

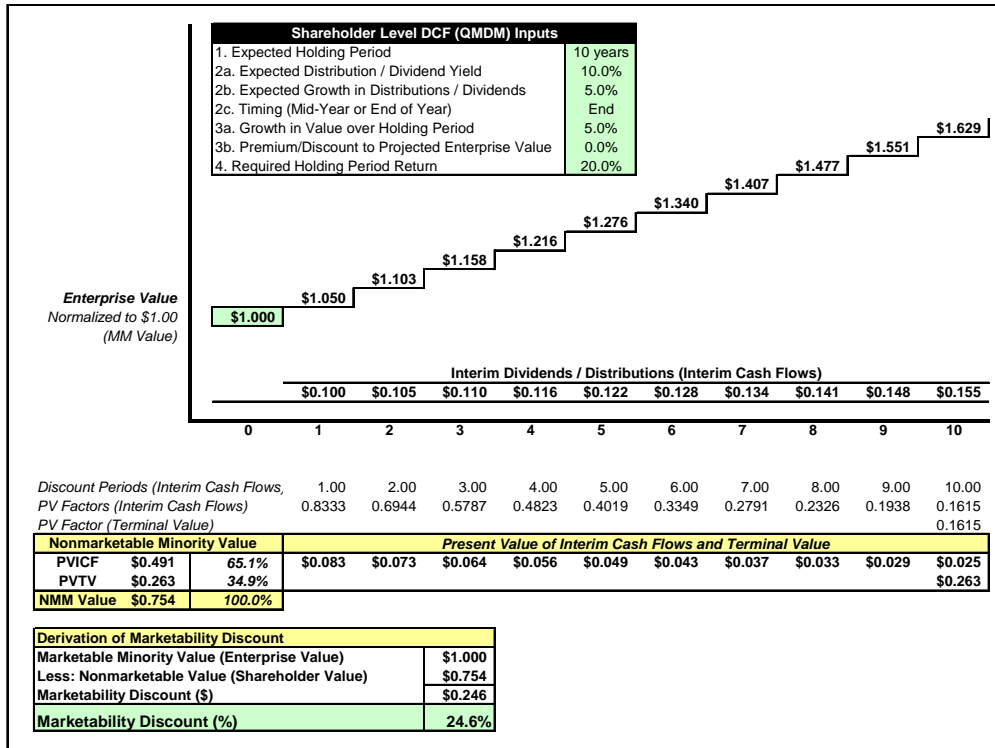
## The Quantitative Marketability Discount Model Fact Sheet<sup>i</sup>

- » The QMDM is a shareholder-level discounted cash flow model designed to help the valuation expert derive and explain a *reasonable* and *transparent* conclusion based upon the facts and circumstances of each case. The discounted cash flow model is a defined method in the *ASA Business Valuation Standards*, falling under the income approach to valuation.<sup>ii</sup>
- » The QMDM was introduced in 1994.<sup>iii</sup>
- » The QMDM is currently taught in the education programs of each of the business appraisal professional associations: the American Society of Appraisers, the Institute of Business Appraisers, the American Institute of Certified Public Accountants; and the National Association of Certified Valuation Analysts.<sup>iv</sup>
- » Three books have been published on the subject and the QMDM is discussed in other valuation textbooks.<sup>v</sup> An thorough discussion, along with a case study, can be found the March 2007 edition of *PPC's Guide to Business Valuation*.<sup>vi</sup>
- » The QMDM is marketed by *ValuSource*, formerly *Wiley-ValuSource*, as a stand-alone software product.<sup>vii</sup>
- » Valuation experts use the QMDM either as a primary means of determining a discount for lack of marketability or to test or to corroborate the concluded discount developed using other methods.<sup>viii</sup>
- » Other quantitative models to development a marketability discount have been developed in the business appraisal profession.<sup>ix</sup>
- » The QMDM provides information to facilitate conformance with the Uniform Standards of Professional Appraisal Practice.<sup>x</sup>
- » The professionals of Mercer Capital have presented the application of the model in training sessions to the Internal Revenue Service.<sup>xi</sup>
- » The QMDM has been presented in both written form and in speeches dozens of times at each of the business appraisal professional associations beginning in 1994.<sup>xii</sup>
- » The QMDM is applicable not only in gift and estate tax appraisals but is also helpful in non-tax situations.<sup>xiii</sup>

- » In *Juan Armstrong v. LaSalle Bank National Association*, No. 05-3417 (7<sup>th</sup> Cir. May 4, 2006), the U.S. Court of Appeals for the Seventh Circuit determined that the appropriate standard of review to apply when considering whether an employee stock ownership plan trustee adopts a valuation of the subject stock is the abuse of discretion standard. It noted that one method for testing a trustee’s abuse of discretion is whether a marketability discount should have been applied. In making this recommendation, the opinion, written by Judge Posner, stated, “There are techniques for calculating a marketability, or illiquidity, discount, see Z. Christopher Mercer, “A Primer on the Quantitative Marketability Discount Model,” *CPA Journal*, July 2003, [www.nysscpa.org/cpajournal/2003/0703/dept/d076603.htm](http://www.nysscpa.org/cpajournal/2003/0703/dept/d076603.htm), visited Apr. 6, 2006 ...”<sup>xiv</sup>
- » Mercer Capital has presented the Tax Court with appraisals containing the QMDM dating back to the mid-1990s<sup>xv</sup> in *Thompson* (1996)<sup>xvi</sup>, *Marmaduke* (1999)<sup>xvii</sup>, and *Noble* (2005)<sup>xviii</sup>.
- » The QMDM has been mentioned explicitly in three tax cases to date: *Weinberg* (2000)<sup>xix</sup>, *Janda* (2001)<sup>xx</sup>, and *Temple* (2006)<sup>xxi</sup>. Mercer Capital has written about each of these cases<sup>xxii</sup> and takes the position that if one disagrees with the underlying assumptions used in a discounted cash flow model, the integrity and validity of the valuation method is not impugned.
- » At no time has a *Daubert* challenge to the QMDM been sustained.
- » The DCF assumptions and the corresponding QMDM assumptions are presented for illustrative purposes. The QMDM is a shareholder-level DCF model whose assumptions parallel those of the enterprise DCF model.

Enterprise-Level DCF Assumptions	Shareholder-Level DCF (QMDM) Inputs
1. Forecast Period	1. Range of Expected Holding Periods
2. Projected Interim Cash Flows (during forecast period)	2a. Expected Distribution / Dividend Yield 2b. Expected Growth in Distributions / Dividends 2c. Timing (Mid-Year or End of Year)
3. Projected Terminal Value (at end of forecast period)	3a. Growth in Value over Holding Period 3b. Premium or Discount to Projected Enterprise Value
4. Discount Rate	4. Range of Required Holding Period Returns

» The QMDM is presented below in a traditional DCF format.



» The same assumptions are highlighted in the QMDM presentation model below.

**QUANTITATIVE MARKETABILITY DISCOUNT MODEL (QMDM)**  
**Conclusion of the Analysis**

Enterprise Level DCF Assumptions	Shareholder Level DCF (QMDM) Inputs	Model Inputs
1. Forecast Period	1. Range of Expected Holding Periods (Yrs)	Low <b>10</b> High <b>10</b>
2. Projected Interim Cash Flows (during forecast period)	2a. Expected Distribution / Dividend Yield	Yield <b>10.0%</b>
	2b. Expected Growth in Distribution / Div. Yield	Growth <b>5.0%</b>
	2c. Timing (Mid-Year or End of Year)	Timing <b>E</b>
3. Projected Terminal Value (at end of forecast period)	3a. Growth in Value over Holding Period	G <sub>v</sub> <b>5.0%</b>
	3b. Premium or Discount to Marketable Value	Prem/Disc. <b>0.0%</b>
4. Discount Rate	4. Range of Required Holding Period Returns	Low <b>20.0%</b> High <b>20.0%</b>

Base Value (Marketable Minority Interest)	<b>\$1.00</b>
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<b>Concluded Marketability Discount</b>	<b>24.6%</b>
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		Assumed Holding Periods in Years													
		1	2	3	4	5	6	7	8	9	10	15	20	25	30
Required Holding Period Return (Annual)		Implied Marketability Discounts													
	17.0%	1.7%	3.2%	4.6%	5.9%	7.0%	8.0%	8.9%	9.7%	10.4%	11.0%	13.4%	14.8%	15.6%	16.0%
	18.0%	2.5%	4.8%	6.8%	8.6%	10.2%	11.6%	12.9%	14.0%	15.0%	15.9%	19.1%	20.8%	21.8%	22.4%
	19.0%	3.4%	6.3%	8.9%	11.3%	13.3%	15.1%	16.7%	18.1%	19.3%	20.4%	24.2%	26.2%	27.3%	27.9%
	20.0%	4.2%	7.8%	11.0%	13.8%	16.2%	18.4%	20.2%	21.9%	23.3%	24.6%	28.8%	31.0%	32.2%	32.7%
	21.0%	5.0%	9.3%	13.0%	16.2%	19.0%	21.5%	23.6%	25.4%	27.0%	28.4%	33.0%	35.3%	36.4%	37.0%
	22.0%	5.7%	10.7%	14.9%	18.6%	21.7%	24.4%	26.8%	28.8%	30.5%	32.0%	36.8%	39.1%	40.2%	40.7%
23.0%	6.5%	12.1%	16.8%	20.8%	24.3%	27.2%	29.8%	31.9%	33.7%	35.3%	40.3%	42.6%	43.6%	44.1%	

PV=100%

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- i The information presented here is as of February, 2009.
- ii *ASA Business Valuation Standards* (updated as of November, 2005), published by the Business Valuation Committee of the American Society of Appraisers. See in particular the definitions for the Income (Income-Based) Approach and the Discounted Cash Flow Method in the Glossary of the publication.
- iii Z. Christopher Mercer, ASA, CFA, *Quantifying Marketability Discounts*, Joint American Society of Appraisers/Canadian Institute of Chartered Business Valuators Conference, San Diego, CA, November 3, 1004.
- iv American Society of Appraisers: BV203, Institute of Business Appraisers: Course #1007, the American Institute of Certified Public Accountants, the National Association of Certified Valuation Analysts.
- v Shannon P. Pratt, CFA, FASA, MCBA, CM&A, MCBC, Robert F. Reilly, ASA, CPA/ABV, CFA, CBA and Robert P. Schweihs, ASA, CBA, *Valuing a Business*, 4<sup>th</sup> Ed. (McGraw-Hill, 2000), "The model is sound ...", p. 411.
- George B. Hawkins, ASA, CFA and Michael A. Paschall, ASA, CFA, JD, *CCH Business Valuation Guide* (CCH, a Wolters Kluwer Business, 2006), "In his excellent book, *Quantifying Marketability Discounts*, Z. Christopher Mercer proposes a new means of quantifying marketability discounts. ... Assumptions will vary company to company and case to case and always be subject to challenge or interpretation." p. 21,024
- James Hitchner, *Financial Valuation*, (John Wiley & Sons, 2003) "The QMDM represents continued theoretical development of the concept of the marketability discount." P. 313.
- Z. Christopher Mercer, ASA, CFA, *Quantifying Marketability Discounts* (Peabody Publishing, LP 1997).  
\_\_\_\_\_. *Quantifying Marketability Discounts: Revised Reprint* (Peabody Publishing, L.P., 2001).  
\_\_\_\_\_. *Quantifying Marketability Discounts: 2005 E-Book* (Peabody Publishing, L.P., 2005).
- vi Jay Fishman, Shannon Pratt, J. Clifford Griffith, *PPC's Guide to Business Valuations* (PPC, March 2007), Volume 2, p. 8-38, and pp. 8-61 – 8-71,
- vii [http://www.valusourcesoftware.com/business-valuation-database\\_quantifying-marketability-discount-model.aspx](http://www.valusourcesoftware.com/business-valuation-database_quantifying-marketability-discount-model.aspx)
- viii Approximately 3,000 books and 400 copies of the model in spreadsheet form have been sold to date by Mercer Capital. The book in e-book form and the model in spreadsheet form continue to be sold by Mercer Capital. The model also continues to be available from ValuSource.
- ix Dr. David Tabak, "A CAPM-Based Approach to Calculating Illiquidity Discounts," Nov. 11, 2002. A copy of which can be found at [www.nera.com](http://www.nera.com)).  
William H. Frazier, ASA, "Some Thoughts on Restricted Stock Studies and the Lack of Marketability Discount," *ASA BV E-Letter*, Issue 8-17, 2004.  
\_\_\_\_\_. "Further Thoughts on the DLOM," *ASA BV E-Letter*, Issue 8-30, 2004.
- x Uniform Standards of Professional Appraisal Practice, revised July 1, 2006. Standard 9-4:  
(d) An appraiser must, when necessary for credible assignment results, analyze the effect on value, if any, of the extent to which the interest appraised contains elements of ownership control and is marketable and/or liquid.  
Comment: An appraiser must analyze factors such as holding period, interim benefits, and the difficulty and cost of marketing the subject interest.
- xi Kenneth W. Patton, ASA, "How to Review a Business Valuation Report," IRS - LMSB Engineering Continuing Professional Education, 8/08/01.  
\_\_\_\_\_. "Assessing a Business Valuation Report," Internal Revenue Service, 9/12/00.  
Z. Christopher Mercer, ASA, CFA, "Discounts & Premiums Meet the Levels of Value," Internal Revenue Service, Fort Monmouth, NJ, 8/30/00.
- xii For detailed information, visit [www.mercercapital.com](http://www.mercercapital.com).
- xiii Kenneth W. Patton, "The QMDM in Action in Non-Tax Situations," Mercer Capital's *E-Law Business Valuation Perspective* (now titled *Value Matters*<sup>TM</sup>) Issue 2002-09, December 13, 2002.
- xiv *Juan Armstrong v. LaSalle Bank National Association*, No. 05-3417 (7th Cir. May 4, 2006), p. 11.
- xv In these cases, the QMDM was either not criticized or not mentioned at all, implicitly indicating acceptance. For more information about these cases, see the following on our website:  
Z. Christopher Mercer, ASA, CFA, "*Estate of Marmaduke* - The Case the Judge Wanted to Settle," *The E-Law Business Valuation Perspective*, 1999-15, November 15, 1999 ([www.mercercapital.com/Publications/elaw/archive/elaw9915.htm](http://www.mercercapital.com/Publications/elaw/archive/elaw9915.htm)).  
\_\_\_\_\_. "When is Fair Market Value Determined? *Estate of Helen M. Noble v. Commissioner*," *Value Matters*<sup>TM</sup>, 2005-02, March 4, 2005 ([www.mercercapital.com/Publications/ValueMatters/archive/VM0502.htm](http://www.mercercapital.com/Publications/ValueMatters/archive/VM0502.htm)).
- xvi *Betty W. Thompson v. Commissioner*, TCM 1996-468, October 17, 1996.
- xvii *Estate of Marmaduke v. Commissioner*, TCM 1999-432, October 14, 1999.
- xviii *Estate of Helen M. Noble v. Commissioner*, TCM 2005-02, January 6, 2005.
- xix *Estate of Etta H. Weinberg, et al. v. Commissioner*, T.C. Memo. 2000-51, February 15, 2000
- xx *Janda v. Commissioner*, TCM 2001-24, February 2, 1001.
- xxi *A. Temple*, DC-Tex., 2006-1 USTC 60,523, No. 9 :03-CV-165(TH), April 10, 2006.

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Z. Christopher Mercer, ASA, CFA, " *Weinberg v. Commissioner*: It's Not About the Marketability Discount," *The E-Law Business Valuation Perspective*, 2000-03 & 04, March 13, 2000 ([www.mercercapital.com/Publications/elaw/archive/elaw0003.htm](http://www.mercercapital.com/Publications/elaw/archive/elaw0003.htm)).

\_\_\_\_\_. "Weinberg: It's Not About Marketability, It's About Minority Interests," *Valuation Strategies*, Aug./Sept., 2000.

Matthew R. Crow, ASA, CFA and Kenneth W. Patton, ASA, *Janda v. Commissioner*: The QMDM Appears in Tax Court Again," *The E-Law Business Valuation Perspective*, 2001-01, February 5, 2001 ([www.mercercapital.com/publications/elaw/archive/elaw0101.htm](http://www.mercercapital.com/publications/elaw/archive/elaw0101.htm)).

L. Paul Hood, Esq., *Janda*: Valuation and Marketability Discounts 'Damned if You Do' Valuation," *The E-Law Business Valuation Perspective*, 2001-02, February 13, 2001 ([www.mercercapital.com/Publications/elaw/archive/elaw0102.htm](http://www.mercercapital.com/Publications/elaw/archive/elaw0102.htm)).

James E. Graves, ASA, CFA, "Estate of Charlotte Dean Temple," *Value Matters™*, 2006-07, July 28, 2006 ([www.mercercapital.com/Publications/ValueMatters/archive/VM0607.htm](http://www.mercercapital.com/Publications/ValueMatters/archive/VM0607.htm)).