Calculation of Holding Period Adjusted DLOMs

Subject Company Fundamentals	Vol Adj.				Adj. to	HP Adj. DLOM
	DLOM	HP	%Reg	Adj. HP ¹	For HP ²	
Market Value of Equity	19%	1.3	29%	1.0	15%	34%
Total Revenues	10%	1.3	42%	0.9	16%	26%
Total Assets	20%	1.4	22%	1.1	14%	34%
Book Value of Equity	20%	1.4	34%	1.0	15%	35%
Market to Book Ratio	11%	1.2	51%	0.7	17%	28%
Net Profit Margin (After-Tax)	10%	1.2	63%	0.6	17%	28%
Volatility	12%	1.3	57%	0.7	17%	29%
Wgt. Avg.						31%
Average (Mean)	15%	1.3	43%	0.9	16%	31%
Median	12%	1.3	42%	0.9	16%	29%

(1) According to FMV Data, the median days to register is 0.17 years. Therefore, the weighted average holding period = % Register*0.17 Years + (1-% Register)*Avg. HP.

(2) The holding period adjustment is calculated via an arithmetic average strike put option by examining the increase in discounts as a result of adjusting the holding period from the weighted average holding period to 7.5 years.

Restricted Stock Data: Mandelbaum Factor Analysis

Mandelbaum Factor	Subject	Restricted Stock	Impact on DLOM
Public vs. private sale of stock	<ul style="list-style-type: none"> No sales 	<ul style="list-style-type: none"> Prospect for public sales 	Increase
Financial Statement Analysis (Risk)	<ul style="list-style-type: none"> Profitable Free cash flow positive Growing steadily No debt Strong balance sheet 	<ul style="list-style-type: none"> Negative earnings Negative equity Distressed 	Decrease
Dividend Policy	<ul style="list-style-type: none"> Not distributing 	<ul style="list-style-type: none"> Not distributing 	No effect
Nature of the company, its history, industry, position, and economic outlook (Risk)	<ul style="list-style-type: none"> Established since 1980s Stable position 	<ul style="list-style-type: none"> Short history Risky industries 	Decrease
Company Management	<ul style="list-style-type: none"> Hoarding excess cash 	<ul style="list-style-type: none"> Board of Directors 	Increase
Amount of control transferred in stock	<ul style="list-style-type: none"> Minority transfers 	<ul style="list-style-type: none"> Minority transfers 	No effect
Holding Period for the stock	<ul style="list-style-type: none"> Expected 5-10 years 	<ul style="list-style-type: none"> Approximately 1.3 yrs. Registration rights 	Increase
Company's Redemption Policy	<ul style="list-style-type: none"> No formal policy 	<ul style="list-style-type: none"> No formal policy 	No effect
Costs associated with public offering	<ul style="list-style-type: none"> Expensive 	<ul style="list-style-type: none"> Already public 	Increase
Other Factors	<ul style="list-style-type: none"> Less reliable financials Small shareholder base Smith family controls Limited buyer pool 	<ul style="list-style-type: none"> None 	Increase
Total Adjustment			10%?

Mandelbaum on Steroids Quantitative and Qualitative

Still Based on Judgment

Exhibit X - Final Factor Analysis

#NAME?		
		Adjust
DLOM Before Factor Analysis		30%
	<u>Qualitative</u>	
Factors that impact volatility		
Attractiveness of subject business		
Attractiveness of subject industry		
Information requirements		
Availability of access to or reliability of information		
Management		
Earnings levels		
Revenue levels		
Book to market value ratios		
Financial condition		
Business risk		
General economic conditions		
Prevailing stock market conditions		
Volatility of stock		
Availability of hedging opportunities		
Market capitalization rank		
Existence and effect of pending litigation		
Degree and effect of industry regulation		
Effect of state laws		
Existence of swing vote attributes in subject interest		
Impact of Volatility (Risk) Factors	Small Increase	2.0%

Factors that impact holding period

Prospects for a sale or public offering of the company

Number of identifiable buyers

Volume of comparable private transactions

Offering size as a % of total shares outstanding

Attributes of controlling shareholder, if any

Ownership concentration effects

Percent of shares held by insiders

Percent of shares held by institutions

Percent of independent directors

Listing on a major exchange

Registration costs

Restrictive transfer provisions

Length of restriction period

Length of expected holding period

Registered vs. unregistered

Total Impact of Holding Period Factors

Large Increase **4.0%**

Factors that impact dividends

Dividend-paying (or distribution) ability and history

Dividend yield

Total impact of dividend factors Small Increase **2.0%**

Other factors

Value of private vs. public stock

Active vs. passive investors

Owners with an adversarial relationship

Liquidity of control owners

Total Impact of Other Factors Small Increase **2.0%**

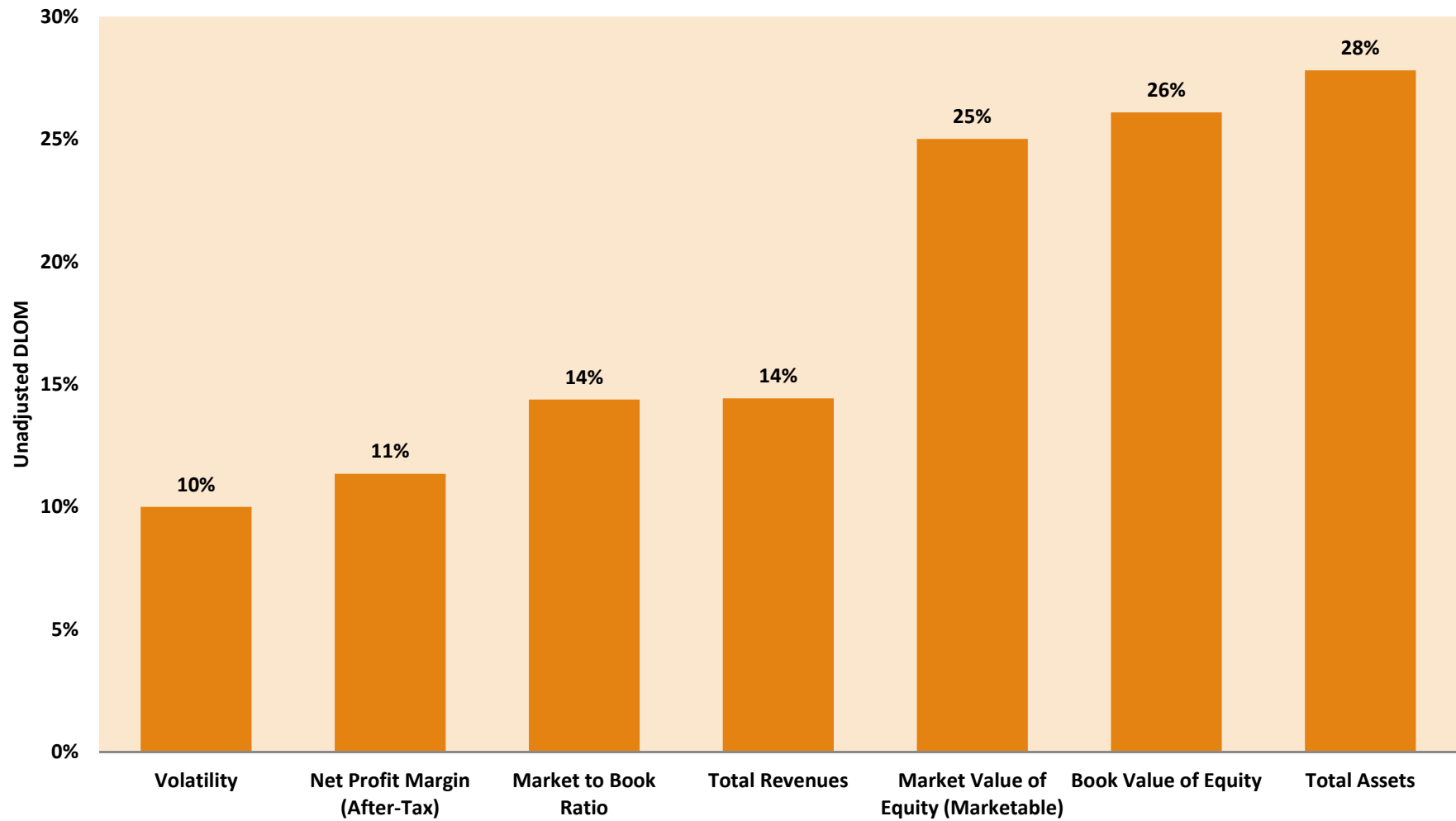
Total Impact of All Factors **10%**

Concluded DL0M **40%**

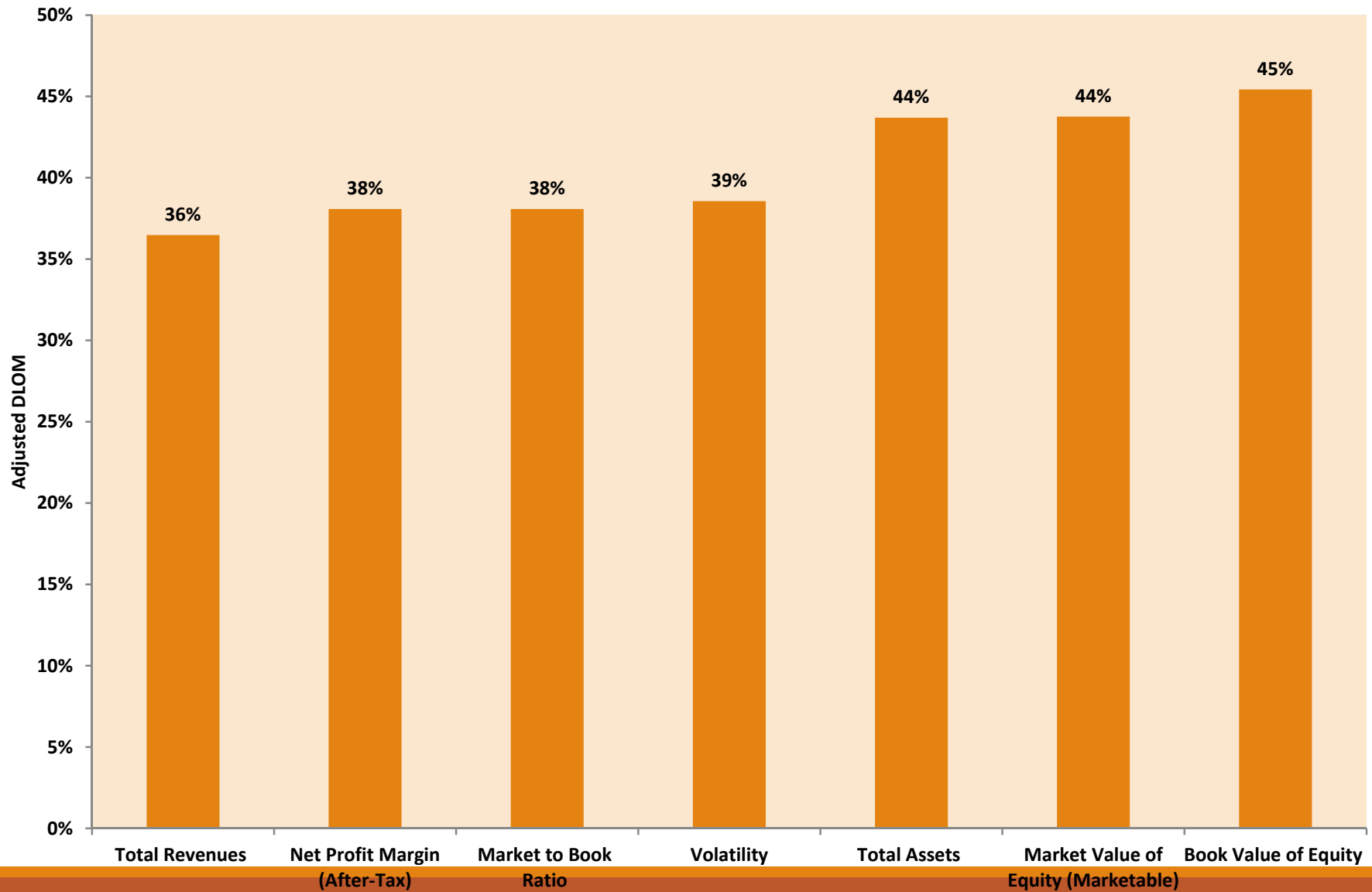
Restricted Stock Data: Summary of Normalized Discounts

Primary Inputs						
Subject Company		Vol.	HP	Fact.	Adj.	
Fundamentals	DLOM	Adj.	Adj.	Adj.	DLOM	Wgt.
Market Value of Equity (Marketable)	25%	-6%	15%	10%	44%	2
Total Revenues	14%	-4%	16%	10%	36%	1
Total Assets	28%	-8%	14%	10%	44%	3
Book Value of Equity	26%	-6%	15%	10%	45%	2
Market to Book Ratio	14%	-3%	17%	10%	38%	1
Net Profit Margin (After-Tax)	11%	-1%	17%	10%	38%	1
Volatility	10%	2%	17%	10%	39%	3
Median	14%	-4%	16%	10%	39%	
Average	18%	-4%	16%	10%	41%	
Wgt Avg.	20%	-4%	16%	10%	41%	

FMV Quintiles Analysis Reported DLOMs



FMV Opinions Quintiles Analysis Adjusted DLOMs



METHOD

Quantitative Marketability Discount Model (QMDDM)

QMDM

QMDM Inputs	
Base Cost of Equity Capital	20.0%
Holding Period Increment	4.0%
LT Growth in Value (Minority)	14.0%
LT Growth in Dividend	0.0%
Dividend Yield	0.0%
Holding Period (Years)	7.5
Mid-Year Convention	no

Calculated DLOM	47%
------------------------	------------

Sensitivity Analysis	
Minimum Holding Period	5.0
Maximum Holding Period	10.0
Minimum HP Return	22.0%
Maximum HP Return	26.0%
Illiquidity Increment	1.0%

QMDM

		Holding Period (Years)											
		1	2	3	4	5	6	7	8	9	10	15	20
HP Required Return (%)	20	5%	10%	14%	19%	23%	26%	30%	34%	37%	40%	54%	64%
	21	6%	11%	16%	21%	26%	30%	34%	38%	42%	45%	59%	70%
	22	7%	13%	18%	24%	29%	33%	38%	42%	46%	49%	64%	74%
	23	7%	14%	20%	26%	32%	37%	41%	46%	50%	53%	68%	78%
	24	8%	15%	22%	29%	34%	40%	44%	49%	53%	57%	72%	81%
	25	9%	17%	24%	31%	37%	42%	48%	52%	56%	60%	75%	84%
	26	10%	18%	26%	33%	39%	45%	50%	55%	59%	63%	78%	86%
	27	10%	19%	28%	35%	42%	48%	53%	58%	62%	66%	80%	88%
	28	11%	21%	29%	37%	44%	50%	56%	60%	65%	69%	82%	90%

METHOD OPTION PRICING MODELS

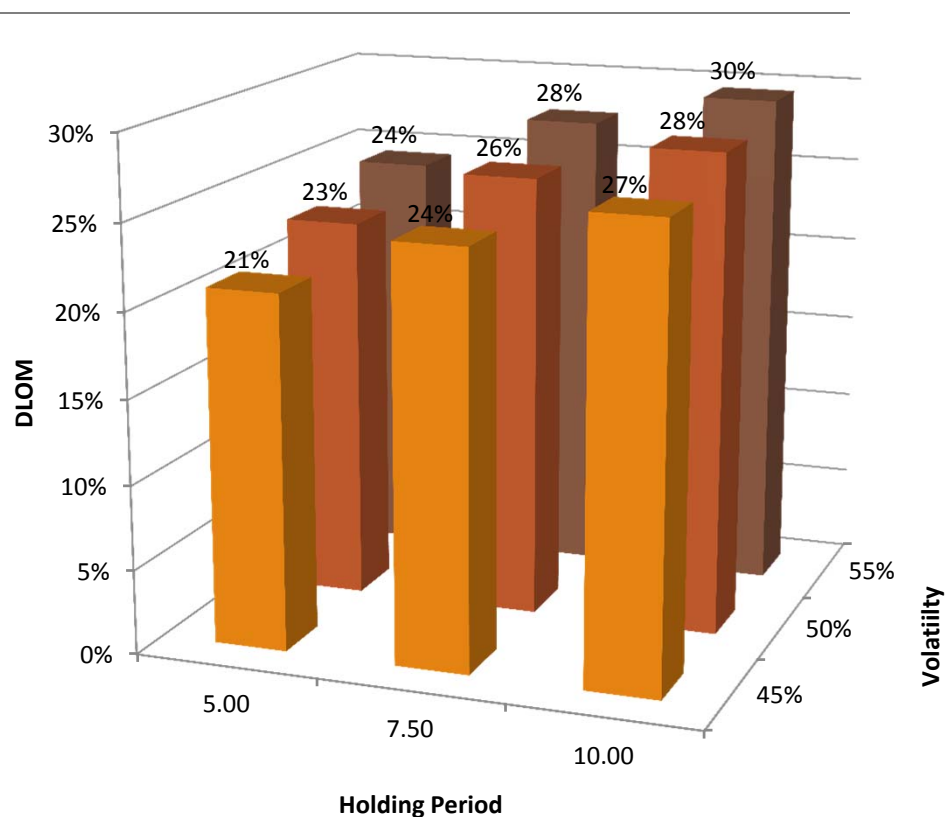
Option Pricing Models

Input	Assumption	Reasoning
Volatility	Range (45-55%)	<ul style="list-style-type: none">Based upon volatility estimated from public companies; could also simply evaluate volatilities over a reasonable range
Holding Period	5-10 Years	<ul style="list-style-type: none">Based upon likely holding period; good to evaluate HP over range
Dividend	0%	<ul style="list-style-type: none">Based upon subject company's recent history and current policies (see case facts)

Finnerty Option Model

Finnerty Inputs	
Volatility (Subject)	50.0%
Holding Period (Years)	7.5
Dividend Yield	0%
Apply Autocorrect Option?	Yes
Calculated DLOM	26%

Sensitivity Analysis	
Minimum Holding Period (Years) for Chart	5.0
Maximum Holding Period (Years) for Chart	10.0
Minimum Volatility for Chart	45.0%
Maximum Volatility for Chart	55.0%
Volatility Increment for Sensitivity Table	5.0%



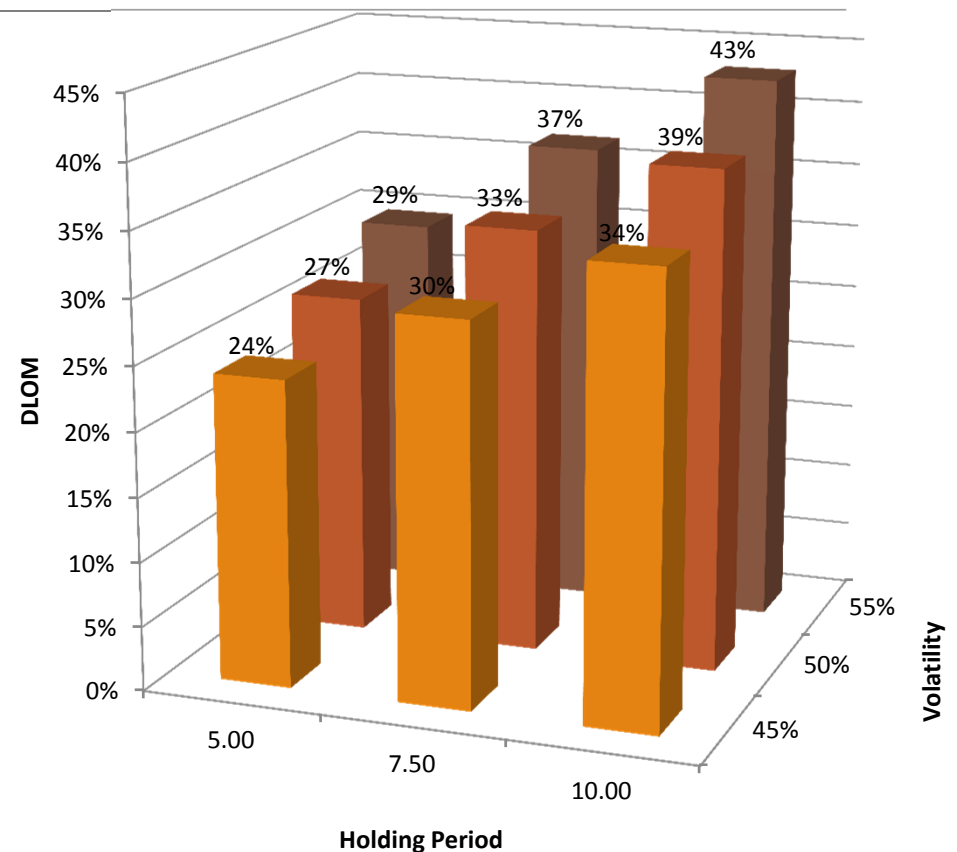
Finnerty Option Model

		Holding Period (Years)										
		1	2	3	4	5	6	7	8	9	10	15
		Implied Discount for Lack of Marketability										
Volatility	30.0%	7%	10%	12%	13%	15%	16%	17%	18%	19%	20%	23%
	35.0%	8%	11%	13%	15%	17%	18%	20%	21%	22%	23%	26%
	40.0%	9%	13%	15%	17%	19%	21%	22%	23%	24%	25%	28%
	45.0%	10%	14%	17%	19%	21%	22%	24%	25%	26%	27%	30%
	50.0%	11%	16%	19%	21%	23%	24%	26%	27%	28%	28%	31%
	55.0%	12%	17%	20%	22%	24%	26%	27%	28%	29%	30%	31%
	60.0%	13%	18%	21%	24%	26%	27%	28%	29%	30%	30%	32%
	65.0%	14%	19%	23%	25%	27%	28%	29%	30%	31%	31%	32%
	70.0%	15%	21%	24%	26%	28%	29%	30%	31%	31%	32%	32%

Ghaidarov Option Model

Ghaidarov Inputs	
Volatility (Subject)	50.0%
Holding Period (Years)	7.5
Dividend Yield	0.0%
Apply Autocorrect Option?	Yes
Calculated DLOM	33%

Sensitivity Analysis	
Minimum Holding Period (Years) for Chart	5.0
Maximum Holding Period (Years) for Chart	10.0
Minimum Volatility for Chart	45%
Maximum Volatility for Chart	55%
Volatility Increment for Sensitivity Table	5%



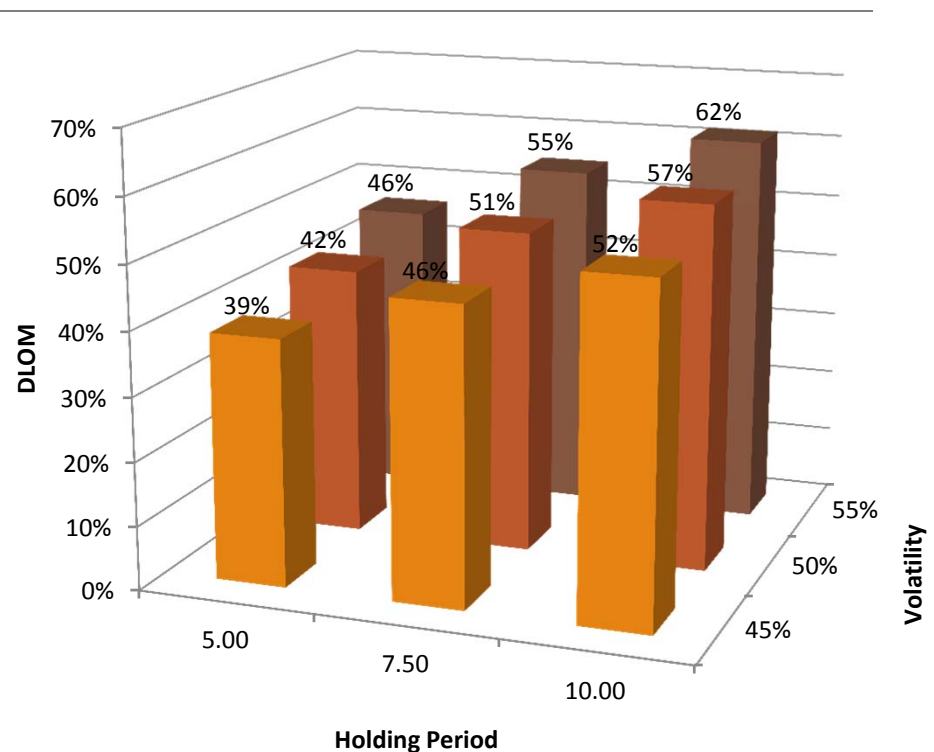
Ghaidarov Option Model

		Holding Period (Years)										
		1	2	3	4	5	6	7	8	9	10	15
		Implied Discount for Lack of Marketability										
Volatility	30.0%	7%	10%	12%	14%	16%	17%	19%	20%	21%	22%	28%
	35.0%	8%	11%	14%	16%	18%	20%	22%	23%	25%	26%	33%
	40.0%	9%	13%	16%	19%	21%	23%	25%	27%	29%	30%	38%
	45.0%	10%	15%	18%	21%	24%	26%	28%	31%	33%	34%	43%
	50.0%	12%	17%	20%	24%	27%	29%	32%	34%	37%	39%	48%
	55.0%	13%	18%	22%	26%	29%	32%	35%	38%	41%	43%	54%
	60.0%	14%	20%	25%	29%	32%	36%	39%	42%	45%	47%	59%
	65.0%	15%	22%	27%	31%	35%	39%	42%	46%	49%	52%	64%
	70.0%	16%	23%	29%	34%	38%	42%	46%	50%	53%	56%	69%

Ghaidarov Forward-Start Put Analysis Upper Bound

Ghaidarov Inputs	
Volatility (Subject)	50.0%
Holding Period (Years)	7.5
Dividend Yield	0.0%
Apply Autocorrect Option?	Yes
Calculated DLOM	51%

Sensitivity Analysis	
Minimum Holding Period (Years) for Chart	5.0
Maximum Holding Period (Years) for Chart	10.0
Minimum Volatility for Chart	45%
Maximum Volatility for Chart	55%
Volatility Increment for Sensitivity Table	5%



Ghaidarov Forward-Start Put Analysis Upper Bound

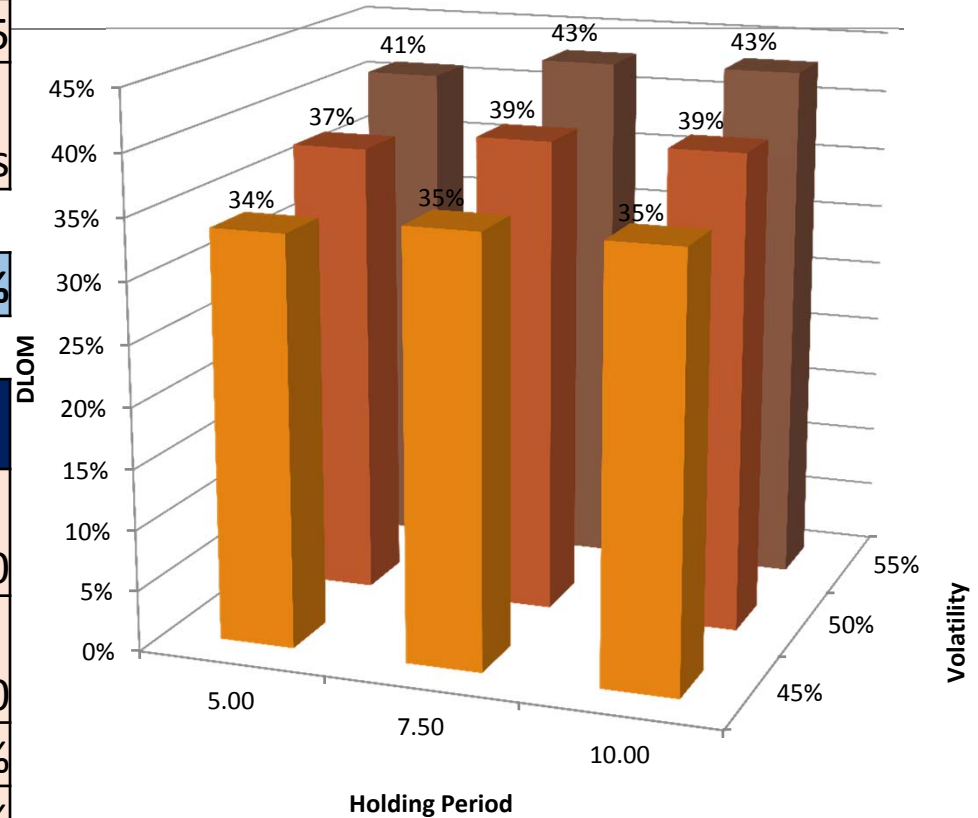
		Holding Period (Years)										
		1	2	3	4	5	6	7	8	9	10	15
		Implied Discount for Lack of Marketability										
Volatility	30.0%	12%	17%	20%	24%	26%	29%	31%	33%	35%	36%	44%
	35.0%	14%	20%	24%	27%	30%	33%	36%	38%	40%	42%	50%
	40.0%	16%	22%	27%	31%	35%	38%	40%	43%	45%	47%	56%
	45.0%	18%	25%	30%	35%	39%	42%	45%	48%	50%	52%	62%
	50.0%	20%	28%	33%	38%	42%	46%	49%	52%	55%	57%	67%
	55.0%	22%	30%	37%	42%	46%	50%	53%	56%	59%	62%	71%
	60.0%	24%	33%	40%	45%	50%	54%	57%	60%	63%	66%	75%
	65.0%	25%	35%	43%	48%	53%	57%	61%	64%	67%	70%	79%
	70.0%	27%	38%	46%	52%	57%	61%	65%	68%	71%	73%	82%

Chaffe

Put Option Inputs	
Volatility (Subject)	50.0%
Holding Period (Years)	7.5
Apply Autocorrect Option?	Yes

Calculated DLOM **39%**

Sensitivity Assumptions	
Minimum Holding Period (Years) for Chart	5.0
Maximum Holding Period (Years) for Chart	10.0
Minimum Volatility for Chart	45%
Maximum Volatility for Chart	55%
Volatility Increment for Sensitivity Table	5%



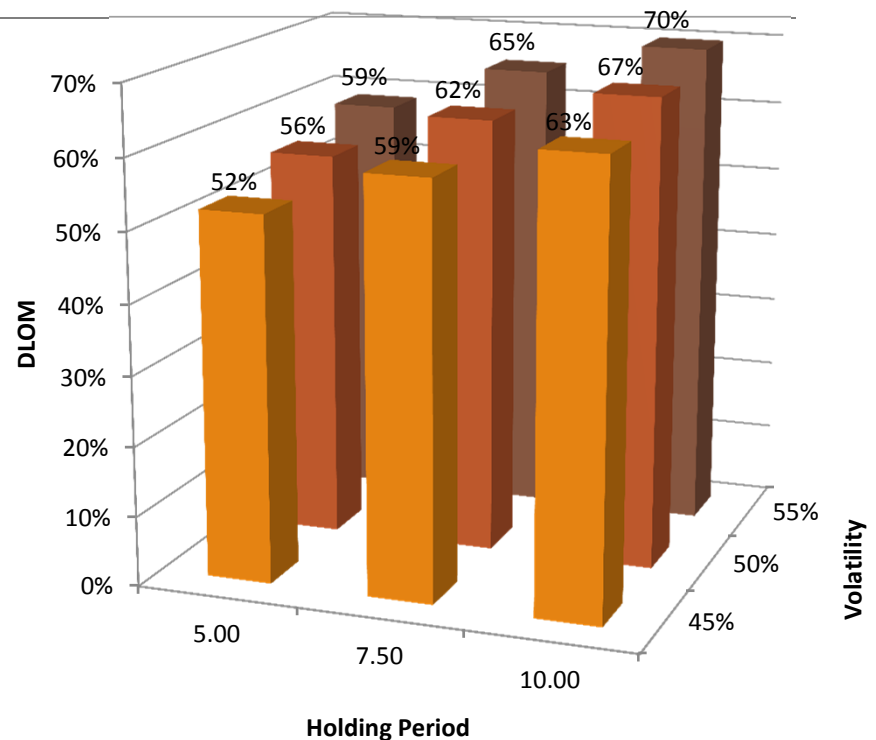
Chaffe

		Holding Period (Years)											
		1	2	3	4	5	6	7	8	9	10	15	
		Implied Discount for Lack of Marketability											
Volatility	30.0%	12%	16%	19%	21%	22%	22%	22%	22%	22%	22%	22%	22%
	35.0%	14%	19%	23%	25%	26%	26%	26%	26%	26%	26%	26%	26%
	40.0%	16%	22%	26%	28%	30%	31%	31%	31%	31%	31%	31%	31%
	45.0%	18%	25%	29%	32%	34%	35%	35%	35%	35%	35%	35%	35%
	50.0%	20%	27%	32%	35%	37%	38%	39%	39%	39%	39%	39%	39%
	55.0%	22%	30%	35%	39%	41%	42%	43%	43%	43%	43%	43%	43%
	60.0%	24%	32%	38%	42%	44%	46%	46%	47%	47%	47%	47%	47%
	65.0%	25%	35%	41%	45%	48%	49%	50%	50%	50%	50%	50%	50%
	70.0%	27%	38%	44%	48%	51%	53%	53%	53%	53%	53%	53%	53%

VFC Longstaff Option Analysis

VFC Longstaff Inputs	
Volatility (Subject)	50.0%
Holding Period (Years)	7.5
Apply Autocorrect Option?	Yes
Calculated DLOM	62%

Sensitivity Analysis	
Minimum Holding Period (Years) for Chart	5.0
Maximum Holding Period (Years) for Chart	10.0
Minimum Volatility for Chart	45%
Maximum Volatility for Chart	55%
Volatility Increment for Sensitivity Table	5%



VFC Longstaff

		Holding Period (Years)										
		1	2	3	4	5	6	7	8	9	10	15
		Implied Discount for Lack of Marketability										
Volatility	30.0%	21%	28%	33%	37%	40%	42%	45%	47%	49%	50%	57%
	35.0%	24%	32%	37%	41%	44%	47%	49%	52%	54%	55%	62%
	40.0%	27%	35%	41%	45%	48%	51%	54%	56%	58%	60%	66%
	45.0%	29%	38%	44%	49%	52%	55%	58%	60%	62%	63%	70%
	50.0%	32%	41%	47%	52%	56%	59%	61%	63%	65%	67%	73%
	55.0%	34%	44%	50%	55%	59%	62%	64%	66%	68%	70%	76%
	60.0%	37%	47%	53%	58%	62%	64%	67%	69%	71%	72%	78%
	65.0%	39%	49%	56%	60%	64%	67%	69%	72%	73%	75%	80%
	70.0%	41%	52%	58%	63%	67%	69%	72%	74%	75%	77%	82%

Summary of DLOMs

<u>Model</u>	<u>Min</u>	<u>Max</u>	<u>Selected</u>
Pre-IPO	N/A	N/A	N/A
Restricted Stock Basic	30%	48%	40%
Restricted Stock with Vol. Adj. & Basic HP Adj. of 14%	34%	44%	40%
Restricted Stock Normalized with Vol. Adj. and HP Adj. (Option)	36%	45%	40%
QMDM	29%	63%	47%
Option Pricing (Finnerty)	21%	30%	26%
Option Pricing (Ghaidarov 1)	24%	43%	33%
Option Pricing (Ghaidarov 2)	39%	62%	51%
Option Pricing (Chaffe)	34%	43%	39%
Option Pricing (VFC Longstaff)	52%	70%	62%
Conclusion			40%

Thank you!

Jim Alerding, CPA/ABV, ASA

Alerding Consulting, LLC

jim@aleringconsulting.com