The Financial Valuation Group

Forensic Accounting, Business Valuation and Consulting

In This Issue:

Conditional Volatility Model for Determining a Reasonable Discount for Lack of Marketability

Michael J. Mard[1], M. Seph Mard[2] and Donald P. Wisehart[3] [4]

In the last issue of our quarterly newsletter[5], we developed at length our Conditional Volatility Model (CVM) for determining a reasonable discount for lack of marketability (DLOM) based on determining the value of a put option applicable to the subject company's shares. While the math is complex, the CVM is simple in its application. We utilize market guideline comparables to estimate the volatility applicable to the subject. As we know, the guideline approach applies a comparison of the subject company to a publicly traded company. The comparison is based on public data regarding the comparable companies' stock prices, balance sheets, income statements, and cash flow statements. Therefore, if the guideline public companies are appropriately comparable to the subject company, then the multiples derived from those comps should represent an accurate comparison. As with any valuation, the validity of the guideline approach for valuation hinges upon choosing appropriate guideline comparables for the subject company.

For our CVM example, we have selected a closely held retail department store being valued for gift tax purposes as our subject. Typically, this purpose would be for a minority interest, thus warrant consideration of a DLOM. In this example, we identified five guideline comparables. Our CVM requires three inputs: the length of time to sell the security, the interest rate, and the underlying volatility of the value of the business, which has the greatest impact.

The first of the three inputs is the length of time to sell. For such lengths of time, we applied the model for 5 separate time periods; 1, 2, 3, 4 & 5 years. The second of the three inputs, which is empirical, is the interest rate. For the interest rates we used the U.S. Treasury constant maturities at the corresponding periods of time (i.e., 12 months US Treasury Yield). The final input is volatility. We calculated and applied a yearly volatility to the given guideline publicly traded company peer group over the same 5 year period of time to serve as proxies[6] for our subject company's volatility. We calculated daily volatility as the standard deviation of the gross-returns of the given guideline company's stock. Our application of the math, specifically the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model, implies that the variance today is conditional upon previous variances, which allows for proper interpretation of volatility relative to the given holding period. Using our Conditional Volatility DLOM Model we approximate a DLOM of 28%. We follow the same process of identifying

Footnotes
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3. Donald P. Wisehart, ASA, CPA/ABV/CFF, CVA, MST is president of the Financial Valuation Group of New England & Wisehart, Inc. See www.wisehart.biz.
4. We thank Jose Agurcia (www.linkedin.com/pub/jose-agurcia/51/57b/8aa), Professor Richard Luger, Georgia State University, (http://www.rmi.gsu.edu/faculty/luger.shtml) and Korey Rubenstein (www.linkedin.com/pub/korey-rubenstein/8/912/b6a) for their review, comments and insight. All errors are, of course, our burden.
5. For a copy of the newsletter, please email a request to l.muraki@fvgfl.com.
6. It is generally accepted to substitute the industry volatility and/or the volatilities of public companies within the same industry for the volatility of the subject company.

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Marketability Adjustment Factors	Size of DLOM Adjustment: Minimum	Reduced	Average	Increased	Maximum
1. History of Company	x				
2. Future Growth of Earnings		x			
3. Financial Analysis			x		
4. Cash Distribution Policy			x		
5. Experienced Management		x			
6. Depth of Management		x			
7. Casualty Risk				x	
8. Relationship with Affiliates			N/A		
9. Redemption Policy					x
10. Restrictions on Transfer of Ownership Units					x
11. Cost of Public Offering				x	
12. Shareholder Loans				x	
13. Stock Purchase Programs					x
14. Broad Number of Shareholders					x
15. Time horizon for sales					x

market comparables and apply our analysis to an evenly weighted portfolio of those assets, which is the proxy of our subject company. This 28% is an upper limit, thus the range applicable to the subject is 0% to 28%. This 28% of course would change with each date of value and with any change in comps.

FINAL DETERMINATION OF DLOM

We then apply a weighted matrix of qualitative elements to the range set by CVM. Where does subject closely held company fit within our example range of 0% - 28%? Assume a number of elements recognized to impact a security's marketability shown in the above chart.

Here are the fuller descriptions of the elements:

1. *History* – Age of company, and history of: combination of entities, products, markets and market share, operational strengths and weaknesses.

2. *Future Growth of Earnings* – Probability of future growth of earnings to exceed inflation, thus creating an increase of real returns and increased value.

3. *Financial Analysis* – Profitability, operating trends, amount of leverage, financial outlook, financial strengths and weaknesses.

4. *Cash Distribution Policy* – History of distributions, distribution policy, outlook for future distributions.

5. *Experienced Management* - Quality, experience, and diversity of leadership, length of time of service, past success of leadership.

6. *Depth of Management* – Succession identified for each of the major officers of the company.

7. *Casualty Risk* - Risk of losses due to weather, or other factors. Level that risk is mitigated by diversity, geographical dispersion, etc.

8. *Relationship with Affiliates* – Level of dependency on related companies, quality of relationships, past successes/ problems with related companies.

9. *Redemption Policy* – Are the members/owners ever required to redeem a member's units? Most closely held corporations lack any requirement to redeem outstanding shares. Amount of liquidity, reflected by an adequately funded liquidity pool. Past successes/future outlook of company acting as a clearinghouse.

10. *Restrictions on Transfer of Ownership Units* – Are there restrictions regarding the transfer of ownership units?

11. *Cost of Public Offering* - Consider the cost of a public offering of shareholder interests in an operating entity with the current level of sales.

12. *Shareholder Loans* – Ability of shareholders to realize cash proceeds through borrowing using their stock as collateral. Company should have established history of such

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Announcements:

Valuation for Financial Reporting

Fair Value Measurement in Business Combinations, Early Stage Entities, Financial Instruments and Advanced Topics, 4th Edition

by James R. Hitchner and Michael J. Mard

Educates preparers, auditors and valuation practitioners and litigators with methodologies for identifying and valuing intangible assets and goodwill. The Book also presents fair value elements for early stage entities and financial instruments.

- Provides specific guidance for determining Fair Value in a Business Combination, including Acquisition Method, Classifying or Designating Assets and Liabilities, Research and Development Assets, and Goodwill.
- Provides guidance for determining Fair Value for Financial Instruments, including option contracts such as derivatives (forwards, swaps) and asset-backed securities such as collateralized debt obligations.
- Gives clear guidance for early stage companies with complex capital structures for stock compensation for both 409A tax compliance and ASC 815-40-15 financial reporting compliance.
- Offers new techniques for applying options methods, including addressing GARCH methodologies in Black Scholes Merton Model and procedures for implementing the probability-weighed expected returns method.
- Presents advanced topics in fair value including
  - measurement of brand value,
  - measurement of intangible assets in ad valorem matters,
  - determining the Discount for Lack of Marketability using empirically tested stochatic processes and
  - analyzing the developmental and reporting standards of all major valuation groups.

Includes a Wiley web site with checklists!

Published 2013 by John Wiley & Sons, Inc.

- Mike Crain will be teaching corporate finance to global MBA students for the Manchester Business School, University of Manchester (UK).
- Mike Crain has been invited to speak in November at the American Institute of CPAs annual Forensic and Valuation Services Conference on advanced issues for discounted cash flow models.

borrowings and repayments.

13. *Stock Purchase Programs* – Ability of company to buy back stock or to facilitate other shareholders to purchase stock of original holder. Company should have established history of such purchases and facilitations.

14. *Broad Number of Shareholders* – A broader number of shareholders will lead to a more normal distribution of behavior. The statistical law of large numbers says a normal distribution is approximated beginning at thirty data points. A shareholder population of, say, one hundred will have more economically consistent (normal) behavior and be less susceptible to aberrations (disputes) than a population of, say six.

15. *Time horizon for sales* – The time horizon for sales refers to the expected length of time to sell the security or churning factor. For instance, if there are a larger number of shareholders, say a hundred, and there is regular sales activity of, say 10% annually, the DLOM would be reduced. On the other hand, if there are a smaller number of shareholders, say ten, who are completely inactive with say a time horizon of thirty years to sell, then the DLOM would be increased.

As can be seen, we have a matrix that is 15 elements long. A specific subject company situation might have more to be identified. Each item has five selectors ranging from minimum discount to a maximum discount. We qualitatively assign each cell a value such that the total of the items would provide a percentile range to apply to the CVM results. Thus if the total of the cells is 60, that might translate to the 60th percentile within the 0 – 28 range, or 17%. It is important to recognize that while these elements are qualitative in nature,

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There are several organizations specializing in business valuation, including the American Institute of CPAs (AICPA), the American Society of Appraisers (ASA) and the National Association of Certified Valuation Analysts (NACVA). Each have developed their own BV standards. The AICPA standards are called Statement on Standards for Valuation Services No. 1 (SSVS). The NACVA developed separate standards and until recently it required designated members to be CPAs, thus adopting by inclusion the AICPA standards. The ASA has formally adopted the federally regulated Uniform Standards of Professional Appraisal Practice (USPAP). All of the standards are divided into two primary areas, developmental (the analysis) and reporting. Typically there are three types of reports, a full detailed version, a summary version and finally a calculation which is agreed upon procedures. Below for your use is a two page chart comparing the reporting standards among each of the major organizations prepared by Donald P. Wisehart, ASA, CPA/ABV/CFF, CVA, MST president of the Financial Valuation Group of New England & Wisehart, Inc. (www.wisehart.biz).

Report Standard Comparative Chart	AICPA Full	AICPA Summary	AICPA Calc	ASA Full	[7] USPAP 10-2 ..	NACVA [1] Detailed & Summary	NACVA Calc
Engagement identification requirements			[2] p42 (77)				[2]
Letter of Transmittal						V.C.1.a	
Table of Contents						V.C.1.b	
Client	p32 (54)	p40 (72)		USPAP	(a) (i)	V.C.1.g(1)	V.C.3.c(1)
Subject being valued	p32 (54)	p40 (72)	p42 (77)	p19 IV	(a) (iii)	V.C.1.c(1)	V.C.3.a(1)
Interest being valued	p32 (54)	p40 (72)		p19 IV	(a) (iii)	V.C.1.c(3)	V.C.3.a(3)
Valuation (or Effective) or Calculation Date	p32 (54)	p40 (72)	p42 (77)	p19 IV	(a) (vii)	V.C.1.c(5)	V.C.3.a(5)
Report Date	p32 (54)	p40 (72)	p42 (77)	p19 IV	(a) (vii)	V.C.1.c(6)	V.C.3.a(6)
Type of report	p32 (54)	p40 (72)					V.C.3.g
Standard of value defined	p32 (54)	p40 (72)		p19 IV	[6] (a) (vi)	V.C.1.c(7)	
Premise of value	p32 (54)	p40 (72)		p19 IV	[6] (a) (vi)	V.C.1.c(8)	
Purpose and intended use	p31 (54)	p40 (72)		p19 IV	(a) (ii)	V.C.1.c(2)	V.C.3.e
Sources of information disclosed	p32 (55)	p40 (72)		p19 IV	(a) (ix)	V.C.1.d	
Interviewees	p32 (55)						
Site visit disclosure or lack of	[5] p32 (55)					V.C.1.e(9)	
Analysis and development of value requirements					[8]	[1]	
Nature and history of business	[4] p31 (59)			[3] p19 V	(a) (iii)	V.C.1.c(4)	
Economic conditions, present and outlook	p31 (59)			p19 V	(a) (ix)		
Past, current and future prospects of business/ industry - Financial Analysis of earnings/ dividend capacity	p31 (60)			p19 VI	(a) (ix)		
Past sales of interest in the business being appraised	p31 (63)			p19 V	(a) (ix)		
Market prices of similar businesses publicly traded	p31 (63)			p20 VII	(a) (ix)		
Similar business/interest sales,	p31 (63)			p20 VII	(a) (ix)		
Ownership size, nature, restrictions and agreements	p31 (63)			p20 VII	(a) (ix)	V.C.1.c(4)	V.C.3.a(4)
Extent the interest appraised contains ownership control	p31 (54)	p40 (72)	p42 (77)	p20 VII B	(a) (iv)		
Extent interest has or lacks elements of marketability	p31 (54)	p40 (72)	p42 (77)	p20 VII B	(a) (v)		
Description of the fundamental analysis						[2] V.C.1.e	
Valuation approaches and methods used	p31 (62-66)	p40 (72)	[2] p42 (77)	p20 VII A	(a) (ix)	V.C.1.e(7)	[2] V.C.3.a(8)
Valuation approaches and methods considered	p31 (62-66)			USPAP	(a) (ix)	V.C.1.e(6)	
Valuation approaches and methods rejected				USPAP	(a) (ix)		
Other items that influenced the valuation						V.C.1.e(8)	
Material matters considereed						V.C.1.c(10)	V.C.3.d
Inclusion of appendices and exhibits						V.C.1.i	
Conclusion of value and signature	p31 (53)	p40 (72)	p43 (77)	p20 VIII	(a) (ix)		
Estimate or opinion disclosure	p38 (69)	p40 (72)	p43 (77)			V.C.1.e(10)	
Signature of primary appraiser	p38 (69)	p40 (72)	p43 (77)	p18 II(A)	(a) (xi)		V.C.3.c(5)
Firm signature option	p39 (69)	p43 (77)	p43 (77)	p18 II(A)			
Financial information disclosure	p31 (53)	p40 (72)		p19 VI	(a) (ix)		
Historical financial statement (F/S) summaries	p34 (60)	p40 (72)		p19 VI A	(a) (ix)	V.C.1.e(1)	
Adjustments to historical F/S summaries	p34 (60)			p19 VI B	(a) (ix)	V.C.1.e(2)	
Adjusted F/S summaries	p34 (60)			Implied	(a) (ix)	V.C.1.e(3)	
Projected/forecasted F/S inculding assumptions	p34 (60)			p19 VI C	(a) (ix)	V.C.1.e(4)	

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Report Standard Comparative Chart (continued)

	AICPA Full	AICPA Summary	AICPA Calc	ASA Full	7 USPAP 10-2 ..	NACVA 1 Detailed & Summary	NACVA Calc
Non-operating assets and liabilities						V.C.1.e(5)	
Tax return information	p33 (55)						
If appropriate, financial comparison to industry	p34 (60)			p19 VI D			
Limiting conditions and assumptions	p31 (54)	p40 (72)		p18 III	(a) (x)	V.C.1.f	V.C.3.b
The scope of work of the appraisal	p31 (54)	p40 (72)		USPAP	(a) (viii)	V.C.1.c(9)	V.C.3.a(7)
Use of report limitations	p30 (51)	p40 (72)		USPAP	(a) (ii)		
Intended users of the valuation	p31 (54)	p40 (72)		USPAP	(a) (i)		
Conclusion of value and signature	p31 (53)	p40 (72)	p43 (77)	p20 VIII	(a) (ix)		
Estimate or opinion disclosure	p38 (69)	p40 (72)	p43 (77)			V.C.1.e(10)	
Signature of primary appraiser	p38 (69)	p40 (72)	p43 (77)	p18 II(A)	(a) (xi)		V.C.3.c(5)
Firm signature option	p39 (69)	p43 (77)	p43 (77)	p18 II(A)			
Financial information disclosure	p31 (53)	p40 (72)		p19 VI	(a) (ix)		
Historical financial statement (F/S) summaries	p34 (60)	p40 (72)		p19 VI A	(a) (ix)	V.C.1.e(1)	
Adjustments to historical F/S summaries	p34 (60)			p19 VI B	(a) (ix)	V.C.1.e(2)	
Adjusted F/S summaries	p34 (60)			Implied	(a) (ix)	V.C.1.e(3)	
Projected/forecasted F/S inculding assumptions	p34 (60)			p19 VI C	(a) (ix)	V.C.1.e(4)	
Non-operating assets and liabilities						V.C.1.e(5)	
Tax return information	p33 (55)						
If appropriate, financial comparison to industry	p34 (60)			p19 VI D			
Limiting conditions and assumptions	p31 (54)	p40 (72)		p18 III	(a) (x)	V.C.1.f	V.C.3.b
The scope of work of the appraisal	p31 (54)	p40 (72)		USPAP	(a) (viii)	V.C.1.c(9)	V.C.3.a(7)
Use of report limitations	p30 (51)	p40 (72)		USPAP	(a) (ii)		
Intended users of the valuation	p31 (54)	p40 (72)		USPAP	(a) (i)		
Representations, disclosures, and certifications	p31(31)	p40(72)		USPAP	(a) (xi)	V.C.1.g	
Denial of access to essential data						V.C.1.c(14)	
Contingency fee						V.C.1.g(2)	V.C.3.c(2)
Subsequent events in certain circumstances	p31 (54)	p40 (72)				V.C.1.c(12)	V.C.3.c(10)
Jurisdictional exception application	p31 (54)	p40 (72)		USPAP	Stated	V.C.1.c(15)	
Attestation disclosure engagements of firm	p31 (56)						
Tax preparer/client relationship disclosure	p31 (57)						
Hypothetical conditions if any	p31 (54)	p40 (72)	p42 (75)	USPAP	(a) (x)	V.C.1.c(11)	V.C.3.a(9)
Extraordinary assumptions if any				USPAP	(a) (x)		
Disclosure of not auditing, reviewing or compiling F/S	p31 (58)						
The reports scope limitations	p31 (54)	p40 (72)		USPAP	(a) (viii)		
Financial interest disclosure						V.C.1.g(3)	
Statement of independence, financial interest, etc.				p18 III A	(a) (xi)		V.C.3.c(3)
If a specialist was used, a reliance use statement	p31 (54)	p40 (72)		p18 III B	(a) (xi)		V.C.3.a(11)
Appraiser representations	p37 (67)	p40 (72)				V.C.1.c(13)	V.C.3.c
Appraisal certification signed by appraiser		p40 (72)		USPAP	(a) (xi)	V.C.1.g(5)	V.C.3.a(4)
Obligation or no obligation to update statement			p42 (77)			V.C.1.g(4)	
Conforms to organizations' standards	p37 (67)		p42 (77)	p18.11(B)	(a) (xi)		
Qualifications of the appraiser						V.C.1.h	

1 Summary report permits an "abridged verison" of the contents of a detailed report.
2 General description of engagement and calculation procedures agreed upon. NACVA refers to Rev Rul. 59-60 tenets as "fundalmental analysis".
3 ASA includes form of organization, history, products and/or services, markets and customers, management, major assets, both tangible and intangible, and major liabilities, sensitivity to seasonal or cyclical factors, competition and "such other factors"
4 AICPA refers to nature, background and history, facilities, organizational structure, management team, classes of equity ownership interest and rights attached thereto, products and/or services, geographical markets, key customers and suppliers, competition and business risks
5 AICPA requires whether a site visit was made and to what extent.
6 USPAP requires to cite the source of the standard and premise of value
7 USPAP 10(a) the appraisal report;10(b) the restricted use report
8 USAP 10(a)(ix) requires that the appraiser summarize the information analyzed, the appraisal procedures followed, and the reasoning that supports the analyses, opinions, and conclusions; exclusion of the market approach, asset-based (cost) approach, or income approach must be explained; 10(b)(ix) requires that the appraiser state the appraisal procedures followed, state the value opinion(s) and conclusion(s) reached, and reference the workfile; exclusion of the market approach, asset-based (cost) approach, or income approach must be explained;

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Conditional Volatility (Continued from page 3)

they are widely dispersed. That is, there are 75 possible selections in the above chart. Further, the summary of the qualitative aspects are applied to the quantitative determination of the CVM. Overall, this approach is specific to the subject company and greatly improves upon the gross (broad) application of traditional benchmark studies.

CONCLUSION

While we agree with the appealing logic of using a put to estimate DLOM, we must correctly model behavior in accordance with today's complicated markets. Currently, assessed DLOMs are being challenged in courts with increasing vigor. Often is the case that the courts are requiring substantiated and targeted valuation opinions. This can only be accomplished by introducing more accurate discount methodologies. Such methods must utilize modern financial theory which is complex, quantitatively rigorous and based on today's best knowledge and research. Namely, the rigorously tested GARCH Option Pricing Model with the Conditional Volatility DLOM Model. ~~