2015 Edition

Journal of Business Valuation

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THE JOURNAL OF BUSINESS VALUATION

The Journal of Business Valuation is an annual publication. It is intended to provide research and informed comments on valuation and related fields. The opinions expressed by the individual writers do not necessarily carry the endorsement of the Institute or its Members.

ISBN: 978-0-7798-6795-0

PRINTED IN CANADA BY THOMSON REUTERS

LETTER FROM THE EDITOR

This edition of *The Journal of Business Valuation* features papers presented at the 2014 CICBV Joint Business Valuation Conference held in Toronto, ON, the winning paper from the 2015 Ian R. Campbell Research Competition, as well as member-submitted papers and articles from other well-respected authors.

The topics included in this edition are at the forefront of the North American Valuation profession both in theory and practice. Readers are reminded that the papers contained in the *Journal of Business Valuation* are not the opinions of the Institute, but rather of the authors who submitted papers for this journal.

I hope you will find this edition both interesting and educational.

I would like to thank all the authors who submitted papers for consideration and the Institute's volunteers and staff who made this edition possible.

Craig Maloney, MBA, CPA, CA, CBV
Editor

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“DOUBLE DIPPING” IN DIVORCE

by Terry Hainsworth, BA, LLB, OAFM, Q.Arb.[*]

1. The Context

In Canada, the cohort with the highest divorce rate is currently the boomers — individuals who are between the ages of 54 to 69 and who were born between 1946 and 1961. This group is increasingly choosing to leave their marriages at or around retirement age. They have raised their children who are now grown. They all anticipate an increasing life expectancy.

On a daily basis, approximately 1,100 Canadians turn 65. Thus, the transition from employment to retirement — and the financial issues it entails, are relevant to CBVs. Gaining an understanding of the legal precedents in this area is important for members of the profession who practise alongside lawyers in providing expert evidence and in assisting in settlement calculations.

2. “Double-dipping”: History and Definitions

a) Defined

The earliest reference to the concept of “double dipping” is found in the case *Linton v. Linton*, 1990 CanLII 2597, 1 O.R. (3d) 1 (Ont. C.A.). The classic definition of double dipping is found in the case of *Boston v. Boston*, [2001] 2 S.C.R. 413 (S.C.C.). This case defines double dipping as occurring when:

- an asset is equalized or shared as property,
- is later treated as income, and
- is treated as a source upon which support payments may be calculated.

Put another way, double dipping occurs when one is attempting to take two bites out of the same apple. The asset is equalized or shared in the property situation. Later, there is an attempt to treat it as an income asset for the purposes of determining support. The court generally considers this conduct unacceptable. The reason for this requirement is clear. The payee spouse cannot save the assets that he or she receives upon equalization and choose instead to live on the liquidation of the payor spouse’s pension when he or she retires. If this were permitted, the payee would accumulate an estate while the payor spouse’s estate is being liquidated.

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* Terry Hainsworth has practised family law for over 40 years. He now devotes himself exclusively to family mediation and arbitration. He is recognized as having substantial expertise in the area of family law. Mr. Hainsworth has authored several textbooks dealing with the Child Support Guidelines, the *Divorce Act* and Ontario’s *Family Law Act* and has spoken extensively on the topics.

b) Obligations Upon the Payee Spouse

Upon the retirement of the pension holding spouse, the payee spouse must use the self-liquidating assets to generate an income. The ideal would be if the payee spouse generated significant income or savings from his or her capital assets equal to the payor spouse's pension income. Notionally, the dependent spouse should create a "pension" to provide for his or her own future support. This requirement is based on the principle that, as far as it is reasonable, the payee spouse should attempt to generate economic self-sufficiency for himself or herself.

The obligation to invest the equalized assets is not an onerous one. It should not be predicated upon any insensitive standard on how the payee spouse should have managed his or her assets from the point of separation. In the same vein, it does not require "investment-savvy" decisions premised upon an extensive knowledge of the market place. Rather, the obligation on the payee spouse is to generate income from his or her assets by investing in a capital-depleting income fund which would provide a regular annual income.

3. The Exception

a) Defined

In the writer's opinion, there is only one exception to the rule. It occurs where three separate criteria are met:

- the payor spouse has the continuing ability to pay
- the payee spouse has made reasonable efforts to use the equalized assets in an income-producing way
- despite this, an economic hardship arises from the marriage or its breakdown persists.

The court also suggested a second exception to the rule — where spousal support orders/agreements were based mainly on need as opposed to compensation.

b) Background

In a number of cases following the *Boston* decision, the courts focused upon when double dipping would be allowed. The cases appeared to be so numerous that judges were prompted to state that the exceptions might overtake the rule itself: *Cymbalisty v. Cymbalisty*, 2003 MBCA 138, 232 D.L.R. (4th) 718 (Man. C.A.); *Senek v. Senek*, 2014 MBCA 67, 46 R.F.L. (7th) 1 (Man. C.A.); *Bennett v. Bennett*, 2003 CanLII 1957, 68 O.R. (3d) 619 (Ont. S.C.J.).

c) Circumstances Justifying an Exception

As stated above, there is only one exception — continuing need despite reasonable efforts by the payee coupled with a continuing ability on the part of the payor. There is, consequently, no absolute prohibition on double dipping: *Strang v. Strang,* [1992] 2 S.C.R. 112 (S.C.C.). In determining whether a double dip should be permitted, the court will look to numerous factors in determining the proper balance: *Cymbalisty v. Cymbalisty*, 2003 MBCA 138.

They can include:

- the size of the asset to be double dipped: *Meiklejohn v. Meiklejohn*, 2001 CanLII 21220, 19 R.F.L. (5th) 167 (Ont. C.A.);

- whether the asset (usually a matrimonial home) is still required to preserve lifestyle: *Marinangeli v. Marinangeli*, 2003 CanLII 27673, 66 O.R. (3d) 40 (Ont. C.A.);
- whether the payor paid the equalization payment: *Hooper v. Hooper*, 2002 CanLII 44963, 59 O.R. (3d) 787 (Ont. C.A.);
- the duration of cohabitation: *S.K.M. v. F.E.M,* 2012 PECA 3, 18 R.F.L. (7th) 1 (P.E.I. C.A.);
- the roles adopted during marital cohabitation: *Richardson v. Richardson*, 2001 BCSC 1258, 21 R.F.L. (5th) 393 (B.C. S.C.).
- the ability of the payee to generate income: *Meiklejohn v. Meiklejohn, supra;*
- the remarriage or the presence of a partner: *Rimmer v. Adshead*, 2012 SKQB 500, 408 Sask. R. 210 (Sask. Q.B.); *Chamberlain v. Chamberlain*, 2003 NBCA 34, 36 R.F.L. (5th) 241 (N.B. C.A.);
- the health of the parties;
- whether the pension was improved after the separation: *Meiklejohn v. Meiklejohn*, *supra* (Ont. C.A.);
- the dependant's use of his or her assets: *Y.O.S. v. R.B.S.*, 2005 BCSC 1801 (B.C. S.C.); and
- the nature of the continuing hardship.

4. Avoidance of Double Dipping

To avoid double recovery, the court should, where practicable, focus on that portion of the payor's income and assets that were not part of the equalization or the division of matrimonial assets. This would normally include that portion of the income stream that was earned following the date of separation and, therefore, was not included in the asset equalization or division: *Shadbolt v. Shadbolt*, 1997 CanLII 12250 (Ont. S.C.J.). In so doing, the court should impute an income to the payee spouse based on those assets taken in exchange for a share of the capitalized value of the other spouse's assets. The court should impute an income to the payee spouse based on what those assets could reasonably produce if invested. The imputation should not be made on artificial assumptions but, rather, upon professional expert advice: *Boston v. Boston*, *supra*.

5. Interests

The "double dipping" concept is restricted to assets which, by their very nature, have been transformed into an income stream and are self-depleting.

In the *Boston* case, the court drew a distinction between businesses or investments which produce income. That income can be spent without affecting the asset itself. The court went on to note that the asset in question could continue to increase in value. Consequently, the value of the business or investment could be equalized, but neither would be depleted by the production of income.

The writer suggests that this general statement is too bold. Certain businesses or assets may be valued on the asset depleting itself over time. Where assets are valued upon the expectation that an asset will deplete itself (usually on a discounted cash flow basis) allowances should be made. In the writer's practice, an issue arose where the sole corporate asset of the husband was a licence to extract gravel from a gravel pit. The gravel pit had a life expectancy of about five further

years. At that time, the licence would have no value whatsoever. The business was valued on a discounted cash flow basis, determining the after-tax profits of the licence until it no longer had value.

In that particular example, the wife was also a stay-at-home mother of three children. The husband was faced with an impossible conundrum. If he equalized the value of his business with the wife, the half that remained in his favour would be fully expended in spousal and child support. Ultimately, the case settled and the court did not have to deal with the unusual situation.

Of course, where a business is valued on a break-up or asset-based approach, the problem should not arise at all: *Cooke v. Cooke*, 2011 BCCA 444. In *Berta v. Berta*, 2014 ONSC 3919, the court side-stepped the issue by noting that there was no proof as to how the business was valued. Cases in which a business owner attempted to take into account depletion had not found favour with the courts. In *Holmes v. Matkovich*, 2008 YKCA 10, double dipping was not found in a situation where a primary asset of the business was its bulldozer which would have to be replaced ultimately. *Holmes v. Matkovich* was applied in *Jens v. Jens*, 2008 BCCA 392 where the income-producing assets were helicopters which, the respondent argued, would wear out or would have to be eventually replaced.

The business exception mentioned in *Boston* may operate unfairly. In *Litton v. Litton*, 2006 BCCA 494, it appeared that the business was valued on a form of discounted cash flow basis. The court simply said that the husband, a realtor, could continue to earn a living despite the sale of the business. In *Bozak v. Bozak*, 2008 BCSC 1458, the business's goodwill value was arrived at by discounting its excess earnings. The court concluded that there was no double dip. See also *Lazorek v. Quinn*, 2010 BCSC 668.

6. Child Support and Double Dipping

a) Introduction

The *Boston* case dealt with the unfairness that would arise between spouses where an asset was divided on a property-sharing basis and then the spouse attempted to divide the asset a second time on an income-sharing basis. This led some commentators to opine that the concept of "double dipping" would have no application where the issue was child support. In *Fraser v. Fraser*, 2013 ONCA 715, the Ontario Court of Appeal ruled that double dipping occurred only between parents. It was inapplicable in terms of child support. Section 16 of the *Federal Child Support Guidelines* required the inclusion of all of the payor's income in its income-determination. There was no exception set out in Schedule III. The Alberta Court of Appeal accepted such reasoning in the case of *Alpugan v. Bakyan*, 2014 ABCA 152.

b) Retreat from Fraser v. Fraser

However, eventually, the Ontario Court of Appeal retreated from its rigid position adopted in *Fraser v. Fraser* in the decision of *Ludmer v. Ludmer*, 2014 ONCA 827. In so doing, it fell in step with other appellate courts, namely, the British Columbia Court of Appeal in *McKenzie v. Perestrelo*, 2014 BCCA 161 and the Saskatchewan Court of Appeal in *Burzminski v. Burzminski,* 2010 SKCA 16 — that double dipping is a discretionary matter.

c) The Exercise of Discretion

In *McKenzie v. Perestrelo, supra,* the court set out certain guidelines for the exercise of discretion. They may be summarized as follows:

- where the issue is between spouses, double dipping should be avoided;
- where child support is involved, the onus is on the payor to demonstrate that inclusion into income would not lead to the fairest determination of income;
- where the RRSP withdrawals are regular or a spouse's primary source of income, they are more likely to be included in income;
- Where a contribution and a withdrawal of RRSP funds occurs during the same year, it is not double dipping but really a "double-count": *Rondeau v. Kirby*, 2003 NSSF 49; *Murdoch-Woods v. Zywina*, 2011 ONSC 705; and
- the use to which the RRSP funds are withdrawn is a material consideration.

7. The User-Test

a) Introduction

Generally, the courts, in the exercise of discretion, tend to apply a "user-test." To the extent that the withdrawals are used to finance the payor's lifestyle, the deferred income stream will normally be included: *Mask v. Mask,* 2008 CanLII 3968 (Ont. S.C.J.); *Wood v. Gates*, 2008 NSSC 388; *Horowitz v. Nightingale*, 2015 ONSC 190.

If, on the other hand, the RRSP withdrawal is not connected with lifestyle, it may be excluded from the payor's income. The courts have held that payment of one's legal fees would constitute an exemption: *Leet v. Beach*, 2010 NSSC 433; *McKenzie v. Perestrelo*, 2014 BCCA 161. It will likely not be included in income where it is used to pay off jointly-incurred debts: *K.A.M. v. P.K.M.*, 2008 BCSC 93; *Pilotte v. Pilotte*, 2013 NSSC 24.

b) Capital Transfers

Where the RRSP redemption is a simple capital-to-capital transfer, it may not likely be included in income. Generally, the court applies s.17 of the *Child Support Guidelines* to structure its discretion: *Ewing v. Ewing*, 2009 ABCA 227; *Ludmer v. Ludmer*, 2014 ONCA 827; *Horowitz v. Nightingale*, 2015 ONSC 190.

c) Unreasonable Conduct of Payor

If the payor has behaved unreasonably — often by taking unreasonable early retirement, double dipping does not apply. The court may impute income to the retiree (sometimes in the amount of his or her pre-retirement income).

This has created a great deal of angst among those who wish to retire. In *Rondeau v. Rondeau*, 2011 NSCA 5, Dr. Rondeau wished to retire. Before doing so, he asked the court to reduce his support. The court ruled, however, that because he had not *actually* retired, his circumstances had not changed. In *Vaughan v. Vaughan*, 2014 NBCA 6, the court ruled that it could not make "advance" rulings. Thus, parties wishing to retire face a gamble in that they could be second-guessed by the court.

d) Frequency

Where withdrawals are frequent, the more the courts are likely to include them as a source of income: *Horowitz v. Nightingale*, 2015 ONSC 190. By contrast, where it is a "one-off event," the court may be more likely to disregard it: *Belot v. Connelly*, 2013 MBQB 98.

e) Income Sources

Where income withdrawals represent the primary income source of the dependant, the greater the likelihood of their inclusion into income: *R*. (*C.M.M.*) *v. R*. (*R.W.A*.) (2011), 15 R.F.L. (5th) 72 (N.B.Q.B.*).* Compare with *Horowitz v. Nightingale*, *supra*.

f) Inability of Payor to Pay

The three-fold test mentioned above requires that the payor has a continuing ability to pay. Absent continuing ability to pay, the court will not permit the double dip: *Heywood v. Heywood*, 2013 ONSC 58.

8. Proving the Double Dip

The onus will be on the party claiming relief from the double dip to prove its existence: *Strang v. Strang*, [1992] 2 S.C.R. 112 (S.C.C.). A failure to do so may result in the courts failure to grant relief to the payor: *MacLeod v. MacLeod*, 1999 SKQB 267; Coombs (Ryan) *v.* Coombs, 2001 NSSF 32; McCulloch *v.* McCulloch, 2011 ABCA 193.

Normally, in pension cases, this will involve proof of the actuarial valuation of the future pension benefit: See, for example, *Hickey v. Princ*, 2014 ONSC 5272.

9. Continuing Ability to Pay

An essential ingredient of "double dipping" is proof of the continuing ability on the part of the payor to pay. Absent that ability, relief should be granted: *Heywood v. Heywood*, 2013 ONSC 58.

10. The Spousal Support Guidelines

The *Spousal Support Advisory Guidelines* do not change the law regarding double dipping. The *Boston* case will continue as a possible constraint upon the amount of support.

11. Conclusion

The three-fold test defining double dipping is easily articulated but difficult in its application. This is due to the substantial residuary discretion that is vested in the courts.

The CBV can assist the judge in

- articulating how the double dip has occurred;
- quantifying the double dip; and
- developing arguments imputing income to the dependent spouse.

2

DLOM VOLATILITY MODELS AND RESTRICTED STOCK DISCOUNTS[1]

by John J. Stockdale ASA, CPA/ABV [2]

"Valuation is more of an art than science." This is a refrain that is frequently heard about business valuation from judges and attorneys but not from business valuators. The whole line of thinking incorporated in this saying is based on a misunderstanding of what valuators do. Valuators are not very much like artists, although there's a beauty in the mathematical elegance of what they do. They are a little like scientists but much more like engineers. An engineer uses a theory from the physical sciences and stacks it up with actual physical results to develop something that works in the real world. Likewise, valuators use a financial theory from the social science of economics along with real world data to develop a value that reflects what happens between buyers and sellers in the real world.

As an example, a frequently used theory is the present value of cash flow. Often, this is used along with real world market data from private company transactions or public company prices to reach a conclusion of value. Using the theory alone or the market data alone is an incomplete result. Using the two approaches together results in a much more supportable and easily explained result.

This paper focuses on discounts for lack of marketability (DLOM). The approach of theory and data works just as well for DLOMs as it does for the overall value of a business. The focus in this article will be on a group of computational DLOM models that can be called volatility models and on DLOM market data from restricted stock studies. The goal is to compute discounts using the volatility models and then to compare them to information from restricted stock studies, using volatility as a link between the two. It will also provide the formulas for the volatility models, discuss which of them work well, and which of them don't. Finally, along the way this paper will also discuss issues that arise with the use of restricted stock studies.

The thrust of this paper is on a brief discussion of the volatility models and their practical performance. A debate about the theoretical correctness of each model is not where the emphasis will be placed. Although theory is important, practical performance compared to real world data is the benchmark of usefulness and will be the centre of interest in this paper

Additional resource material on both restricted stock studies and volatility models can be found in *BVR's Guide to DLOM Fifth Edition*.

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1 This paper is based on a presentation delivered at the CICBV National Conference in October 2014.

2 John Stockdale, ASA, CPA/ABV has been in the business valuation profession for 35 years. He spent the first 15 years of his career at Coopers & Lybrand, now part of PWC Group, and the most recent 20 years as the head of his own firm. John is a former chairman of the ASA BV standards committee and a former treasurer of the BV committee. For the last several years John has taken a strong interest in matters involving discounts for lack of marketability. He's authored ten articles on the topic as well as two editions of the book BVR's Guide to Discounts for Lack of Marketability. He's also developed two mathematical models for quantifying the marketability discount: the Time Model and the Sigma DLOM Curve.

What is a DLOM?

As a starting point for the discussion, consider, in concept, why there is a DLOM. When valuing a private company, valuation theory and pricing data are applied to determine a value that would result if the company could be sold quickly. But practically speaking, this value may not be easily achievable in cash in the short term. Legal, contractual and market constraints may prevent a prompt sale at this value. The DLOM accounts for that disconnect.

A common example is the process of helping an owner to sell a company. Theory and data are used to determine an asking price for the company. But when the company is listed, it will almost always be a lengthy and costly process to sell the company. Sometimes there may be few buyers in the market at that time of offering. At this point, it will either take a long time to sell it, in which case the current economic value would include a reduction of the eventual price to present value, or, the price must be discounted in order to sell it quickly.

In the legal area, whether or not the discount is applied depends on the appropriate standard of value. If it is market value, the discount is usually applied. In other areas, the discount does not necessarily apply because there is less concern about the market. For example, in the area of Michigan divorce law, there is no one set standard of value. But one of the standards used is called “Holder’s Interest,” which is another way of saying investment value. Holder’s Interest is the value to the current holder of the security, as opposed to market value. In this case the DLOM doesn’t necessarily apply because market constraints causing a delay in obtaining cash from a sale aren’t relevant.

The volatility models discussed in this paper are a way to compute the amount of the discount and the restricted stock discounts are actual evidence of the amount of the discount in a specific situation.

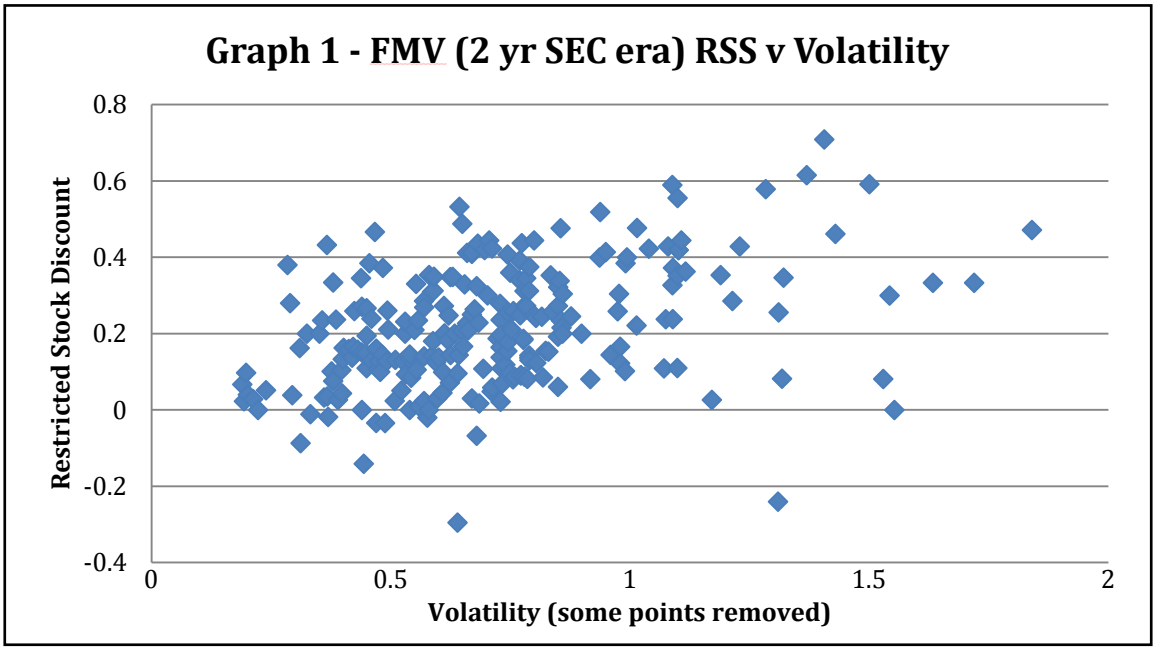
Restricted Stock Discounts

Restricted stock discounts first gained attention in the 1970s and averages from these studies became popular as a sole indication of the amount of the DLOM. Unfortunately, the use of an average restricted stock discount is a practice that continues today. But observed restricted stock discounts have an extraordinary range. Averages or medians provide little insight into the amount of a discount in a particular situation.

When the SEC became interested in this phenomenon in 1972, it issued a study which was quite illuminating. It had approximately 200 observations relating several factors to the discount. After that study was published, there were a number of tax practitioners in the 1970s that issued studies on restricted stocks and the Gelman, Moroney, Maher, Trout and Johnson & Racette studies became widely known in the valuation community. The averages from these studies were used as a primary indicator of the discount for the lack of marketability.

At the time this was a real step forward. Before that general practice was basically pulling the discount out of the ether. Now there were actual data on which to base the discount. Unfortunately many practitioners still use the same studies and averages today. For example, there was a recent U.S. Tax Court case where the same old 1970s studies were used to determine the discount.

But the true range of restricted stock discounts is very extraordinary. Graph 1 illustrates this using data from the SEC 2 year holding period era. The Y axis shows the discount and the X axis shows volatility. The average of the discounts shown is about 22% but knowing that average doesn’t provide much assistance in selecting a discount for any particular situation because of the extraordinary range of the discounts shown on the chart.



Some might call it a hopeless task to sort out this very wide dispersion of data. But the same could be said for the more general task of determining a stock price. A dispersion of stock prices compared to almost any parameter will provide a picture similar to that shown on the discount graph. For example, a graph showing publicly traded security historical rate of return shows the same sort of scatter as the one above. But in determining stock prices, financial theory has been widely accepted as a way to sort out the dispersion. Practitioners have gotten quite comfortable over the years using financial theory as a guide through that morass. The volatility models that will be discussed in this paper are one way to address this dispersion issue for discounts and move part of the way to a solution.

Another disconnect that needs to be addressed is that between restricted stock discounts and private company discounts. There is a difference in the required time of restriction for a restricted stock and the time it takes to sell an interest in a private company. Restricted stocks are a special case of DLOM resulting from rules that narrow the period of marketability. Private company securities are sold in a market where the disposal period is uncertain. It is a much broader period of marketability than would be expected with restricted stocks.

When determining a private company DLOM, one must account for that difference when interpreting the restricted stock data; and that is where these economic models become useful because they have time as one of the inputs.

What Restricted Stock Data to Use?

There are pre-2000 studies that are often referenced, even today, but they are just the tip of the iceberg. The old standbys included the SEC Study, Gelman, Moroney, Maher, and others[3]. These studies focused on a unique situation, which was the purchase of restricted securities by certain mutual funds. But there are comparatively few transactions in these studies.

Since 2000, there has been a deluge of studies with much larger sample sizes. This comes about because there are two databases, Placement Tracker and PrivateRaise, that track these

3 These early restricted stock studies are listed at the end of this article.

transactions and that have thousands of transactions within them. This abundance of data has attracted the attention of academics who have written many of the new articles. As of 2012, there were at least 32 different studies analyzing restricted stock discounts.

Trying to find an average from these studies is uniquely difficult because there is little convergence of central tendency among them. The reasons for this include such factors as the date of the transaction, selection criteria, and specifics of measuring the discount. Another problem is that the studies generally do not show the detail of the underlying transactions, which creates an issue in attempting to compare and combine results.

There are, however, two databases, the FMV Restricted Stock Study and the Pluris DLOM Database that provide a body of these restricted stock transactions along with related financial data useful to valuators. These databases were used to provide the volatility comparisons shown in this paper. One or both of them should be in the valuation analyst's DLOM toolkit.

Importance of Volatility to DLOM

Review of the many articles about restricted stock discounts shows that volatility is the most commonly found factor related to the size of the discount. Of the 32 studies referred to earlier, 26 included analyses relating various factors to the size of the discount. Of those 26, 15 found volatility to be a factor related to it. That is more than any other single factor.

A possible underlying mechanism for this relationship is that volatility results from price changes over time. At the valuation date, the exact price that will be achieved from selling a restricted security or privately held company is not known because the price fluctuates over time. The more the volatility the greater is the uncertainty of the eventual price. This leads to a higher required rate of return, which, in turn, leads to a larger discount.

Mathematical models have been developed that use volatility as a primary input variable, which indicates the importance of volatility to theoreticians. This article discusses eight of these models, which are listed below:

Chaffe 1993, Black Scholes Put Option
Longstaff 1995, Lookback Put Option
Ghaidarov 2014, Forward Start Put Option
Finnerty 2012, Average Strike Put Option
Ghaidarov 2009, Average Strike Put Option
Meulbroek CAPM 2005
Tabak CAPM
Stockdale Sigma-DLOM Curve 2011

This class of models have common strengths and weaknesses. A principal strength is that they are a closed form expression, in other words they are a formula. That allows a computation of a discount based on specific inputs into the formula, which allows the computation to be tailored to a specific situation. Some of the formulas are quite complex, but they are relatively easy to program into a spreadsheet.

The models do have perceived weaknesses. The first one is that they use volatility as an input variable so the volatility must be determined. That is difficult for a public company and even more difficult for a private company. The second issue is that a disposal period is needed. It is really a misnomer to call these two issues weaknesses because they are essential matters that valuators must address when determining a discount. Volatility is indicative of the risk and risk needs to be factored into the determination of a discount. It has also been shown that the disposal period is important to the discount, requiring that some judgment be made about this issue.

Addressing Volatility and Time

Volatility is not observable for private companies but must exist for them because many of the same factors that affect public company pricing also affect private company pricing. As those factors change, they change the values of private companies as well as the public companies. There are a number of techniques in common use for determining the volatility of private companies such as comparing them to public companies, but these techniques could certainly use some improvement. In an effort to shed some light on this issue, a preliminary analysis has been performed that relates financial and market factors to volatility for a group of very small public companies. This analysis shows that there are three groups of factors that are related to volatility: the general market volatility, the specific characteristics of the market for the individual stock and six financial factors. This preliminary working paper is available at no cost on the SSRN website.[4]

Disposal period is a term that can be used to describe the concept of the time from the valuation date until the security is sold or disposed of. Others use the term "holding period" for that same concept but the term "disposal period" is more descriptive and avoids confusion with the SEC required holding period.

It is virtually impossible to determine a specific disposal period for any private company. One way to address this issue is the use of probability of disposal as a function of time.

Tests of the Volatility Models

Two tests have been used to determine the effectiveness of each of the volatility models. The first test compares the results of the model to restricted stock data over a range of volatilities. The second test examines the results of the model over time as volatility is held constant. These are reasonableness tests and not statistical tests. The effectiveness of each model is judged by the reasonableness of the result it produces. The question addressed is whether the model produces a result that seems to reflect what happens in in the restricted stock market.

The second test, performance over time, is somewhat easier to understand and apply and so will be addressed first. Here's the way the test works. The result of the model at a constant volatility over a range of time is computed. Then this result is examined to determine whether it appears to be reasonable. Reasonable is defined as whether the discount increases at a decreasing rate, approaching but never exceeding 100%. It should never exceed 100% because this is a theoretical impossibility. Also, it should not increase to 100% too quickly because this renders the model useless in discriminating between different situations.

In the first test, the volatility comparison, the discount resulting from model computations over a range of volatilities is compared to observed restricted stock discounts over the same range of volatilities using a discount-volatility graph. Discount and volatility data is available from the FMV and Pluris databases. Restricted stock discounts are a useful subset of DLOMs because the volatility of the underlying stock can be observed and the disposal period can be estimated during the era from which the restricted stock transactions are drawn.

The concept of this comparison is a simple idea, but it has significant complications. It is worth labouring through these complications because they exist with restricted stocks whether a valuator uses a volatility model or not. There are five types of complications that will be discussed: (1) the data source, (2) the large degree of scatter in the data, (3) describing where the result from the model falls within the data, (4) premiums that occur within the databases when they should be all discounts, and (5) the holding and disposal periods to be used.

It is helpful to know the history of SEC holding period rules in order to understand likely investor disposal periods in different eras. SEC rules have changed over the years and these changes have

4 John J. Stockdale, "On the Volatility of Very Small Exchange-Traded Operating Companies" (September 30, 2014). Available at SSRN: http://ssrn.com/abstract=2409130. The author welcomes feedback.

resulted in different eras where the likely disposal periods used by investors are different. Prior to 1972, there was no set SEC rule specifying a holding period. The holding period was determined by a group of SEC rulings and a number of court cases. An investor had to judge the holding period in each situation.

In 1972 the SEC issued Rule 144. One of its features was that it required an investor in restricted stock to hold the stock for two years. There were a lot of other features in Rule 144 and some of those changed over the years, as well. But the holding period rule stayed at two years until 1997, when it was dropped to one year and then it stayed at that period until 2008 when it was reduced to six months. The required holding period remains at six months today. Because these required holding periods have changed, it is likely that investors' expected disposal periods have changed. Thus, when discussing a restricted stock discount, it is helpful to associate it with one of the SEC holding periods to understand the underlying expected disposal period.

Two different data sources were used for the comparisons in this paper. For the SEC two-year era data, the FMV database was used. The Pluris DLOM database wasn't developed until the 2000s and it does not have two-year era data available within it. For the one year and six month eras, the Pluris data has been used, as it offers more transactions than FMV. Also, it is helpful to work with two alternative sources. In addition, the Pluris database has a beta associated with each restricted stock transaction, and a beta is needed to test the two of the models which use the CAPM.

The tests discussed here were all performed during 2012 and the data included is through the end of 2011.

Restricted stock studies show that there is a wide scatter in the data and the reasons for this are not completely understood. Graph 1 above shows the substantial scatter. As the volatility on the x-axis increases, the discount on the y-axis tends to increase but it is not at all a well-defined line. There is very significant variation.

In an attempt to explain this variation, a number of multi-variable regressions have been performed where restricted stock discounts are the independent variable. The best that any of these achieved was a 50% coefficient of variation, while most of them are considerably less. (Coefficient of variation is also known as R^2 and can be interpreted as an indication of the amount of variation explained by the regression equation.) Although it cannot be expected that a regression will result in an effective computational model, a regression with only one of the variables can provide an indication of the middle of the data, which can be used as a starting point for the application of further judgment.

In order to make some sense of the relationship of the restricted stock discount to volatility, a curve is used to describe the middle of the data. This middle of the data curve is developed using a best fit curve which is fitted using least squares regression, but not a linear line. The underlying assumptions used to describe the characteristics of this curve are, first, that the discount increases at a decreasing rate as volatility increases. This is based on both liquidity theory and the notion that it is likely that present value theory is underlying restricted stock pricing and discount determination. A second assumption is that the curve goes through the origin on the graph's axis, that is, the zero volatility and zero discount point. This is based on the thought that if volatility is the only factor of concern about the discount, then at zero volatility, there would be a zero discount. With the increasing at a decreasing rate requirement, a log curve would normally be a first choice. But this can't be used because of the zero/zero requirement. However, a Weibull curve can be used to satisfy these requirements. The Weibull curve is an exponential function with the following form:

The form of the curve is $Y = e^{-(x/a)^{\wedge}b}$

Where, in this application

Y = the discount

exp = e = a mathematical constant = 2.71828…

a = alpha = a constant determined in curve fitting

b = beta = a constant determined in curve fitting

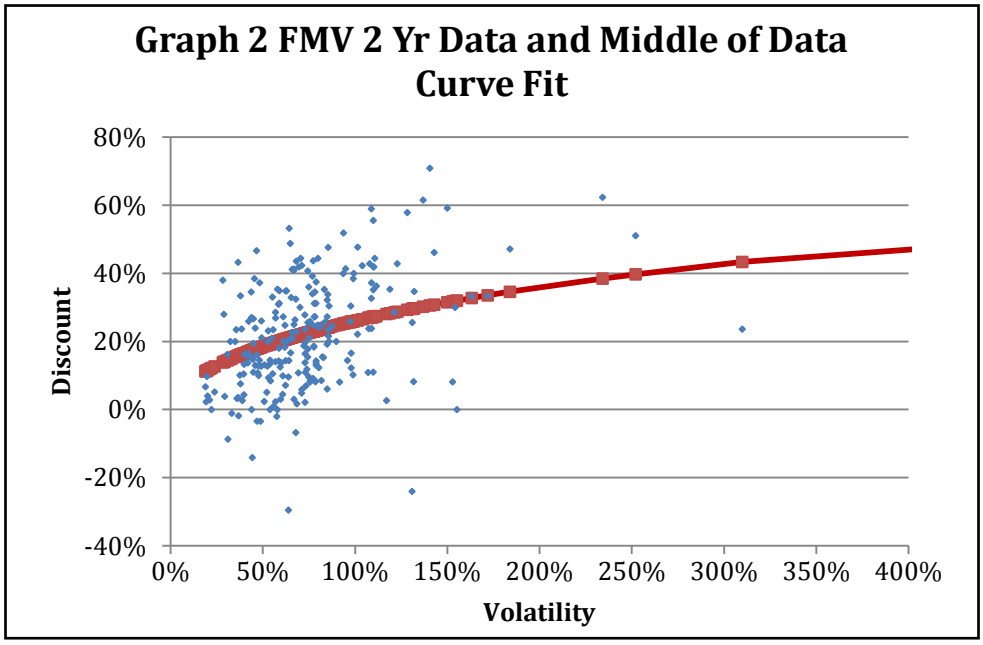
x = volatility

The parameters that result from fitting the curve to the data are as follows:

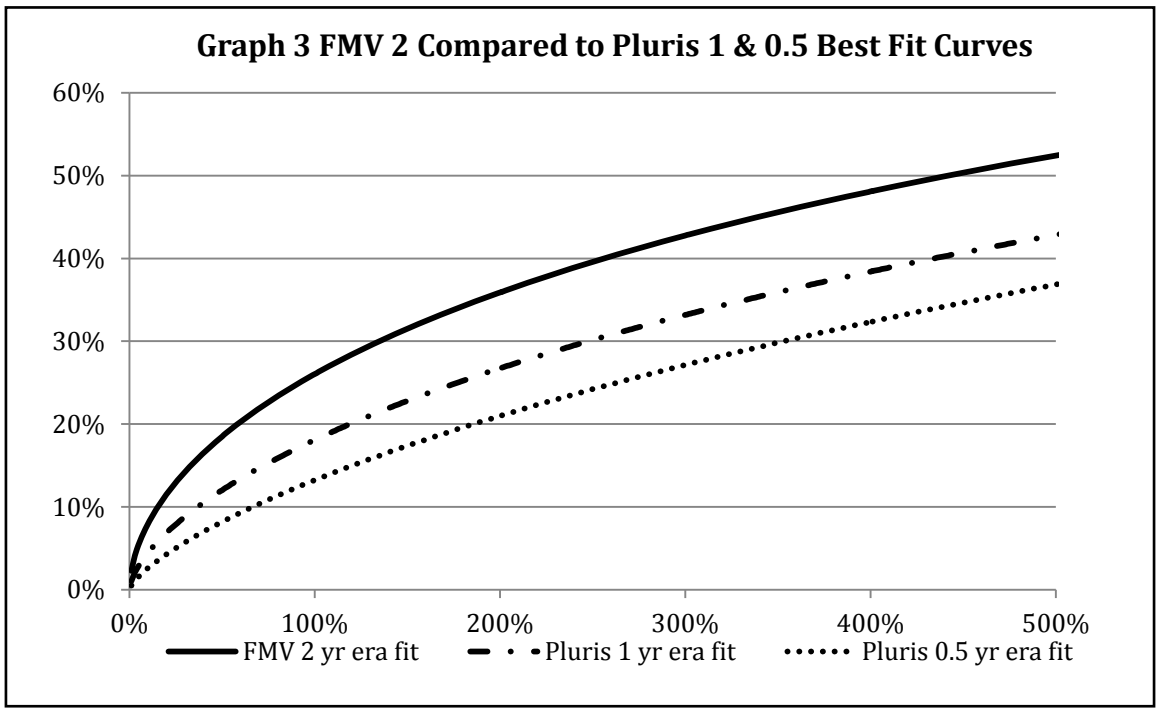
Database	alpha	beta	R^2
FMV 2	8.5	0.56	17.1%
Pluris 1	12.4	0.64	14.6%
Pluris 0.5	14.5	0.73	11.6%

The above table shows the specific constants that are developed for the three different eras of SEC holding period data. The coefficient of variation (R^2) is a common interpretation of the percent of variation that has been explained by the regression. In an absolute sense, these look pretty dismal here. The best of the bunch is 17%, only explaining 17% of the variation. But low coefficients like these are typical of regressions in securities analysis. For example, three analysts from Management Planning did a regression analysis on a substantial number of restricted stock transactions, which was reported in the Spring 2011 *Business Valuation Review*. The R^2 on that regression equation, which had 11 independent variables, was 21%. So, an R^2 square of 17% with one variable indicates a definite relationship, while still indicating that other variables are at play.

Graph 2 shows the best fit curve for the FMV 2 year era data.



The purpose of this best fit curve is only to show a midpoint and not to make statistical statements. A large variance around the line can be expected. The relationship for the Pluris 1 and Pluris 0.5 are not shown, but are similar. The relative relationship of the three curves is shown on the following Graph 3. The black dotted line on this graph is the six-month era data, the blue dash dot line is the one-year era data, and the solid red line is the two-year era data. The space between the solid red and the blue dash-dot lines is about twice as large as the space between the blue dash-dot and black dotted lines. An interpretation of this is that the discount is proportional to the holding period because the space between the lines is proportional to the holding period.



Disposal Period

A disposal period is needed to compute the discount in the models. In order to get a good comparison, the disposal periods used to compute discounts from the models (that are representative of the RSS data) need to match. The test could be off if the true average period of the restricted stock data is different than that used for the model. The disposal periods used are:

2 year era – 3.3 years
1 year era – 2.3 years
0.5 year era – 1.8 years

For the SEC two-year era, there are two different independent determinations of the disposal period. First of all, during the development of the Sigma DLOM curve (discussed further below), in 2010, there was a lot of trial and error analysis. This involved comparing the disposal period and volatility to a resulting liquidity premium. After sorting through all the data, a judgment was made that 3.3 years was the right number within that two-year era data. Separately when John Finnerty came out with his study in 2012, he stated that he believed the disposal period is 3.3 years as well. His rationale is based on the two-year era holding period plus an additional 1.3 years for the average time that restricted stock investors would take to dribble out the stock under the SEC rules.

The rationale for the one-year era and the six-month era is a little simpler. The disposal period for the one-year era is one year less than for the two year era and for the six-month era the disposal period is another six months less. There is somewhat less certainty for the two more recent eras. The PIPES (Private Investment in Public Equity) market has increased in sophistication as time has progressed and disposal periods may have dropped more than proportionately.

There are substantial issues involved in computation of the reported discounts for the restricted stock transactions. Some of these issues include: (1) the date of comparison for the freely traded price and the restricted stock transaction (closing price on transaction day is used here); (2) Should other elements of price, such as warrants, be included? (warrants are not included in determining

price.); (3) How to handle premiums included in the databases? This latter point requires a bit of explanation.

Theoretically there should not be a premium in a pure restricted transaction because a stock that cannot be sold immediately must be worth less than an identical stock that can be immediately sold. However, premiums do show up in the data, likely for two reasons. First, there is often stock movement around the date of the transaction (i.e. the transaction price is set and then the stock price moves). If the stock price goes down, there could be a premium. If it goes up, the discount is too large. Second, the transaction could include something other than an investment in restricted stock. A very common example is a joint venture where the purchase of restricted stock is actually an investment in a joint venture.

Premiums from the stock movement should be included because they are needed to get the right overall economic effect. Stock movement causes some too-large discounts to be included. As a result, the stock movement premiums should also be included to get the right overall average discount. But premiums that include other investment elements should be excluded because these premiums are substantially unrelated to illiquidity. Unfortunately, it is very difficult to identify the transactions with investment elements unless every transaction in the databases is examined, which was not done. As a practical matter, a decision rule was set up and premiums greater than 50% have been excluded. Because FMV is more selective about the transactions included in their database, none of those transactions were excluded. Pluris, on the other hand, has a philosophy of including more transactions than FMV, so a number of large premium transactions needed to be excluded from the Pluris database.

There were exclusions from the Pluris database for two other reasons. It includes transactions with warrants. The economic effect of the warrants is not clearly spelled out so these transactions were excluded. Also, Pluris identifies the beta of the underlying stock, which is useful in testing CAPM based models. However, some of the betas were very high or very low and these extreme betas were also excluded.

Volatility Benchmarks

The volatility test shows how the size of the discount varies over a range of volatilities. A few benchmarks relating volatility to type of security will assist in interpreting this volatility test.

An indication of the low end of volatility for private companies is provided by a public securities index. For the S&P 500 index, from 1990 to 2013, the average volatility is 16% and has a range of 8% to 27%, excluding 2008, when it was much higher.

The volatility of an index is going to be absolutely the low end of the volatility of all the companies in that index because the index tends to average out up and down movement of the individual companies in the index. An average of the volatilities of the individual companies in the index provides a better indication of the typical volatility of an individual company. To get a better feel of volatility of the individual companies, the average volatility for companies in the S&P 100 was computed for the period 1990 to 2013. That average volatility is 32% with a maximum annual average of 51% and a minimum annual average of 20%. This average volatility shows the typical volatility for very large companies.

A study of volatility of small public companies was referenced earlier. The companies in this study all have revenue of about $100 million or less. The average volatility of these companies during the period of 1990 to 2013 is 58% with a range of about 40% to about 91%.

A very critical issue is the level of volatility that is associated with private companies. The number can never be known with certainty because private companies don't have regular prices that can be observed. A reliable indicator of volatility therefore cannot be computed. However, there is a way to compute a number that may be representative. This is reverse engineering the

total beta. If this is done with expected input factors for a private company, the computed range of volatility is 50% to 130%.

What is meant by reverse engineering the total beta? There is a concept called total cost of equity, in which the cost of equity is based on a risk free rate plus total beta times the equity risk premium. Total cost of equity differs from the standard CAPM model because the total beta drops the correlation coefficient, which is present in the standard beta. This is a controversial concept and there is substantial disagreement about the validity of total beta. The essence of the issue comes down to whether it's the volatility alone or the correlation to market volatility that counts for these smaller companies. The study of small companies referenced earlier lends some support to the position that it is total volatility and not correlation to the market that is important for smaller companies, which lends some support to the total cost of equity concept.

If the total cost of equity concept is accepted, it is easy to use algebra to compute volatility for an individual company. Specific company volatility equals market volatility times a factor, where the factor equals the difference between total cost of equity less the risk free rate divided by the equity risk premium. These factors are often determined when an income approach is performed. The following shows the math for this computation.

$TCOE = r_f + T\beta \times ERP$
$T\beta = \sigma_s / \sigma_m$
$\sigma_s = \sigma_m \times (TCOE - r_f) / ERP$

Where,

- TCOE = total cost of equity used to value the company
- r_f = the risk free rate
- ERP = the equity risk premium
- σ_s = volatility of the specific company
- σ_m = the volatility of the market

One final set of benchmarks is available from the FMV and Pluris databases. The average volatility of the companies in the FMV database during the two-year era is 77% and the average volatility from the Pluris database is 133%. These volatilities are based on weekly price changes.

TEST OF DLOM VOLATILITY MODELS

Chaffe Black-Scholes Put[5]

The Black Scholes Put Model was published by David Chaffee in 1993. The theory of this option model is that a put option measures the right to sell and it is exactly the right to sell that is lost if a stock is restricted or if it cannot be sold for a period of time because of the market.

The formula for this model is:

DLOM=Black-Scholes Put Value/Stock Value

The assumptions used for the computation of the value of the put used in this test of the Chaffe Black-Scholes Put model are as follows:

Lives

2 year era	3.3 years
1 year era	2.3 years
0.5 year era	1.8 years

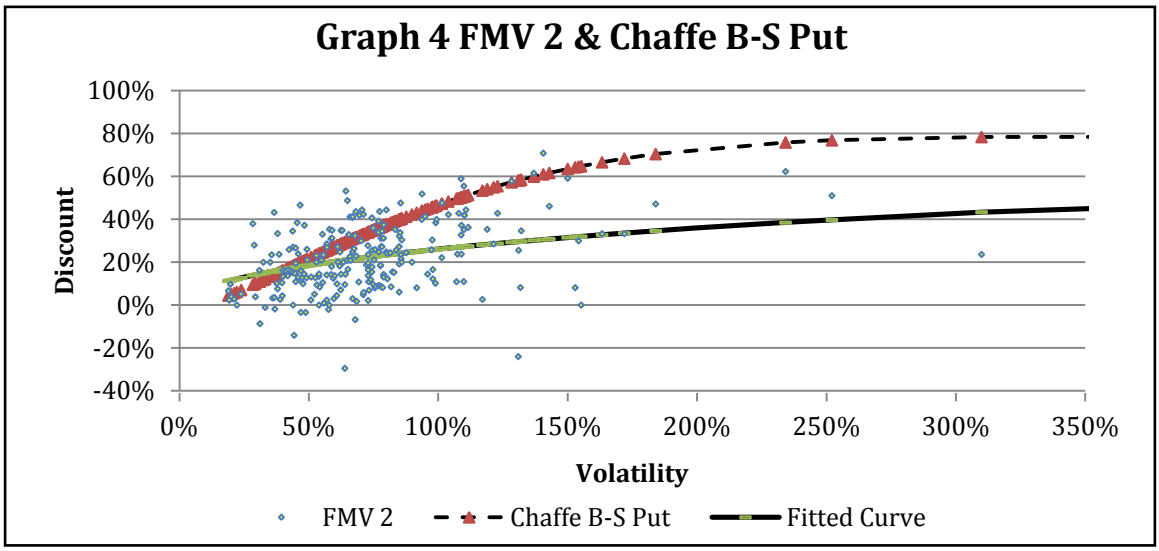
5 For more information see David B. H. Chaffe III, "Option Pricing as a Proxy for Discounts for Lack of Marketability in Private Company Valuations: A Working Paper," *Business Valuation Review* 12:14 (December 1993), pp. 182-193.

Dividends – 0%–most companies in the databases don't pay dividends
Interest rate – an average during the period the data was observed

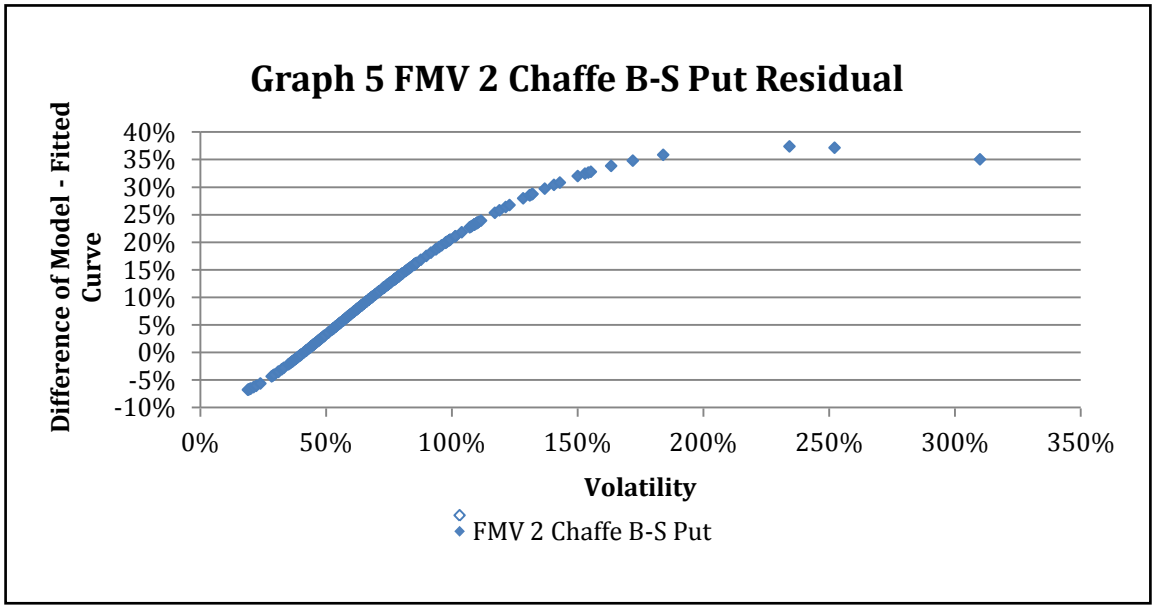
2 year era	7.2%
1 year era	2.9%
0.5 year era	0.5%

The issue of the holding periods was discussed in detail earlier. Almost all of the option models tested here require an assumption about the dividend rate. A zero rate is used because in the restricted stock databases most of the companies do not pay dividends. The last issue is the interest rate. For the Chaffe Black-Scholes put, unlike the other models, an interest rate is needed to perform the computation. What is used here is the average during the period that the data were observed. It is interesting to note how these interest rates have changed over time. During a two-year era it was 7.2%, during the one-year era 2.9% and during the six-month era and continuing today, 0.5%. It is well known that interest rates have dropped in recent years, but it is quite shocking to see the actual amount of the drop.

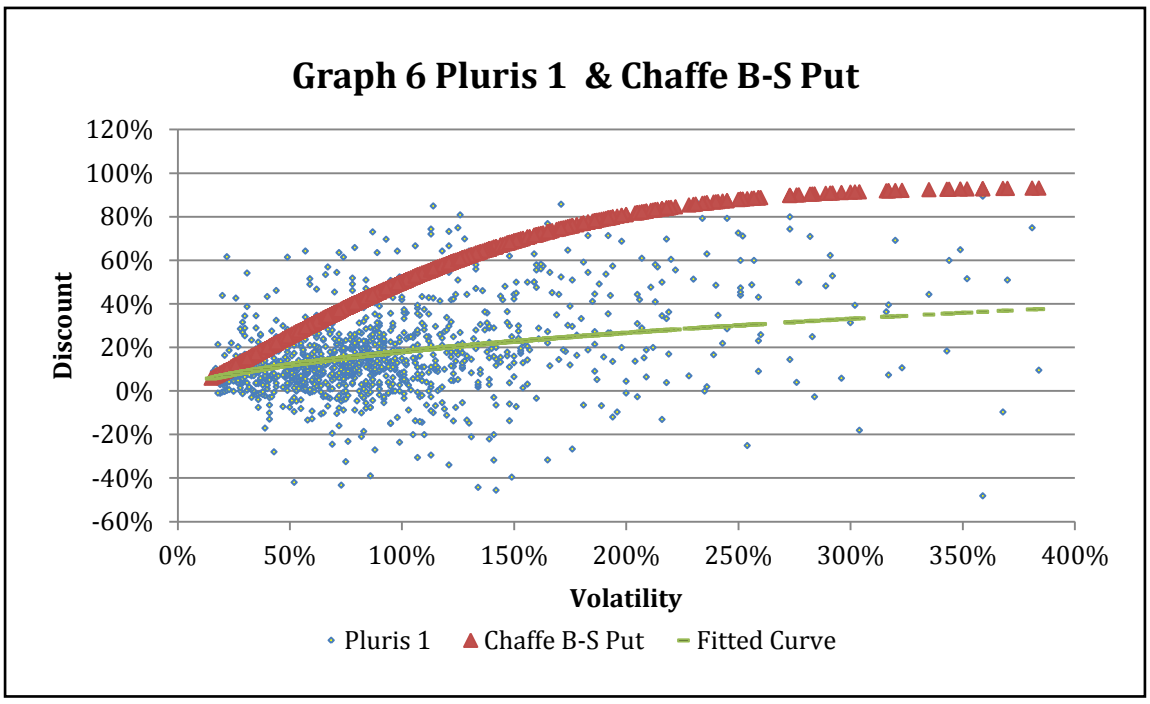
Graph 4 below shows the results of the volatility test using the FMV data, which is from the SEC two-year holding period era. The solid line cutting through the data represents the midpoint of that data determined using the least squares regression technique discussed earlier. The red dashed line shows the computed discounts from applying the Chaffe Black-Scholes Put Model. It can be seen that there is a crossover point at about 50% volatility; below that the discount from the model is less than the middle of the data and above that the model produces a value greater than the midpoint.

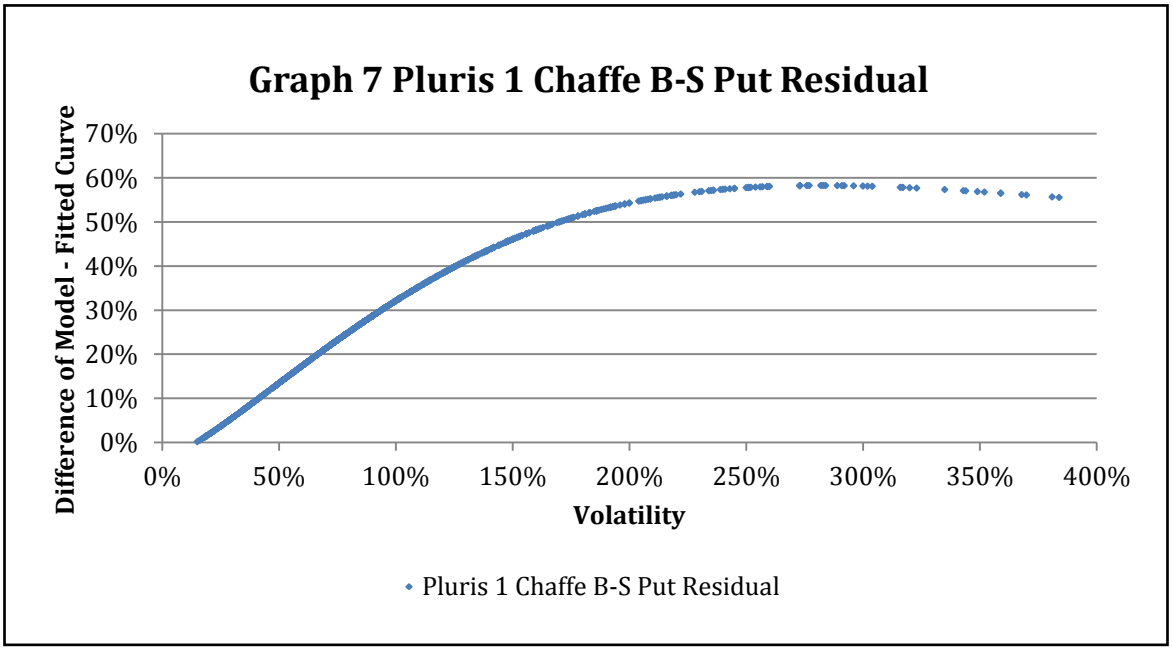


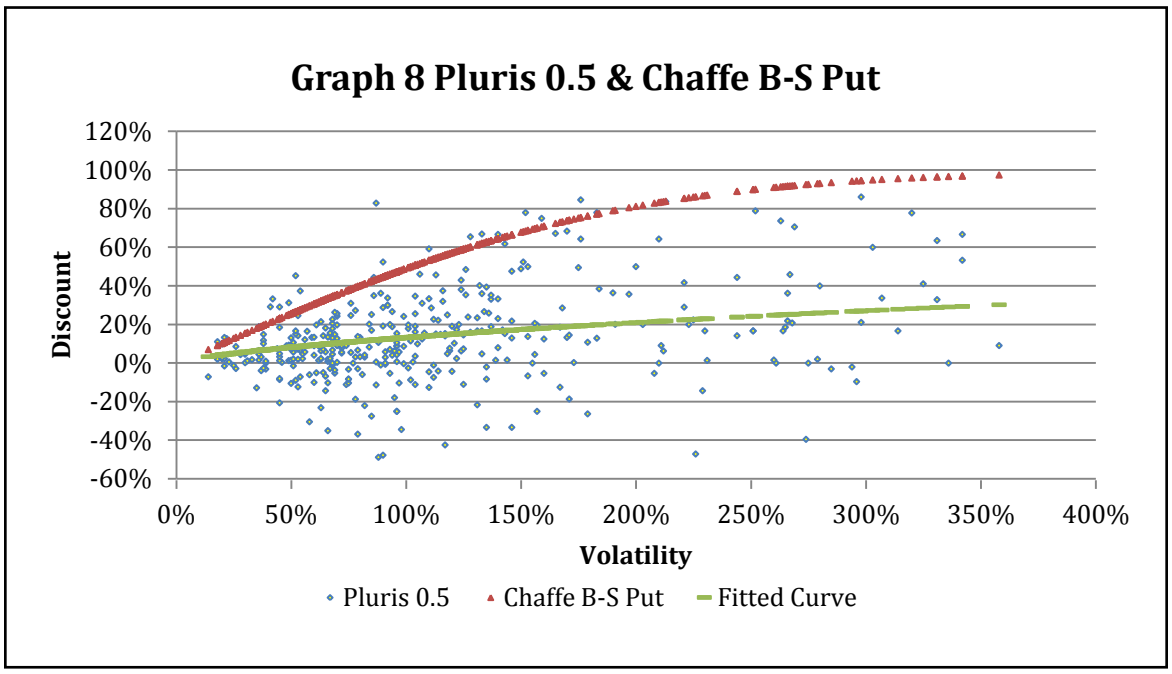
Graph 5 below shows a residual, which is the difference between the midpoint-of-the- data line and the result from applying the model. At 40% volatility the midpoint and model result are equal. At lesser volatilities the model produces a value less than the midpoint and at higher volatilities it is greater. As volatility increases, the discount increases at a decreasing rate which is proper but it exceeds the midpoint of the data by more and more.

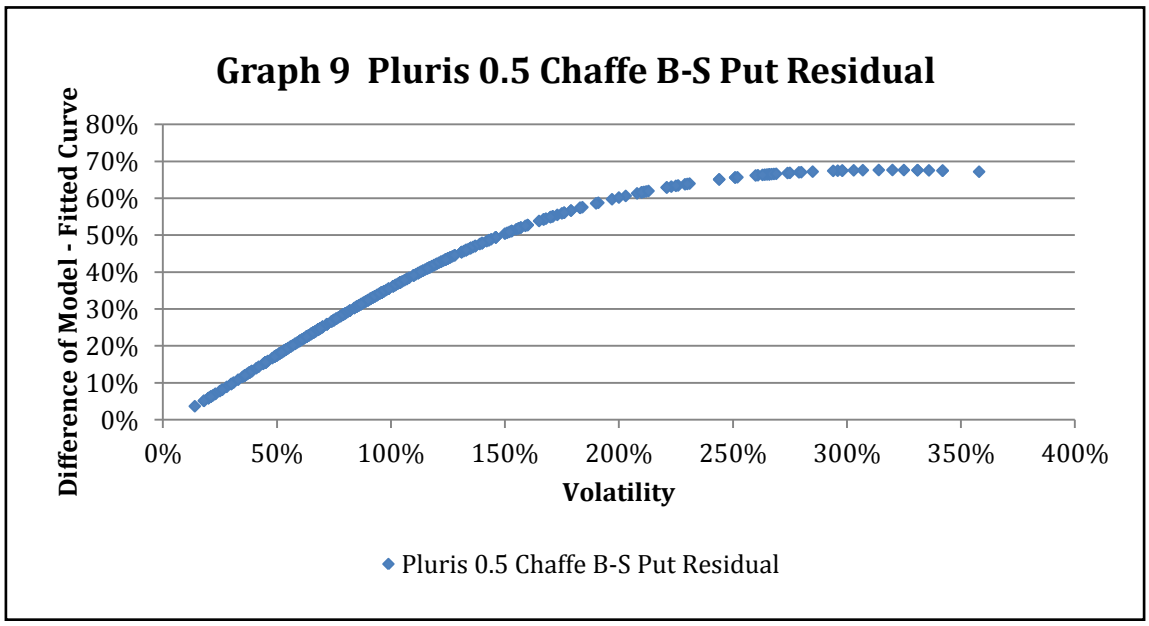


This volatility test was repeated for the shorter time periods embodied in the Pluris database and the results are similar to that discussed above. These results are shown in the graphs 6 through 9 below.



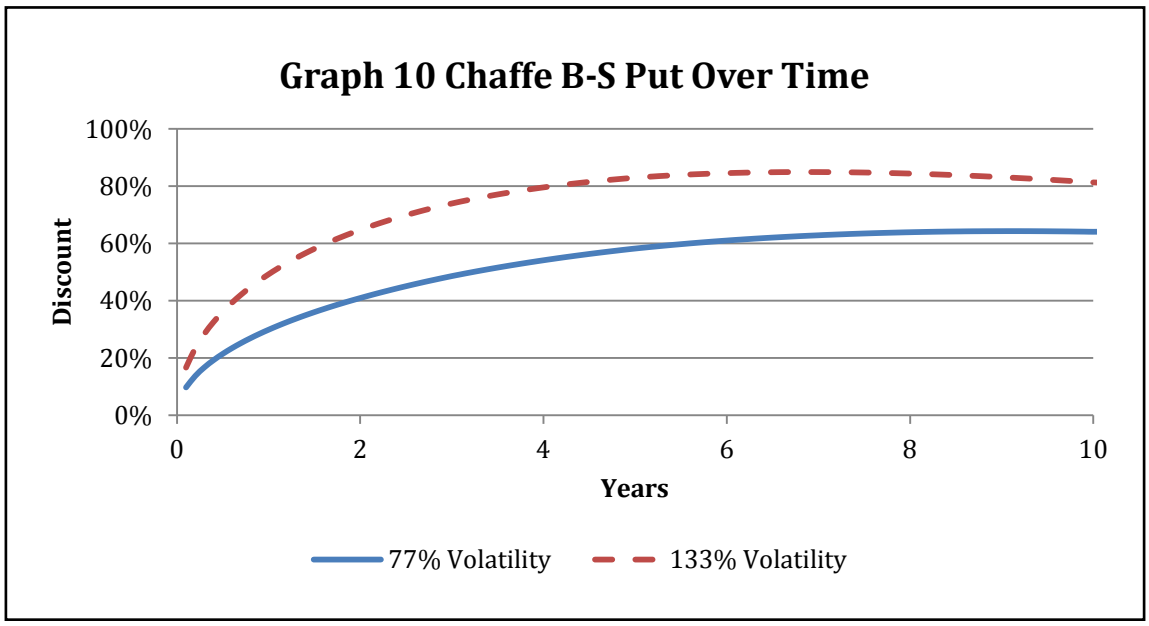

Graph 7 Pluris 1 Chaffe B-S Put Residual
Difference of Model - Fitted Curve
70%
60%
50%
40%
30%
20%
10%
0%
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 1 Chaffe B-S Put Residual


Graph 8 Pluris 0.5 & Chaffe B-S Put
Discount
120%
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 0.5
Chaffe B-S Put
Fitted Curve



The second test is the time test, that is, how well the model performs over time. There are two lines on the graph 10. The solid blue line is 77% constant volatility and the dashed red line is 133% constant volatility. It's a little easier to see some bad behaviour from this model with the red dashed line. The result from the model tends to increase at a decreasing rate until about year seven but then it reaches an inflection point and starts to drop off. Now that is just not what should happen with a discount for lack of marketability. One would expect that as time goes on, representative of an increasing disposal period, the discount would continue to increase. So, this model does not seem to work as the time period gets longer. Disposal periods longer than six or seven years can often be relevant for a private company.

In summary, at lower volatilities and shorter times, the model produces a result that may be representative of the midpoint of the data. Higher volatilities and longer disposal periods are probable for private company interests, however. This model produces an uncertain result for two reasons. First, it is too high on the volatility dimension and possibly too low on the time dimension. In addition it reaches an inflection point so that the discount increases as the disposal period increases. Such behaviour does not make sense.



Mark Katsanis is one of David Chaffe's colleagues and in the Spring 2012 *Business Valuation Review* he published an article about a modification of the Black-Scholes model which is called a shout put option. Now that modification corrects the decrease over time but substitutes a result that approaches a value of less than 100%.

Longstaff Lookback Put Option

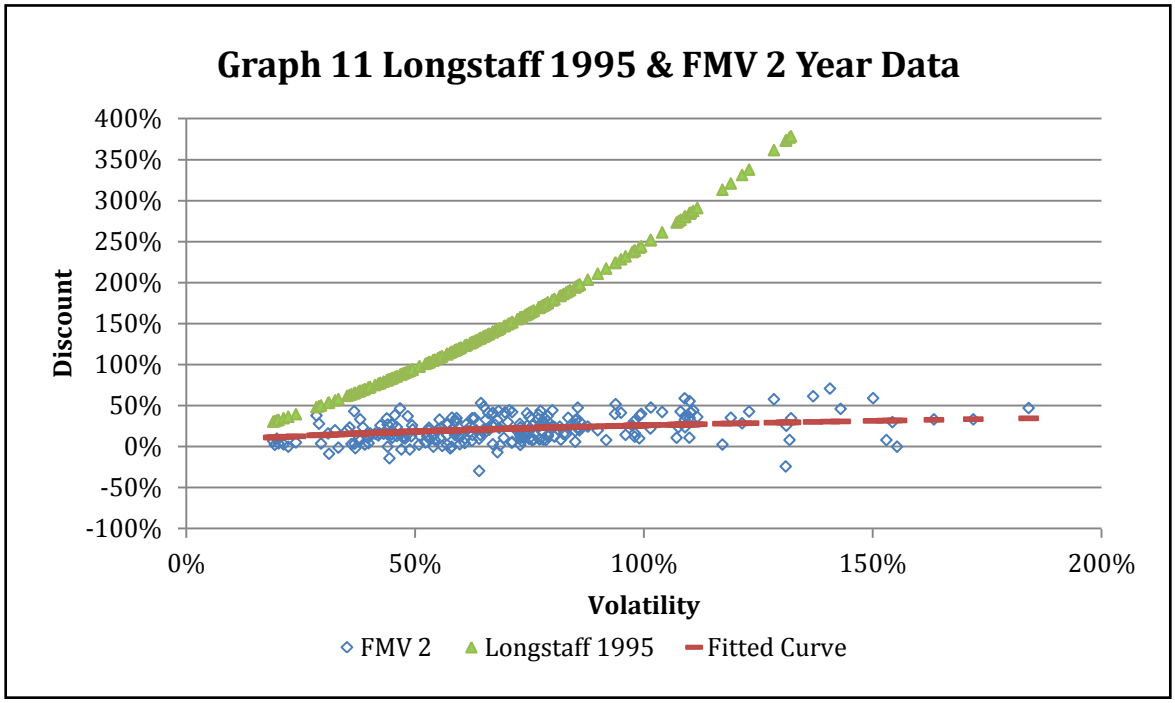
The basic theory behind the Longstaff Lookback Put Option model is that an investor with perfect market timing ability is restricted from selling during a period of time. This means that the investor cannot benefit from selling during the restriction period. An investor can't have better knowledge and be more disadvantaged in its use than this. As a result this model is intended to show the upper bound of the discount and not to show a result in the midpoint of the data. Here is the formula for the model:[6]

$$F(V,\,T) = V\left(2 + \frac{\sigma^2 T}{2}\right)N\left(\frac{\sqrt{\sigma^2 T}}{2}\right) + V\sqrt{\frac{\sigma^2 T}{2\pi}}\exp\left(-\frac{\sigma^2 T}{8}\right) - V$$

Where,

F(V,T) = the upper bound of the amount of the discount
N(-) = cumulative normal distribution function
V = value of the security
T = time of restriction
σ^2 = the statistical variance of return of the security
exp = e = a mathematical constant = 2.71828…

6 See Francis A. Longstaff, "How Much Can Marketability Affect Security Values?" *Journal of Finance*, Vol. L, No. 5, December 1995, pp. 1767-1774.



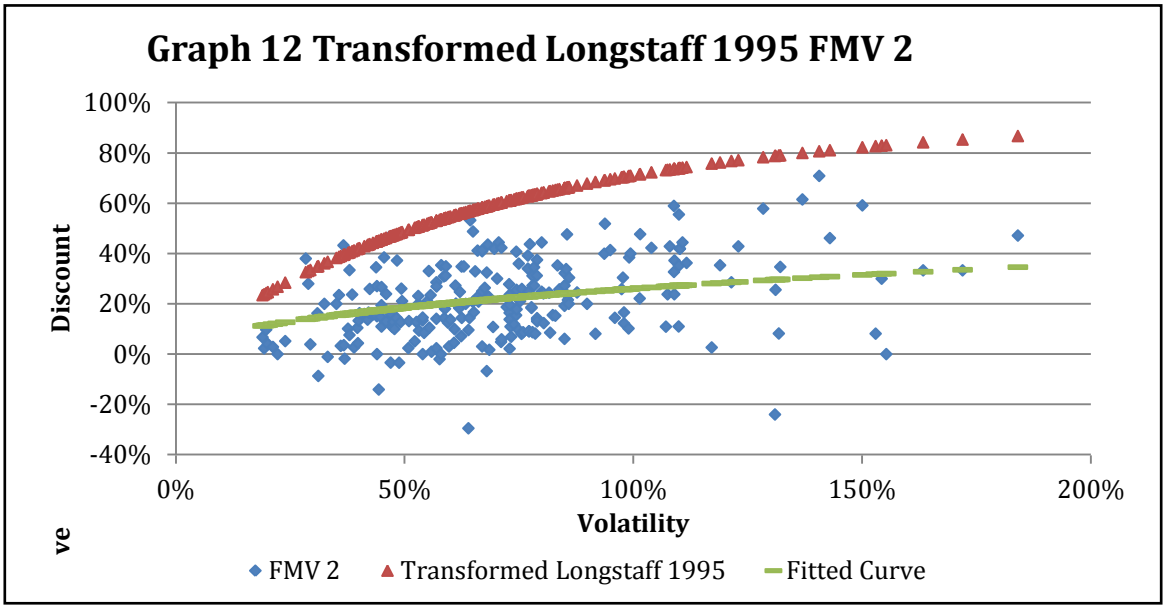
In the above graph 11, the blue dots represent the discounts from the database. The red dashed line is the middle of the data while the line with the green triangle markers is the result from the Longstaff model. It rightly begins above the data, because it is showing an upper bound. But then it increases to 100% and it keeps on going, continuing far above 100%. At 100% volatility, the resulting discount is about 200% and it continues to increase even more as volatility increases. This is simply impossible. Discounts can never be above 100%. As a result this form of the model is not very useful. It is not recommended even to show an upper limit.

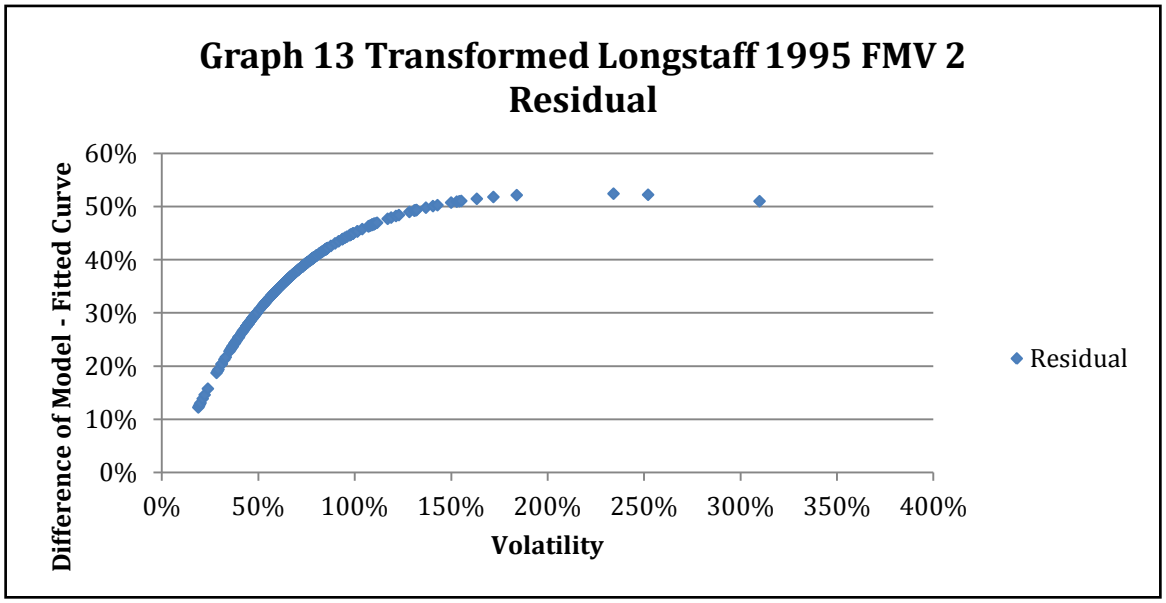
Abbott Transformation of the Longstaff Discount

To address this issue, Ashok Abbott has suggested a transformation of the Longstaff model. The Longstaff discount is divided by one plus the Longstaff discount, to arrive at an indication of the DLOM. The rationale for this transformation is that the important economic entity is not only the stock, the base security, but also the option, and both of these need to be considered to get the whole economic package. The formula for the transformed Longstaff discount has the following form:

$$\text{DLOM} = \frac{\text{Longstaff Discount}}{\text{1+ Longstaff Discount}}$$

The result of the volatility test of the transformed model is shown on the following graphs 12 and 13.





It does appear that once the Longstaff model is transformed it produces a result that shows an upper limit. There are problems with this transformation approach, though. If the option value gets big enough, it dominates the total economic package. Earlier in this paper, the Longstaff discount was shown to be 200% and 300% at volatility ranges typical for private companies. This means the option would be two or three times the value of the stock itself, so that the option rather than the base security dominates the computation. Another problem is that this transformation approach can be used for any kind of continuously increasing function to get the right shape of a curve. Also, John Finnerty wrote an article in the fall of 2013[7] expressing additional objections to this transformation approach.

7 John D. Finnerty, PhD, "Using Put Option-based DLOM Models to Estimate Discounts for Lack of Marketability," *Business Valuation Review* (Fall 2013), pp. 165-170.

In summary, after the transformation, the result exceeds the restricted stock data for almost every point, and it does look like an upper limit. However, consideration needs to be given to the appropriateness of this transformation because of the aforementioned issues.

Ghaidarov Upper Bound on Cost of Illiquidity

In the summer of 2014, Stillian Ghaidarov published an article concerning an upper bound on the cost of illiquidity.[8] The article intends to provide a straightforward and general theoretical upper bound on the cost of illiquidity to an undiversified restricted investor. The model developed is intended to extend and improve earlier work by Longstaff.

The cost of illiquidity is modeled as a forward-start put option. Forward start options are options whose strike will be determined at some later date. They are sometimes used for employee stock options when an employee is given a series of options with different maturity dates, but the strikes are all set in the future.

The closed form expression developed by Ghaidarov is as follows:

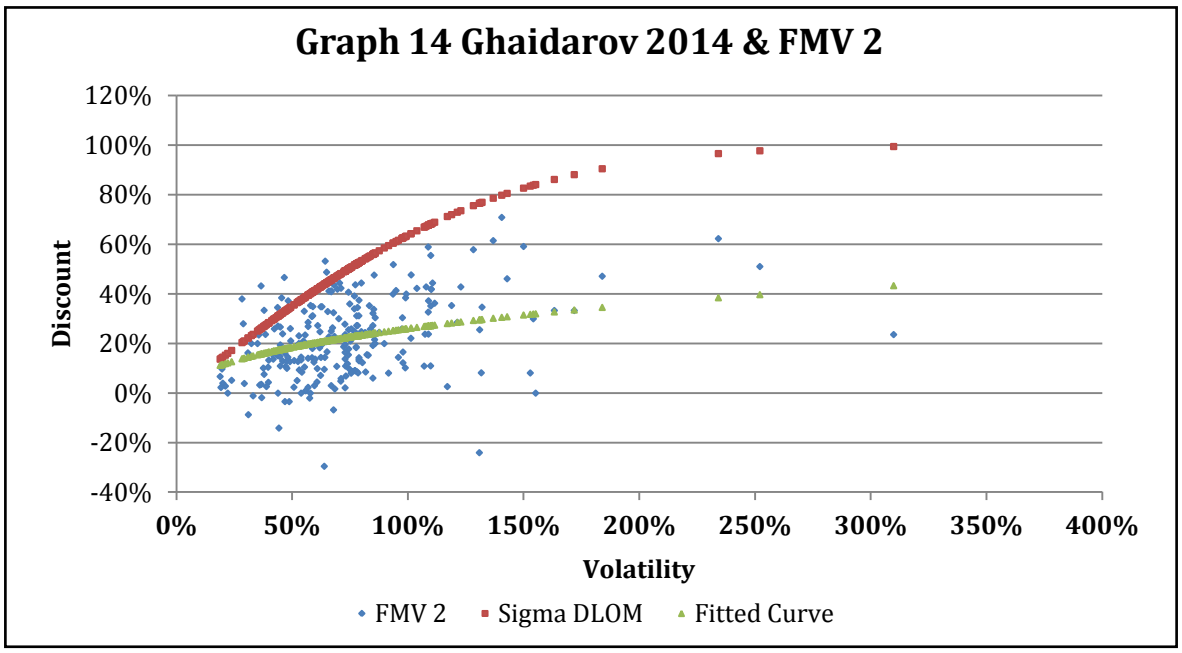
$$D_T = e^{-qT}[2N(\sigma\sqrt{T}/2)-1]$$

Where,

D_T = the upper bound of an illiquidity discount
q = constant continuously compounded dividend yield
T = time to maturity equal to the length of the restriction period
N indicates the normal cumulative distribution function
σ = constant volatility of the stock price

Graph 14 below shows the result of the volatility test for the Ghaidarov 2014 model using the FMV 2 data. It shows that the Ghaidarov 2014 model generally meets its intended purpose of providing an upper bound on the discount. Results for the SEC one-year and half-year data are similar and are not shown here. The model is not intended to and does not provide an indication of the discount centred in the restricted stock data. It provides an indication of the upper bound of the restricted stock discount.

8 Stillian Ghaidarov, "Analytical Bound on the Cost of Illiquidity for Equity Securities Subject to Sale Restrictions," *The Journal of Derivatives* (Summer 2014), pp. 31-48.



Finnerty Average Strike Put Option

Another model that has become quite well known over the years is the Finnerty Average Strike Put Option.[9] The model presented below is the 2012 model, which replaced the model introduced in the early 2000s and which was subsequently withdrawn.

In this model, Finnerty uses a put where the strike price is determined as an average price over a period of time instead of at a specific date. This is also called an "Asian Put." Finnerty states that it results in an upper bound, but as shown below, it does not.

The formula for this model is as follows:

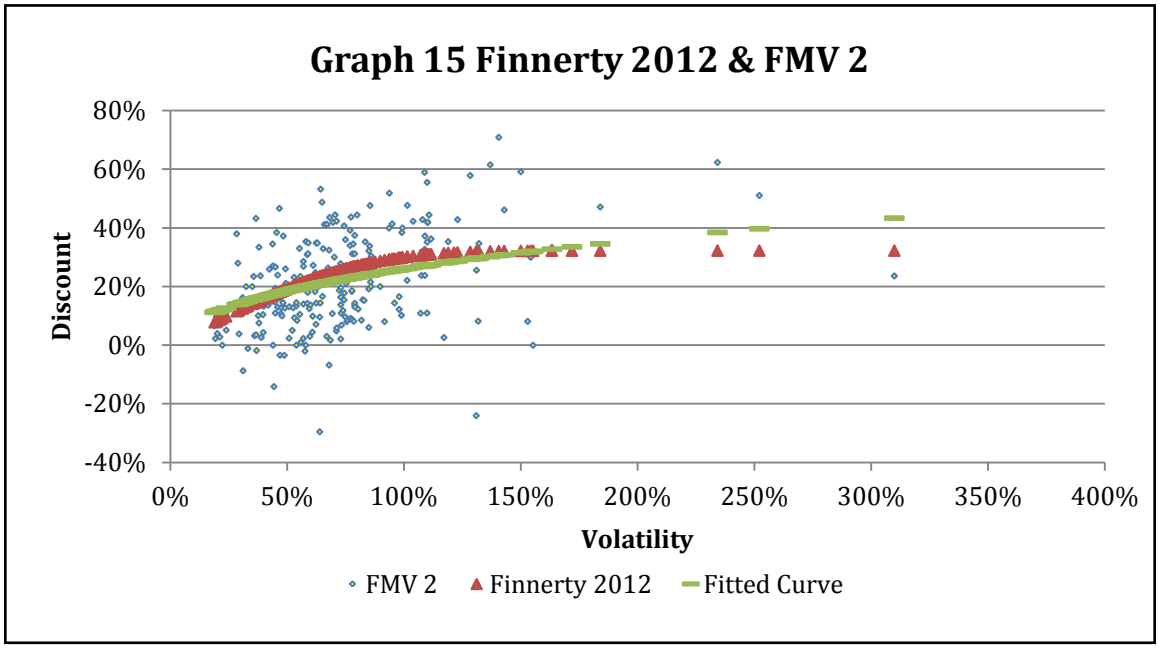
$$D(T)=V_o e^{-qT}[N(v\sqrt{T}/2)-N(v\sqrt{T}/2)]$$
$$v\sqrt{T}=[\sigma^2 T+\ln[2\{e^{\sigma\wedge 2T}-\sigma^{2T}-1\}-2\ln[e^{\sigma\wedge 2T}-1\}]^{1/2}$$

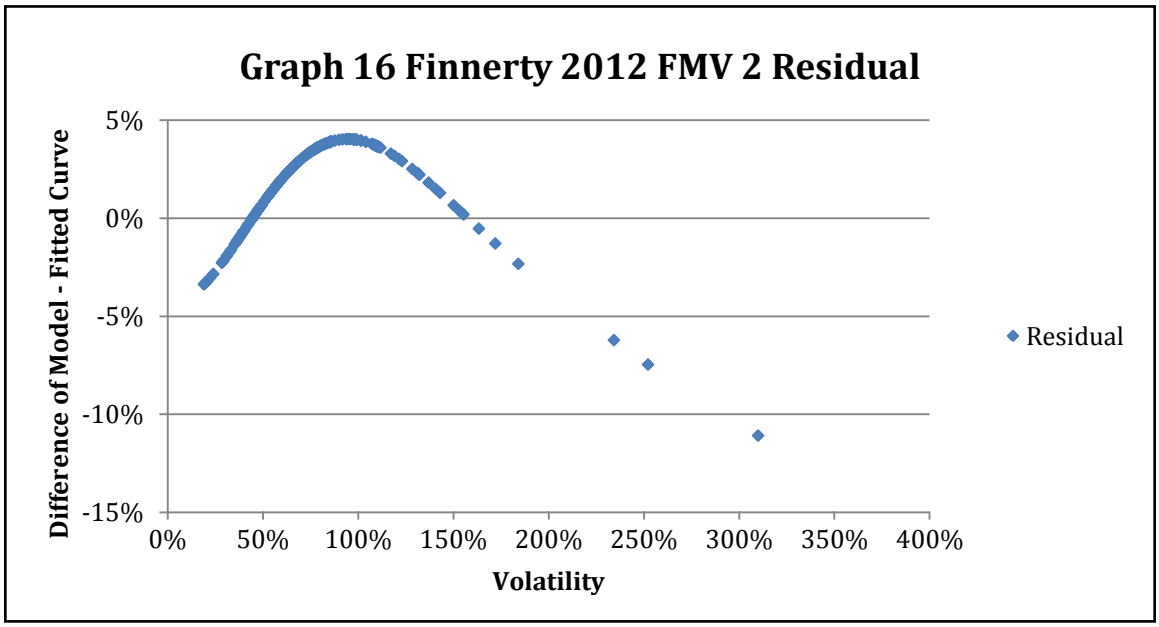
Where,

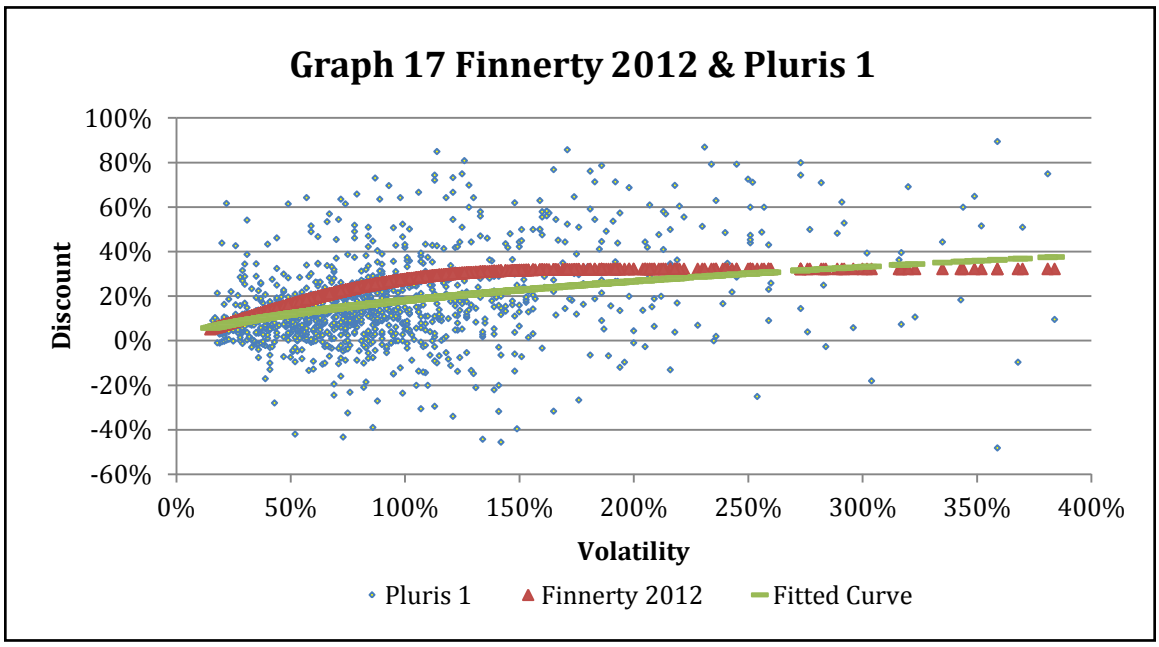
- D(T) = the value of the marketability discount
- V_o = value of the share of common stock without transfer restrictions
- q = the stock's dividend yield
- N(-) = the cumulative standard normal distribution function
- T = the restriction period
- σ = the volatility of the stock
- e = a mathematical constant = 2.71828…
- ln = the natural log

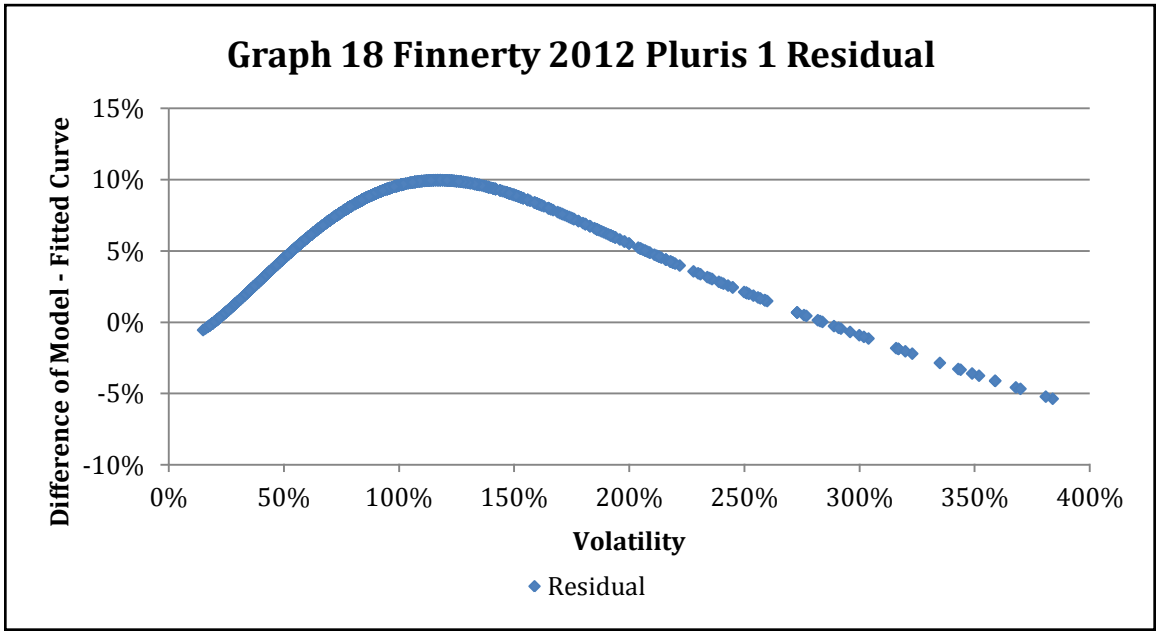
The result of the volatility test is shown in the following graphs 15 through 20. The green dashed line is the middle of the data and the red triangle line is the result of applying the model. The result from the model starts out a little below the midpoint. Then, it is above, and then drops below again. The model provides a result that is close to the middle of the data until a volatility of about 150%. However, a problem with the model is that it never approaches 100%. In fact it approaches but never exceeds 32%, no matter how high the volatility gets.

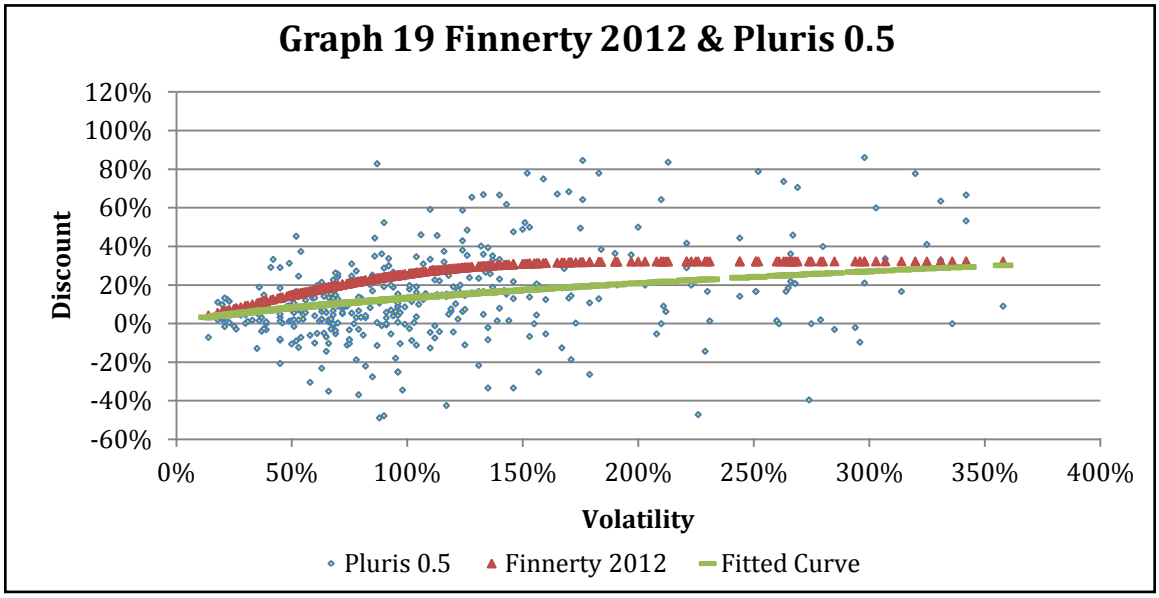
9 John D. Finnerty, "An Average-Strike Put Option Model of the Marketability Discount," *The Journal of Derivatives* (Summer 2012), pp. 53-69.

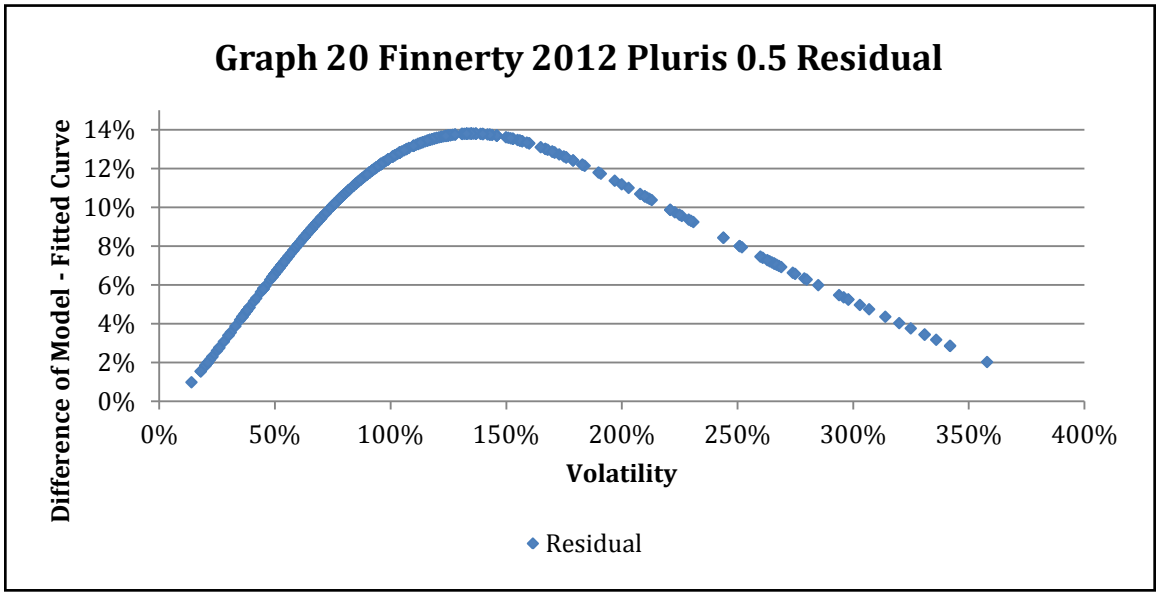

Graph 15 Finnerty 2012 & FMV 2
80%
60%
40%
20%
0%
-20%
-40%
Discount
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
FMV 2
Finnerty 2012
Fitted Curve


Graph 16 Finnerty 2012 FMV 2 Residual
5%
0%
-5%
-10%
-15%
Difference of Model - Fitted Curve
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Residual

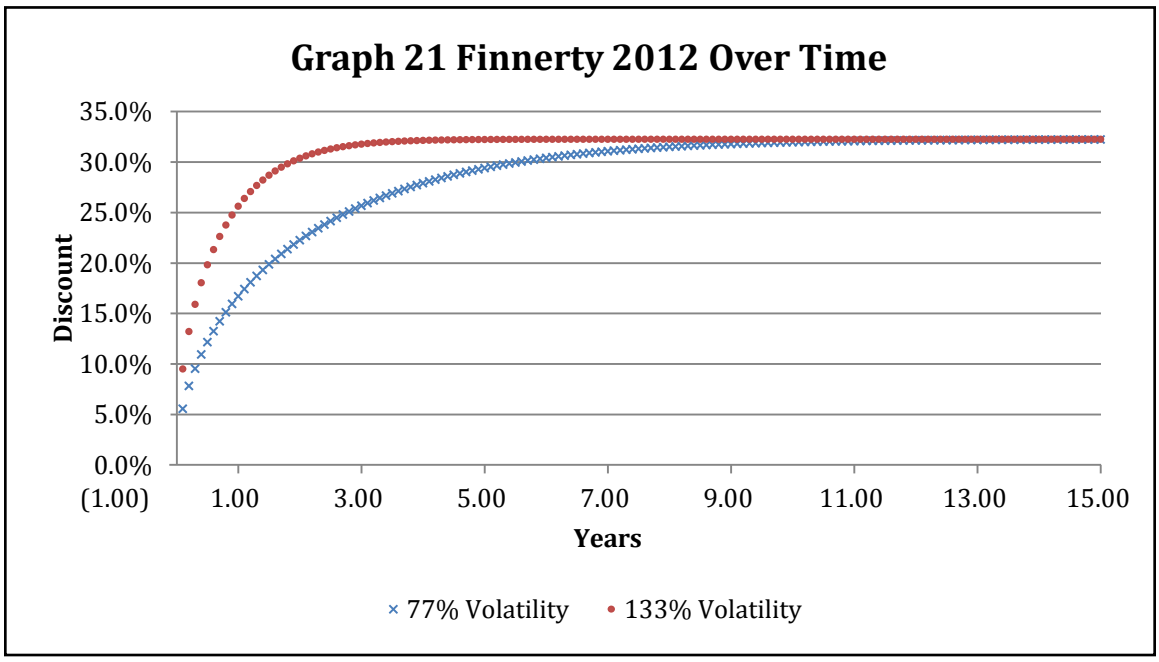

Graph 17 Finnerty 2012 & Pluris 1
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
Discount
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 1
Finnerty 2012
Fitted Curve


Graph 18 Finnerty 2012 Pluris 1 Residual
15%
10%
5%
0%
-5%
-10%
Difference of Model - Fitted Curve
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Residual





Graph 21 below shows the result of the time test. The Finnerty model does have the proper shape of increasing at a decreasing rate. However, as time increases the result from the model never exceeds 32%.



In summary, the Finnerty model produces results closer to the midpoint than most other models but within a limited range. At long lives and high volatilities, the curve understates the result because of its characteristic of approaching 32% as a maximum discount. The model is more useful for companies with lower volatilities and shorter disposal periods. The 32% maximum value limits usefulness for private companies that would have a possibility of a longer disposal period.

Ghaidarov Strike Put Option

Stillian Ghaidarov's 2009 model[10] is also based on the average strike put option and uses the same basic concept as Finnerty but with a difference: instead of an arithmetic average, it uses a geometric average.

This model has the following formula:

$$\text{Discount} = e^{-qT}V(0)[2N(V_T/2)-1]$$
$$v_T^2 = \ln[2\{e^{\sigma\wedge 2T}-\sigma^{\wedge 2T}-1\}]-2\ln[\sigma^2 T]$$

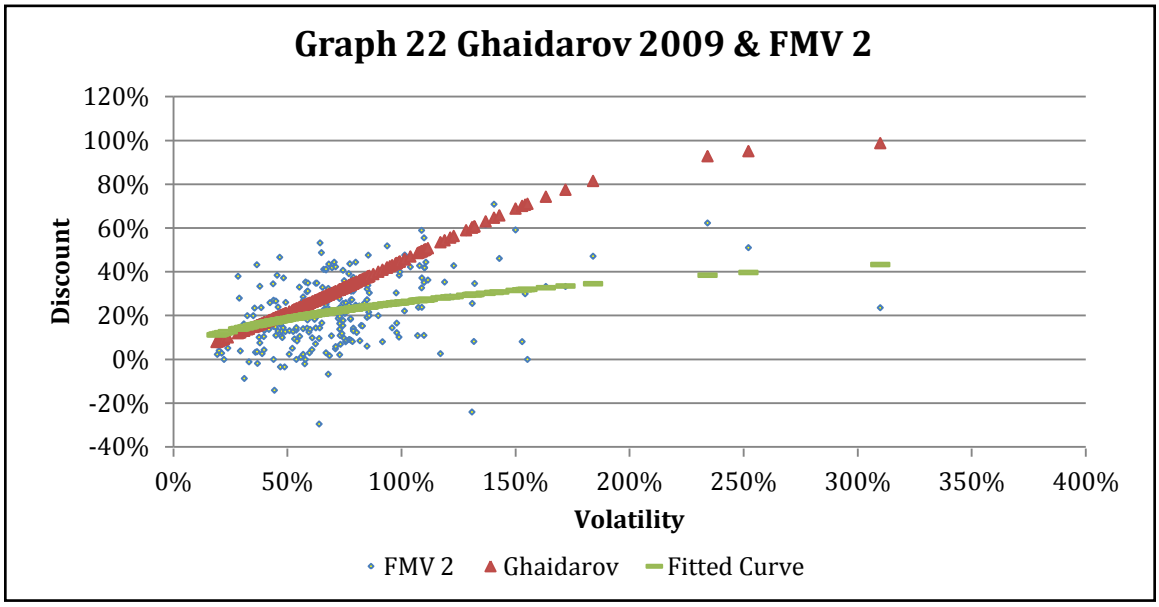
Where,

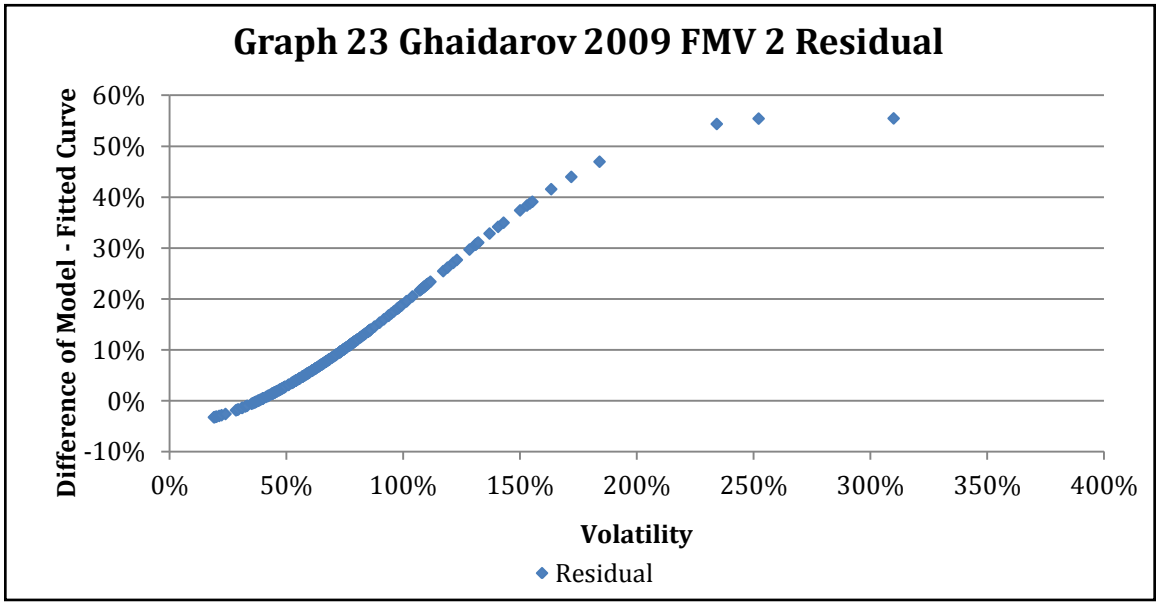
- V(0) = value of the share of common stock without transfer restrictions
- q = the stock's dividend yield
- T = the restriction period
- N(-) = the cumulative standard normal distribution function
- σ = the volatility of the stock
- e = a mathematical constant = 2.71828…
- ln = the natural log

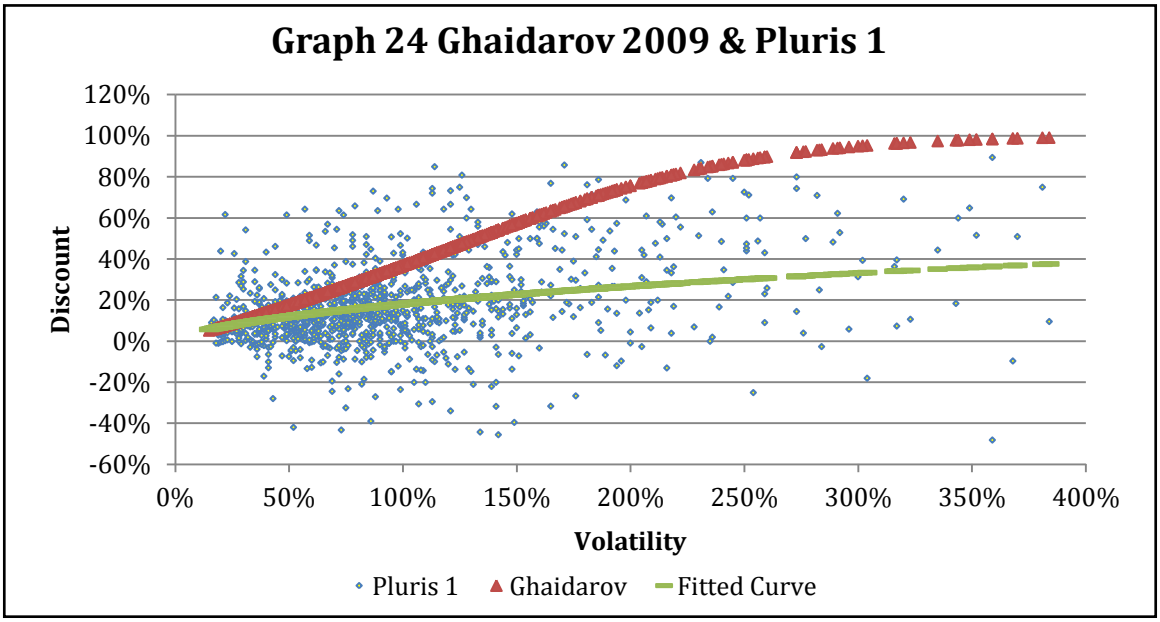
10 Stillian Ghaidarov, "Analysis and Critique of the Average Put Option Marketability Discount," Working Paper, September 24, 2009. Available at: papers.ssrn.com/sol3/papers.cfm?abstract_id=1478266.

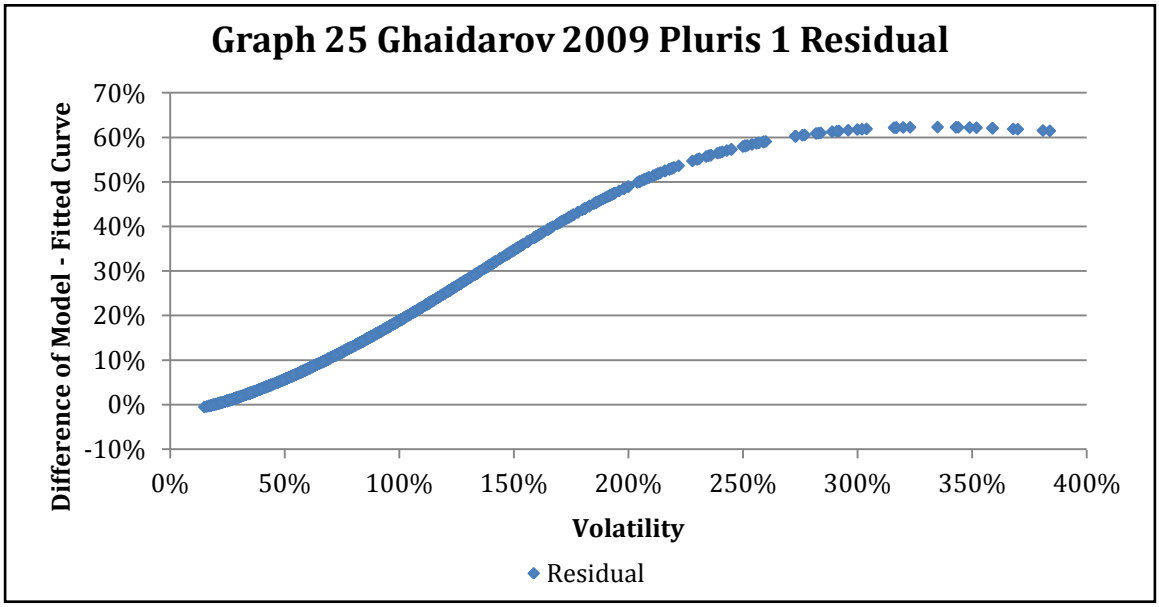
Graphs 22 through 27 show the results of the volatility test.

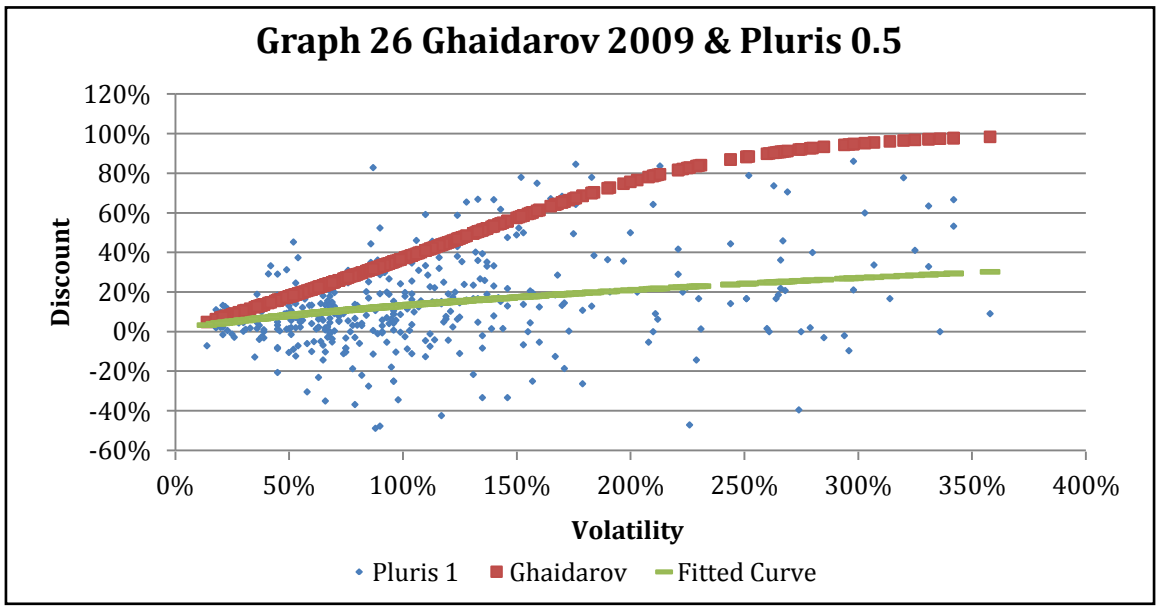
The green dashed line represents the midpoint of the data and the red line with triangle markers is the result of the Ghaidarov model. At lower volatilities, the model produces a result a little below the midpoint. The model's output and the midpoint are equal at about 40%, and then the model begins to exceed the midpoint, eventually becoming substantially above the midpoint.

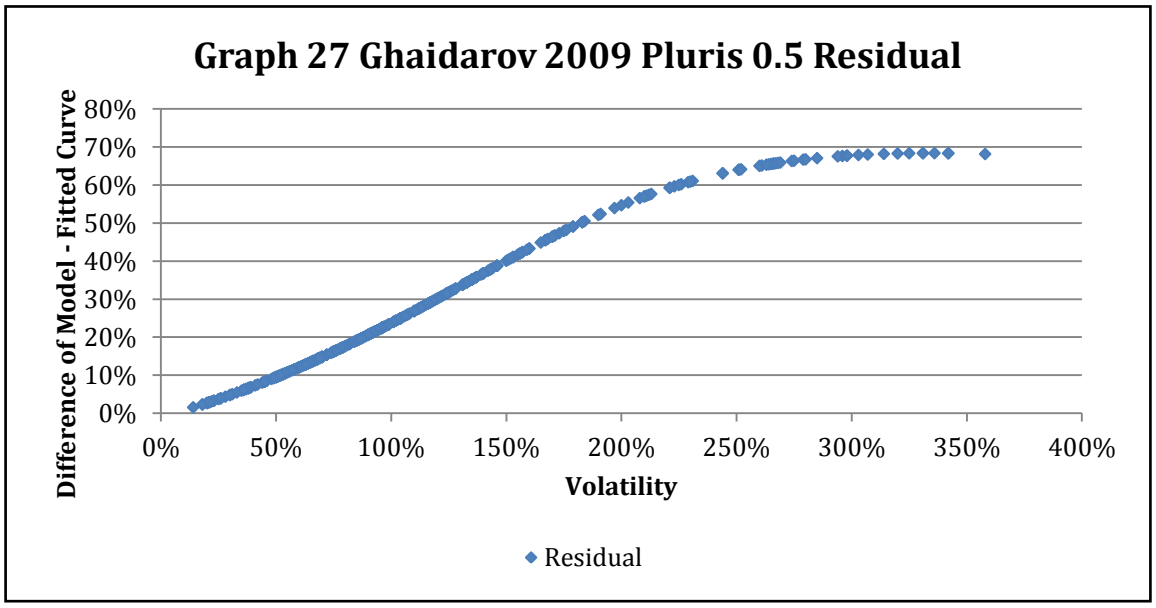




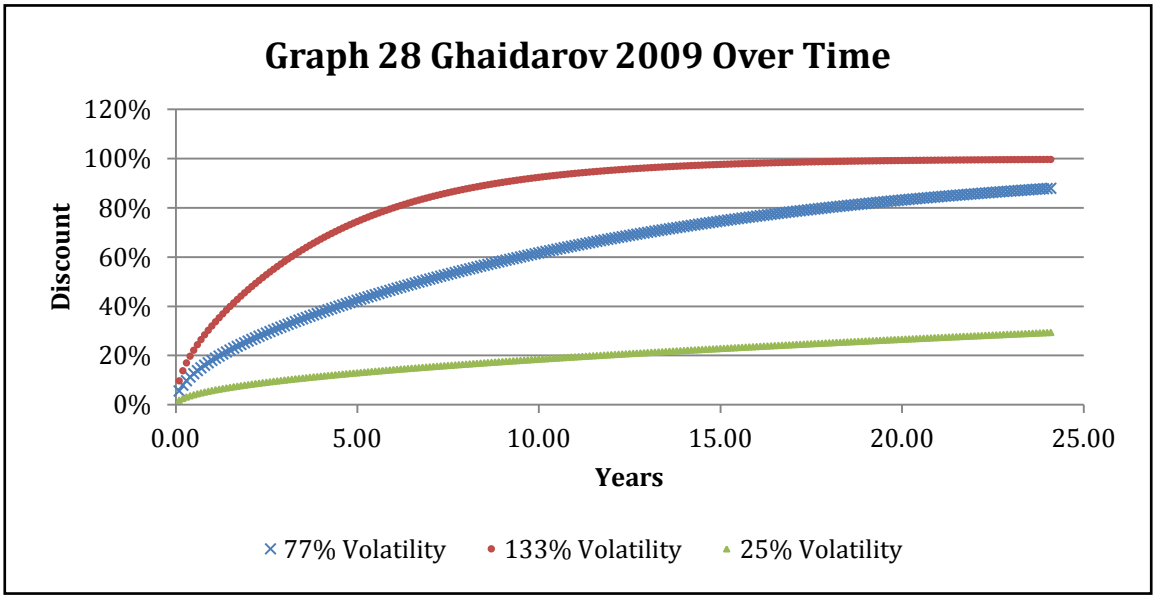

Graph 24 Ghaidarov 2009 & Pluris 1
120%
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
Discount
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 1
Ghaidarov
Fitted Curve


Graph 25 Ghaidarov 2009 Pluris 1 Residual
70%
60%
50%
40%
30%
20%
10%
0%
-10%
Difference of Model - Fitted Curve
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Residual





Graph 28 below shows the time test applied to the Ghaidarov 2009 model. For the volatilities used, the result from this model increases at a decreasing rate, approaching and never exceeding 100% as the time period lengthens. This shows that the model performs properly over time.



In summary, at lower volatilities, this model produces a useful result. At higher volatilities the result appears to exceed the midpoint of the data. The model performs properly over time.

Meulbroek CAPM Model

The Meulbroek CAPM model[11] was developed to investigate the cost of holding a single stock instead of a portfolio of stock in a retirement plan, rather than being specifically developed to determine a marketability discount. The discount is the result of the added risk of being forced to carry a single stock instead of a diversified portfolio. The author of the model states that it produces a lower limit of the DLOM — but as we will see, it does not.

There are two forms of this model. First, there is one where there is a complete lack of diversification and the holder of the stock has no other investments. Then there is another with partial diversification where the holder of the stock has other investments. This latter form has more general theoretical applicability, but the weight that should be assigned to the individual stock in a portfolio is a question. In a fair market value context, the question becomes the weights to assign to securities in a hypothetical investor's portfolio, This makes it problematic to use the partial diversification formula in the fair market value context.

The formula for this model where there is complete lack of diversification is stated as follows:

$$DLOM = 1- [1/(1+R)^N]$$

Where,

R = incremental rate of return from holding a single stock instead of a portfolio
N = the period of time the investor is forced to hold the stock before being able to diversify
R = market risk premium x (σ_s/σ_m–beta)
σ_s = standard deviation of return for the stock
σ_m = standard deviation of return of the market
Beta = the CAPM beta of the stock
Market risk premium = the risk premium required for equity in excess of the risk-free rate

11 Lisa K. Meulbroek, "Company Stock in Pension Plans: How Costly Is It?" *Journal of Law and Economics* 48:2 (2005), pp. 443-474.

It is worth noting that σs/σm is sometimes called the total beta.

The essence of this model goes to the heart of the DLOM matter. The basic part of this model is that the DLOM is a present value function. Where N is the disposal period and R is a liquidity premium. A liquidity premium is an increase in the rate of return because a security is illiquid. In this model, the liquidity premium is computed as the equity risk premium times the difference between total Beta and CAPM Beta.

The formula for the partial diversification form is more complex. The basic DLOM formula is the same as above. However, the formula for R has more terms. It becomes:

$R = \{(1/W) \times [(\sigma_p - \sigma_m)/ \sigma_m] + (1- \text{beta})\} \times \text{market risk premium}$

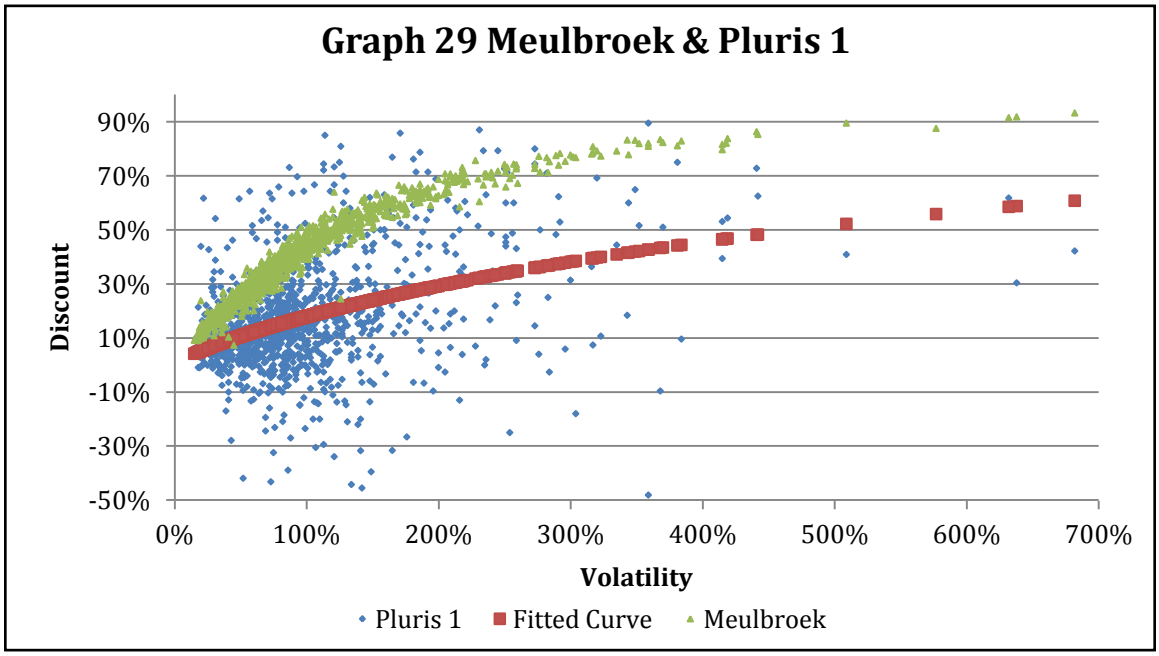
Where,

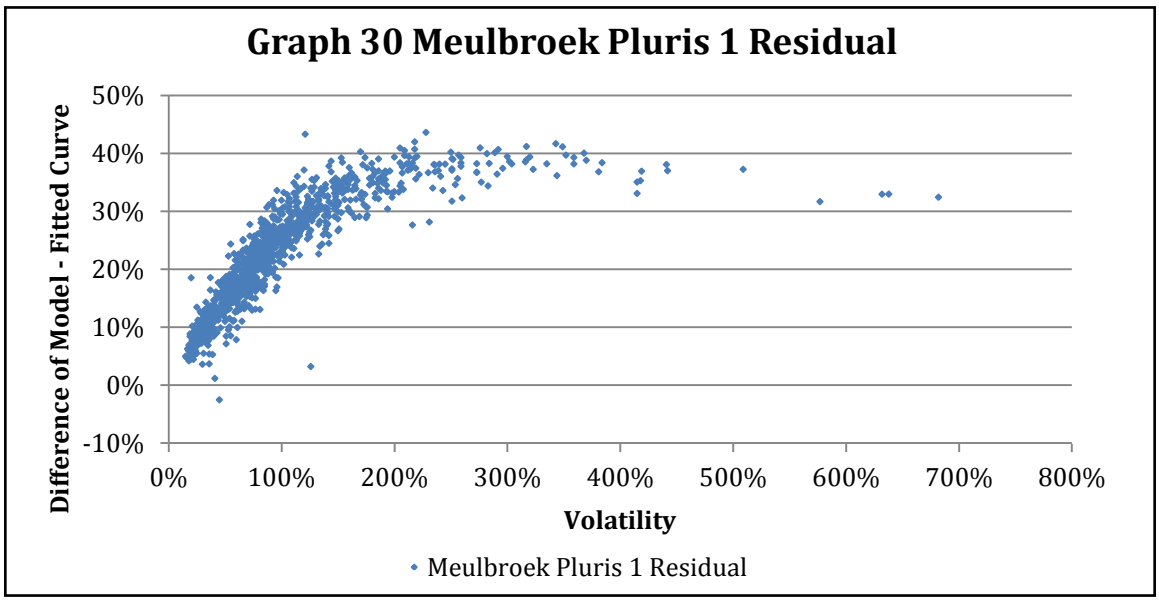
W = the weight invested in the subject stock

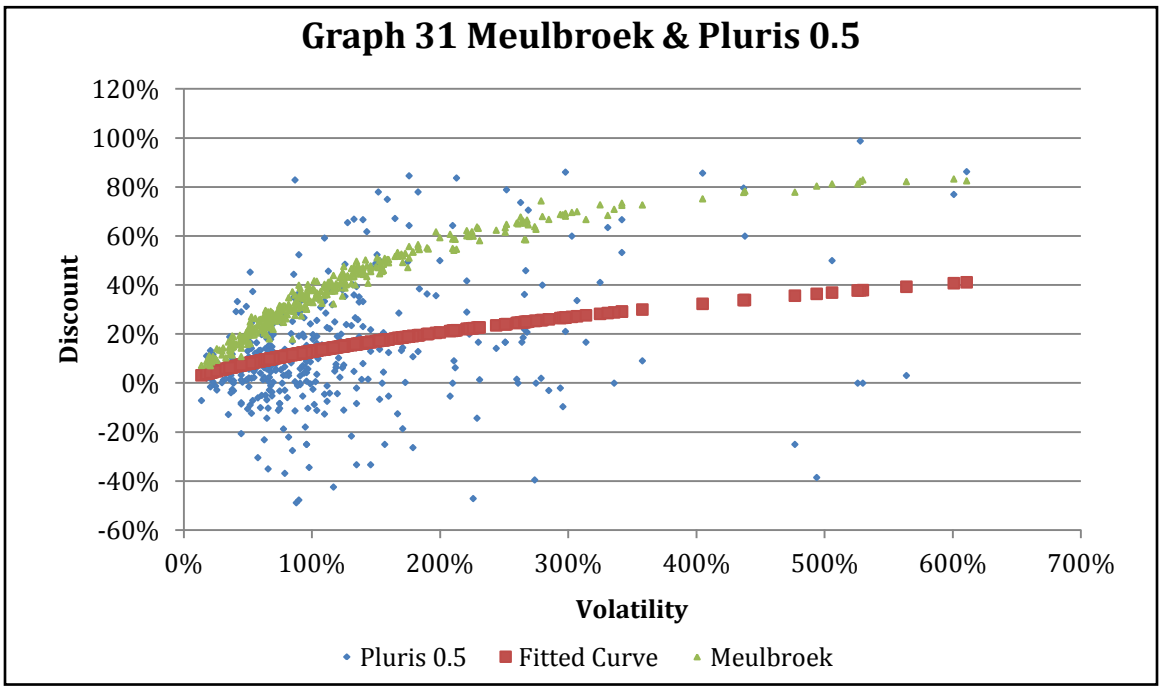
σ_p = the standard deviation of return of the portfolio (including the subject stock) held by the investor.

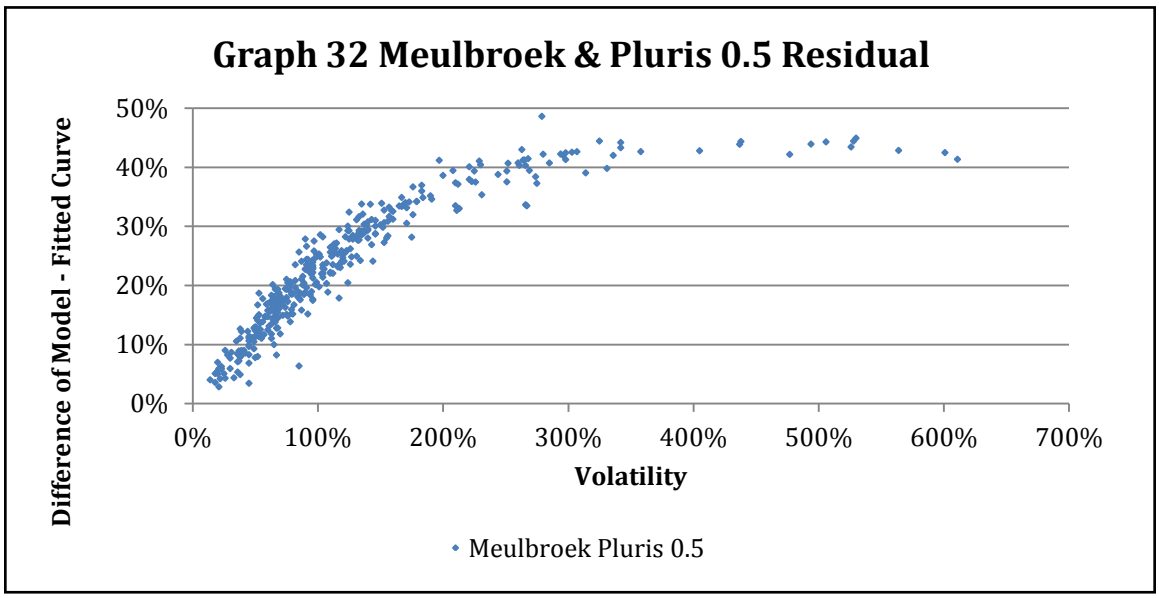
Because of the difficulty of determining a hypothetical investor's typical portfolio, the use of the partial diversification form of the model is difficult in a fair market value context because the weight and the standard deviation of the portfolio must be determined for a hypothetical investor but these factors can vary substantially from investor to investor.

The results of the volatility test for the total diversification form of the model are shown on graphs 29 through 32. The red dashed line is the midpoint of the data and the green triangle fuzzy looking line is the result of using the model. The reason for the apparent fuzziness is that this is a two-dimensional graph that shows the discount and volatility but not beta. Because beta is one of the model inputs but it is not on the graph, the line is not as sharp as that for the other models. But the line still provides an idea how the model performs. The result is similar to that for the other models that have been discussed. At lower volatilities it is only slightly above the midpoint. But then as the volatility increases, the difference between the middle of the data and the model results increases. At the levels of volatilities associated with a private company, it appears to produce a result that is too high.

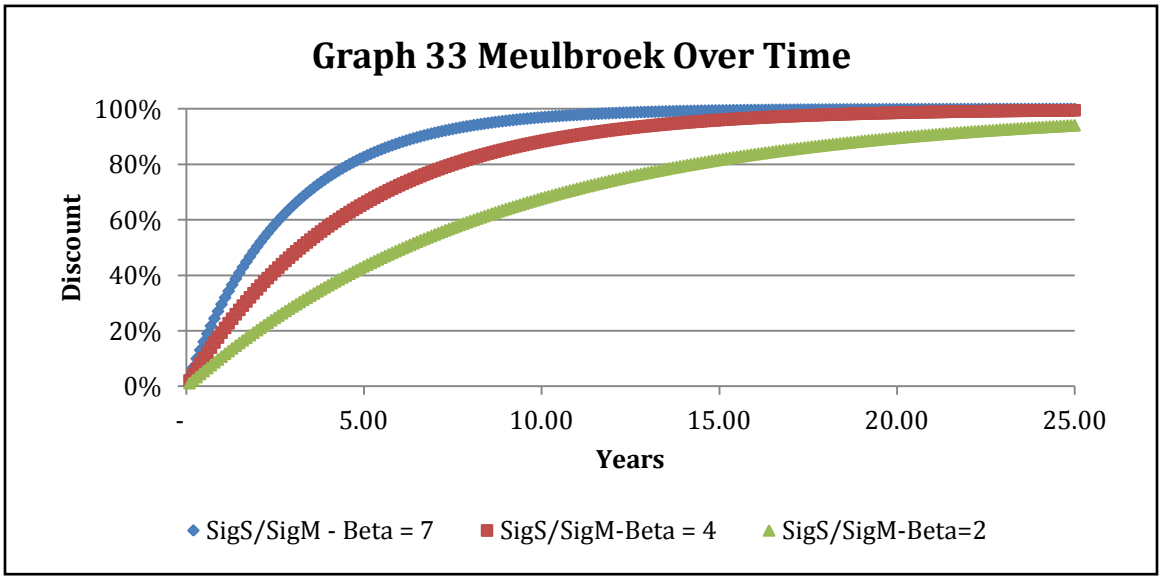



Graph 30 Meulbroek Pluris 1 Residual
Difference of Model - Fitted Curve
50%
40%
30%
20%
10%
0%
-10%
0%
100%
200%
300%
400%
500%
600%
700%
800%
Volatility
Meulbroek Pluris 1 Residual


Graph 31 Meulbroek & Pluris 0.5
Discount
120%
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
0%
100%
200%
300%
400%
500%
600%
700%
Volatility
Pluris 0.5
Fitted Curve
Meulbroek



Graph 33 below shows the result of the time test. Over time the model performs properly because it is a present value function. It increases at a decreasing rate, approaching 100% but never exceeding 100% regardless of the volatility.



There is a theoretical issue with the model as applied to DLOM because there is no discount at the average market volatility where total beta equals beta. Average market volatility for a specific security could be appropriate in a practical valuation situation — a limited partnership that held the S&P 500 index. In such a case, there would be no discount even though a disposal period of years might be expected. Another problem with the model is that, in practice, it is quite hard to estimate both volatility and a matching beta for a private company.

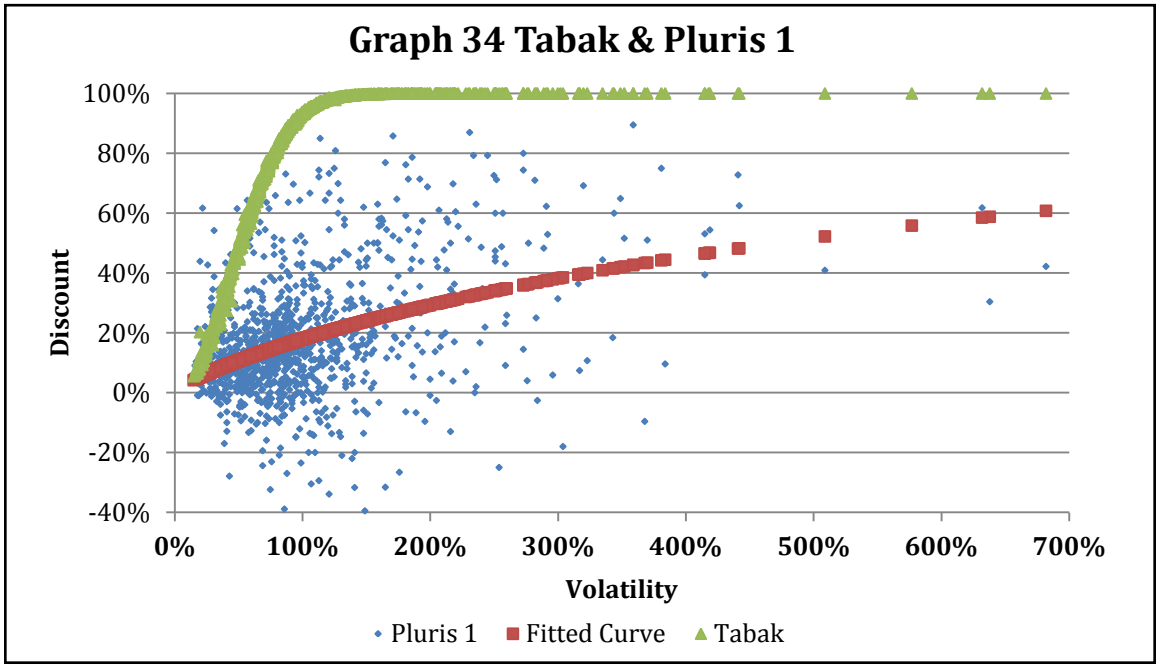
In summary, the result for the Meulbroek model is close to the midpoint at lower volatilities but appears to be too high at higher volatilities. The curve seems to flatten out as volatility increases but

this is at a relatively high volatility. The model performs as it should over time. There is a theoretical issue with the model as applied to DLOM because there is no discount at the average market volatility where total beta equals beta. In practice, it is harder to use this model because an estimate must be developed for both volatility and a matching beta.

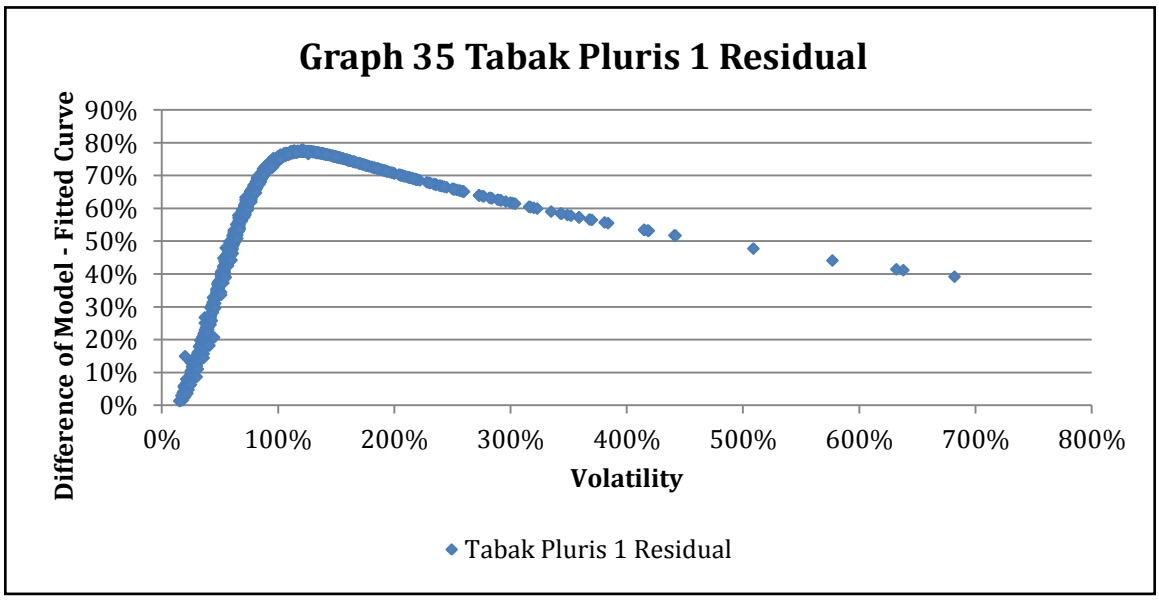
Tabak CAPM

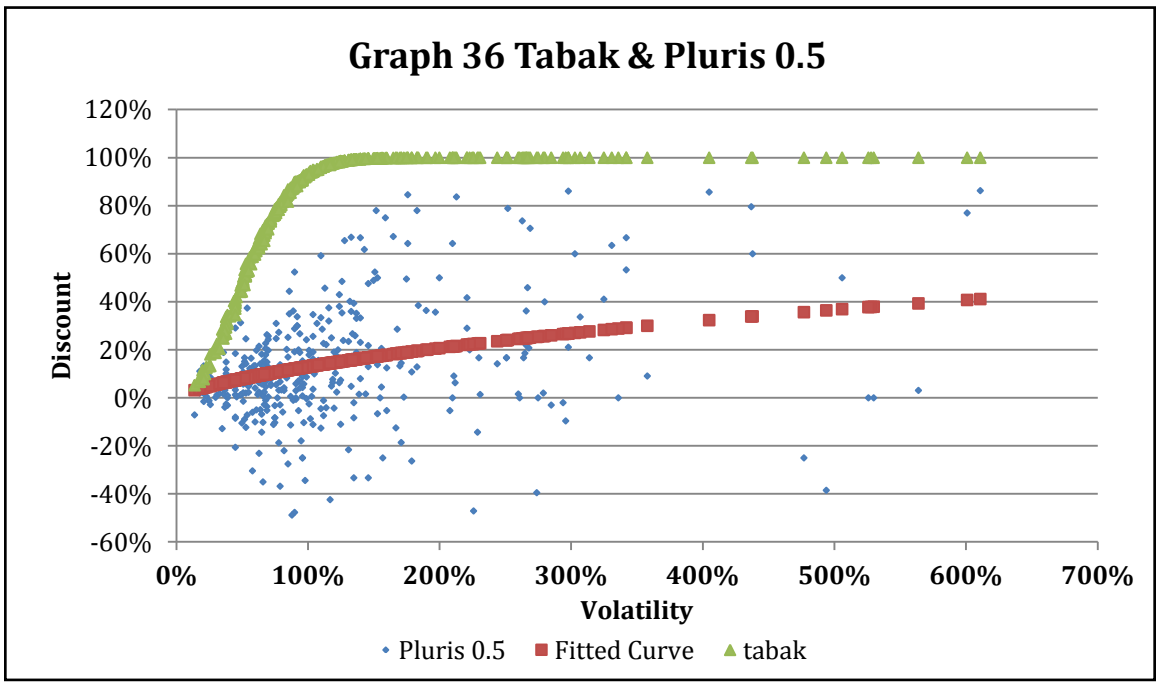
The concept underlying the Tabak CAPM[12] model is the same as that in the Meulbroek model, which is a reduction in value to an investor who is forced to bear additional risk due to a lack of diversification. However, this model uses the ratio of variance of return instead of standard deviation of return. This, ultimately, does not work out very well.

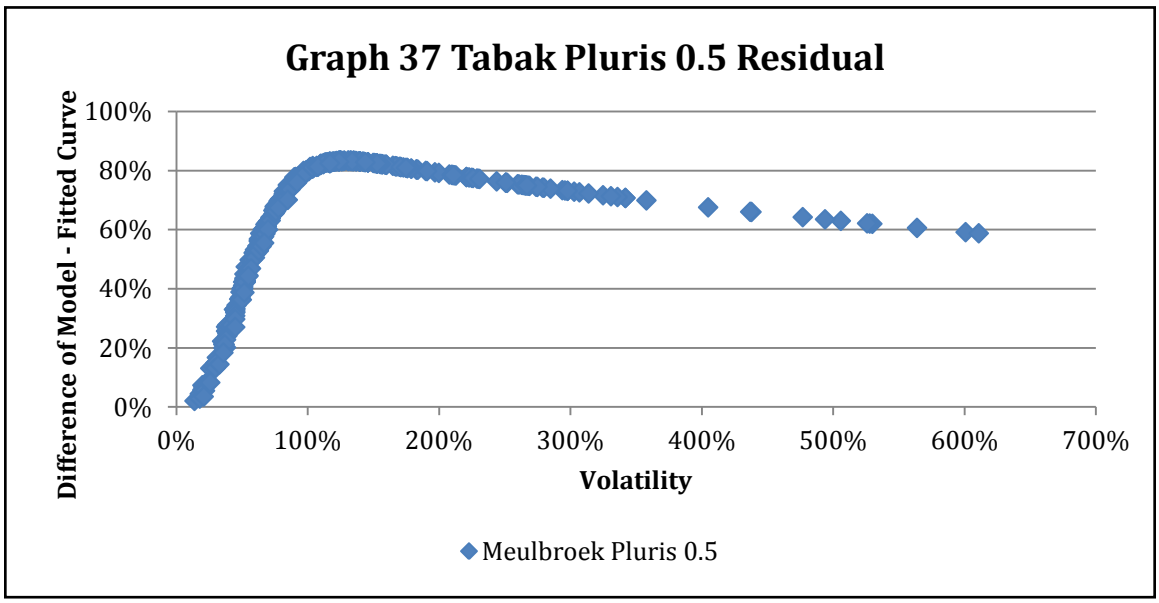
The result of the volatility test for the model is shown on graphs 34 through 37. The green line with triangle markers is the result from using the model. One can observe that at very low volatility the discount is near the midpoint but then the discount rapidly increases as volatility increases. It is quickly much higher than the midpoint and equals 100% at a relatively low volatility. In the range of interest for a private company, say 100% to 200% volatility, the model produces a discount that is close to 100%, which is an unrealistically high discount. The model does not provide the ability to differentiate DLOMs in the range of volatilities often appropriate for private companies.



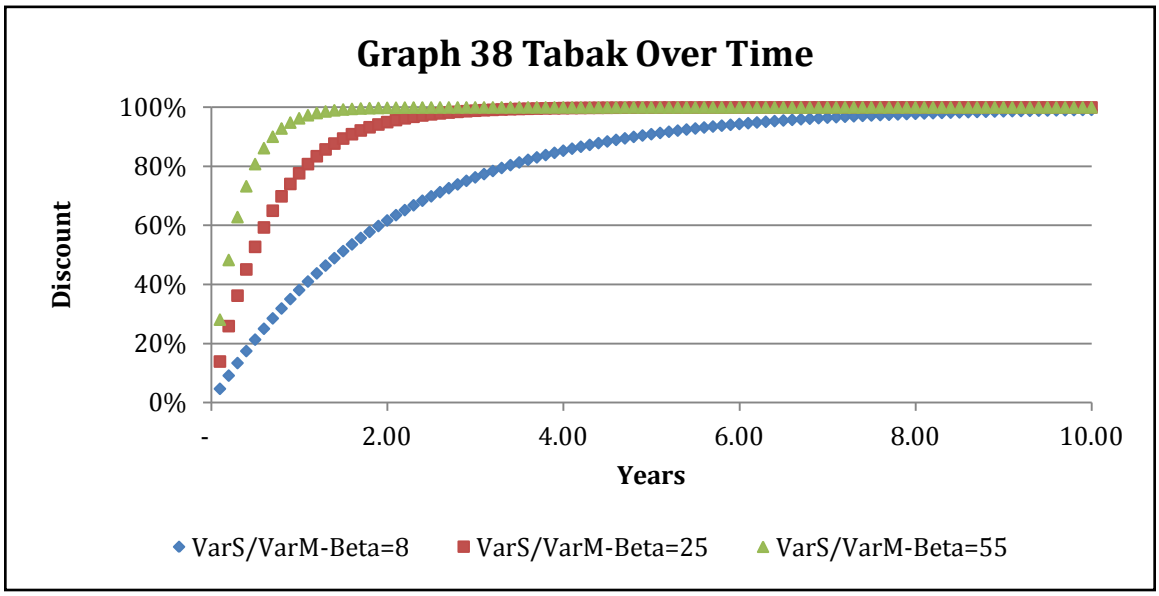
12 David I. Tabak, "A CAPM-Based Approach to Calculating Illiquidity Discounts," Unpublished manuscript. Available on the NERA Economic Consulting website.


Graph 35 Tabak Pluris 1 Residual
Difference of Model - Fitted Curve
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0%
100%
200%
300%
400%
500%
600%
700%
800%
Volatility
Tabak Pluris 1 Residual


Graph 36 Tabak & Pluris 0.5
Discount
120%
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
0%
100%
200%
300%
400%
500%
600%
700%
Volatility
Pluris 0.5
Fitted Curve
tabak



Graph 38 below shows the time test. The graph shows that the model produces a very high discount at relatively short disposal periods. At about one year it is producing a result that is almost 100%. At the typical periods of time that are considered appropriate to dispose of a minority interest in a private company, the model almost always produces a discount that is close to 100%. The model does not provide much ability to distinguish between discounts as the disposal period increases.



In summary, the Tabak model produces discounts that exceed the database discounts at almost every volatility. The model quickly produces a discount of 100% as volatility increases and as the disposal period increases. As a result, the model doesn't have a practical use for valuing companies with even moderate volatility.

Stockdale Sigma DLOM Curve

The Sigma DLOM curve was created to incorporate the most important theories related to DLOM while also working to develop a result that was in accord with the evidence concerning the size of DLOMs provided by restricted stock discounts. The underlying principles of the Stockdale Sigma DLOM curve[13] are that the discount is a present value function where the rate of return is a function of the liquidity premium, which is a function, in turn, of volatility. As volatility increases, the liquidity premium increases, and the DLOM increases.

There are several aspects to the theory underlying this curve. First, the DLOM is a present value function, following the basic concept used in the Meulbroek model. Second, DLOM is a function of volatility. Numerous restricted stock studies have shown that the DLOM increases as volatility increases. Third, the rate of return includes a premium for illiquidity and illiquidity is a basic concept underlying the DLOM. Fourth, liquidity theory holds that the liquidity premium increases at a decreasing rate resulting in a concave curve shape. Finally, the DLOM should be zero at zero volatility, assuming no other factors affect the DLOM.

An attempt was made to develop a theoretical mathematical function using these basic concepts and that produced a result that appeared to match the restricted stock discount data. No such function could be identified that fit all of the requirements. As a result, a curve fitting procedure was used to develop a mathematical formula that fit the data and which incorporated all of the theoretical principles. A Weibull function was used as the curve shape. The curve fit was developed on a DLOM-volatility plot based on the concept of increasing at a decreasing rate and having a 0% discount at 0% volatility. The data used for this curve fit was the FMV SEC 2 year era. A disposal period was chosen to result in a liquidity premium that appeared to be reasonable. Ultimately this was a judgment call. This judgment was based on a process of sifting through this data to develop parameters that matched all of the requirements. The period chosen as the midpoint was 3.3 years, which is the median quarters to sell under SEC rules. A reasonable range was 2.5 to 4.6 years. The final curve chosen was based on a trial and error procedure where the DLOM and the liquidity premium appeared reasonable at selected disposal periods and volatilities. This brief explanation gives short shrift to a lengthy process which is explained in detail in chapter 8 of the book, *BVR's Guide to Discounts for Lack of Marketability, Fifth Edition*.

The result of this procedure is the following function for a 3.3 year disposal period:

$$DLOM = 1 - 1/(1+R)^N$$

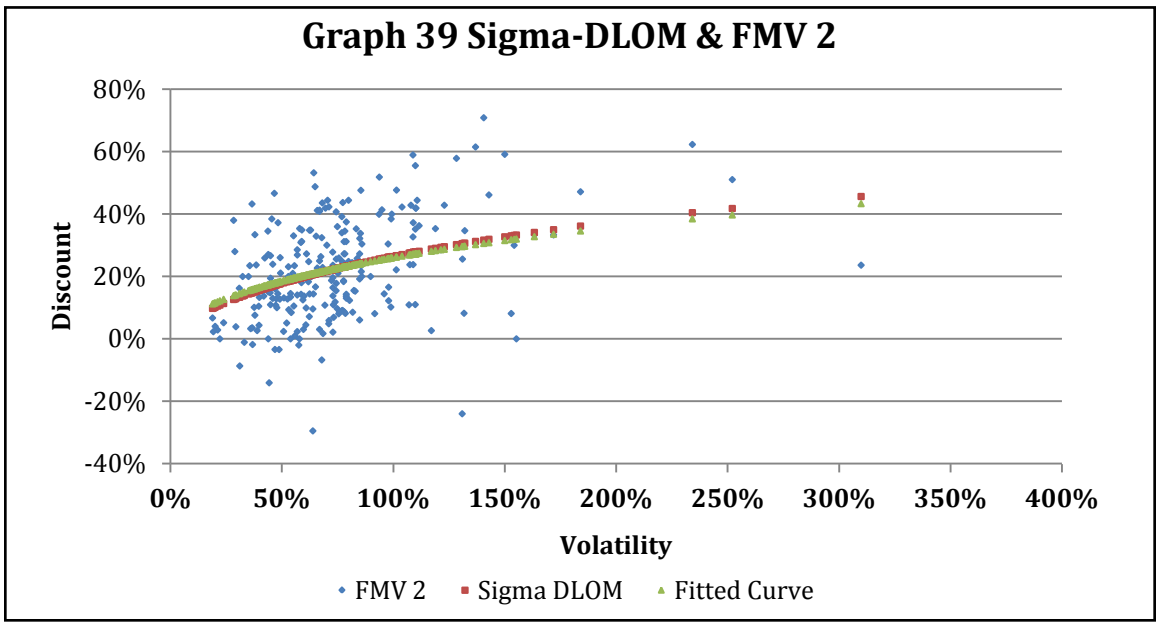
Where,

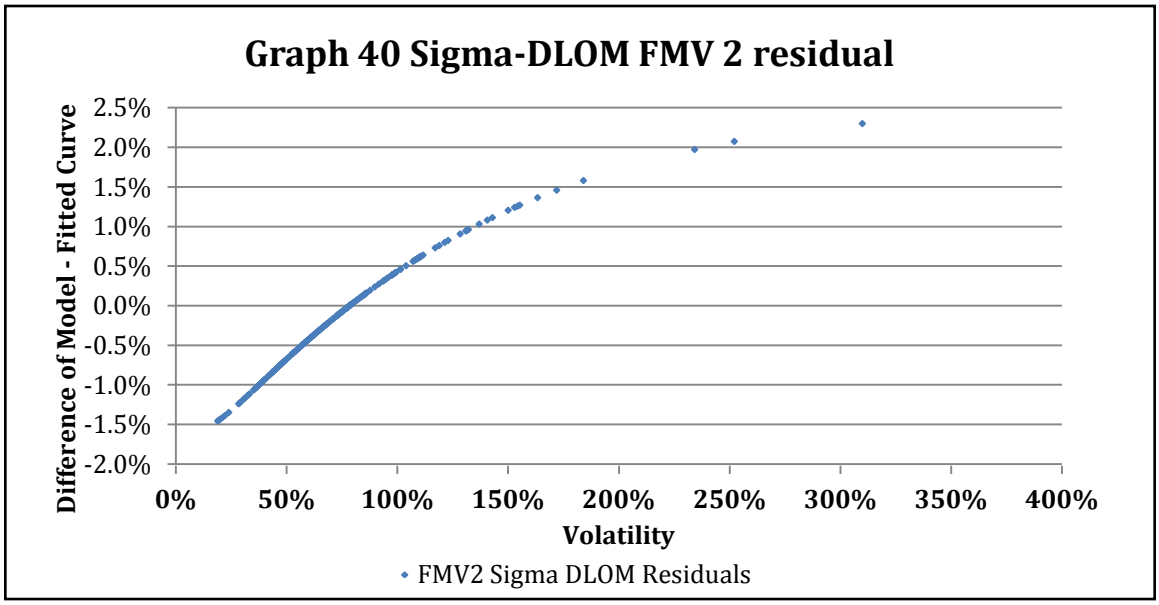
R = the liquidity premium
And R = 1 – Exp(-1 x sigma/25.8)^0.7
N = disposal period
Sigma = the volatility (standard deviation of return) of the security

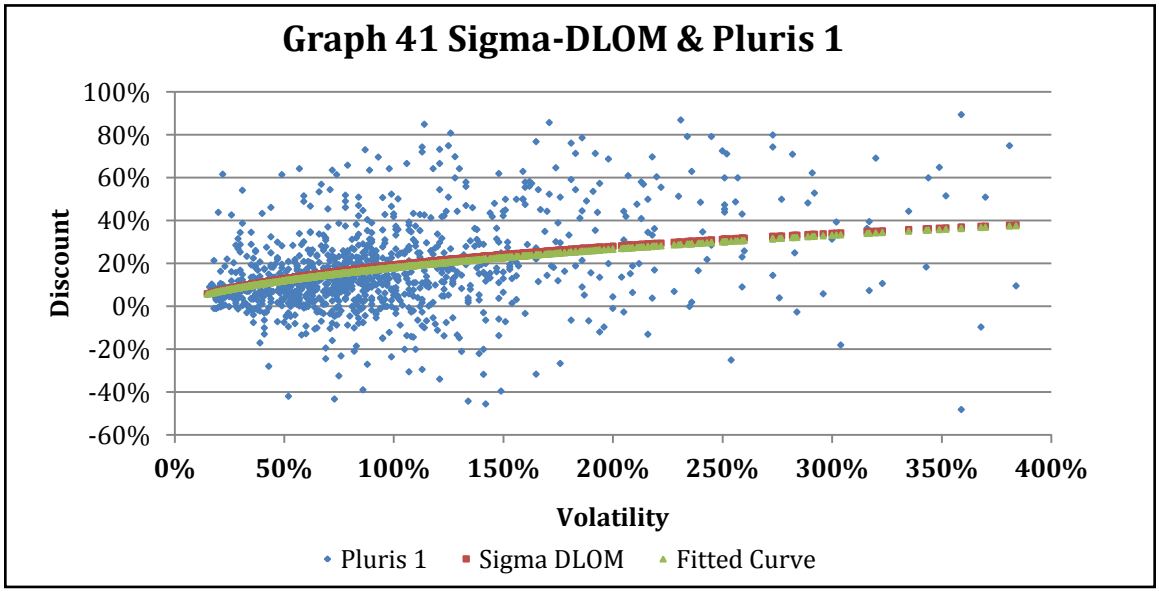
For SEC two-year holding period, 3.3 years is used as a midpoint. A reasonable range is 2.5 to 4.6 years and curves were also developed for those lives.

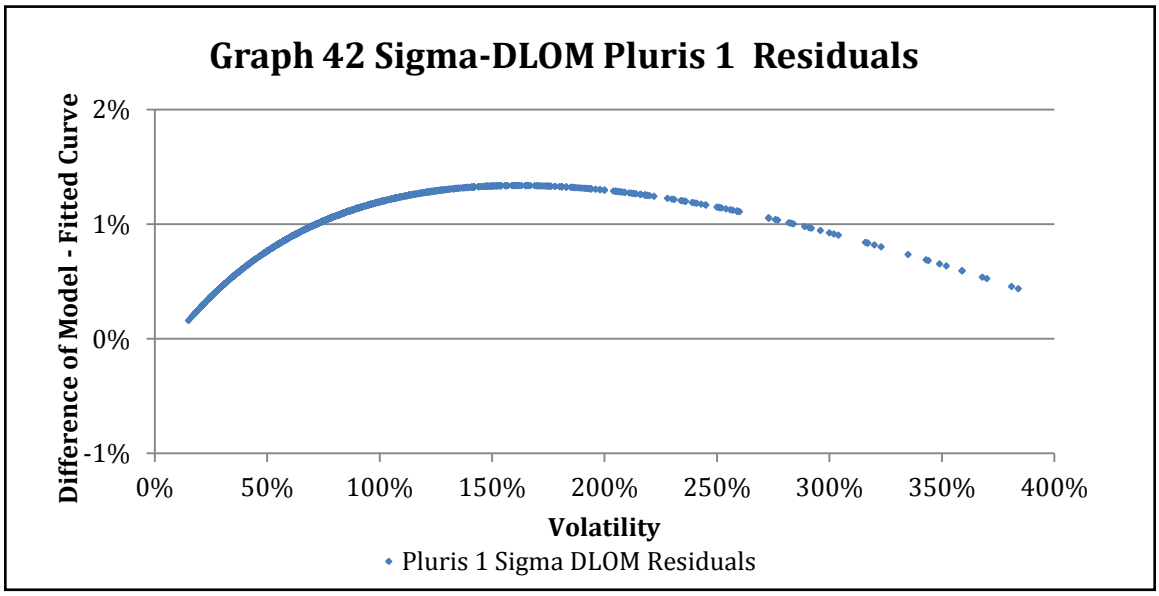
Graphs 39 through 44 show the volatility test for the Sigma-DLOM curve. As can be seen, the curve produces a result that is nearly identical to the curve representing the midpoint of the data. Further, the residual, the difference between the sigma-DLOM curve is much smaller than any other model. This good result comes about, in part, because of a procedure for developing the Sigma-DLOM curve which was based on the same data and the same concept as that used for the middle-of-the-data curve. However, Graphs 41 through 44 show that the curve produces good results even though the data is from a different source and has different disposal periods.

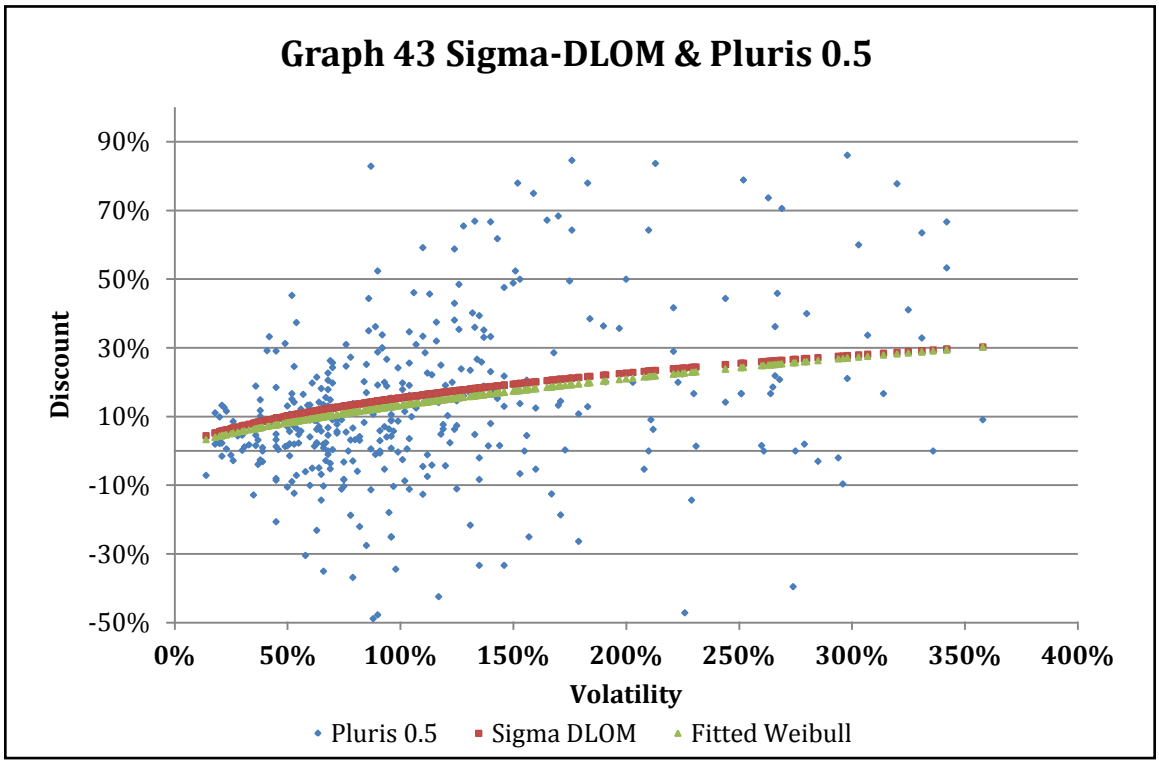
13 John J. Stockdale, "Theory and Evidence Nexus — The Sigma DLOM Curve," Chapter 8 of *BVR's Guide to Discounts for Lack of Marketability*, 5th ed., pp. 173-189.

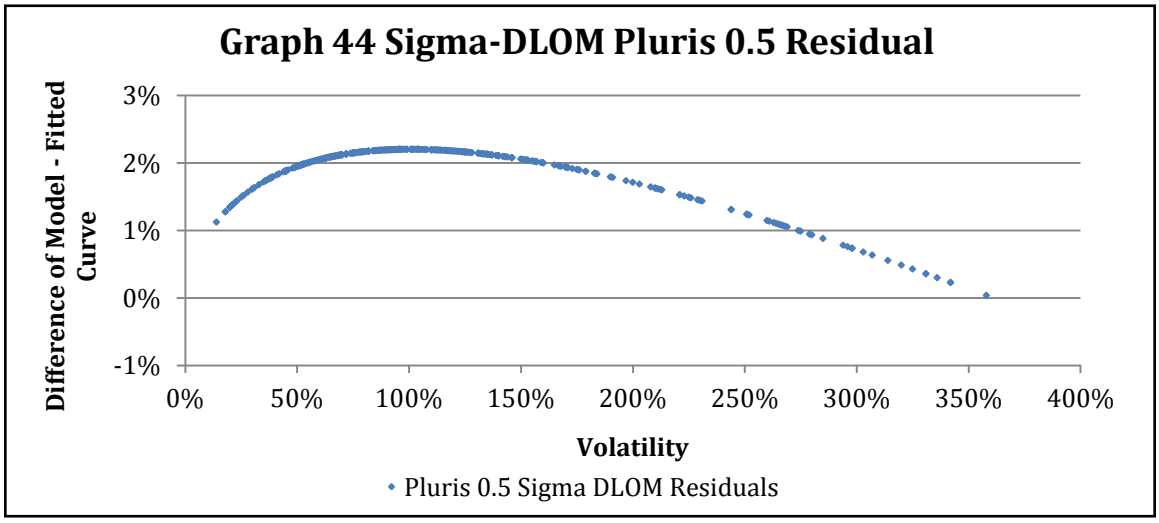

Graph 39 Sigma-DLOM & FMV 2
80%
60%
40%
20%
0%
-20%
-40%
Discount
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
FMV 2
Sigma DLOM
Fitted Curve


Graph 40 Sigma-DLOM FMV 2 residual
2.5%
2.0%
1.5%
1.0%
0.5%
0.0%
-0.5%
-1.0%
-1.5%
-2.0%
Difference of Model - Fitted Curve
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
FMV2 Sigma DLOM Residuals

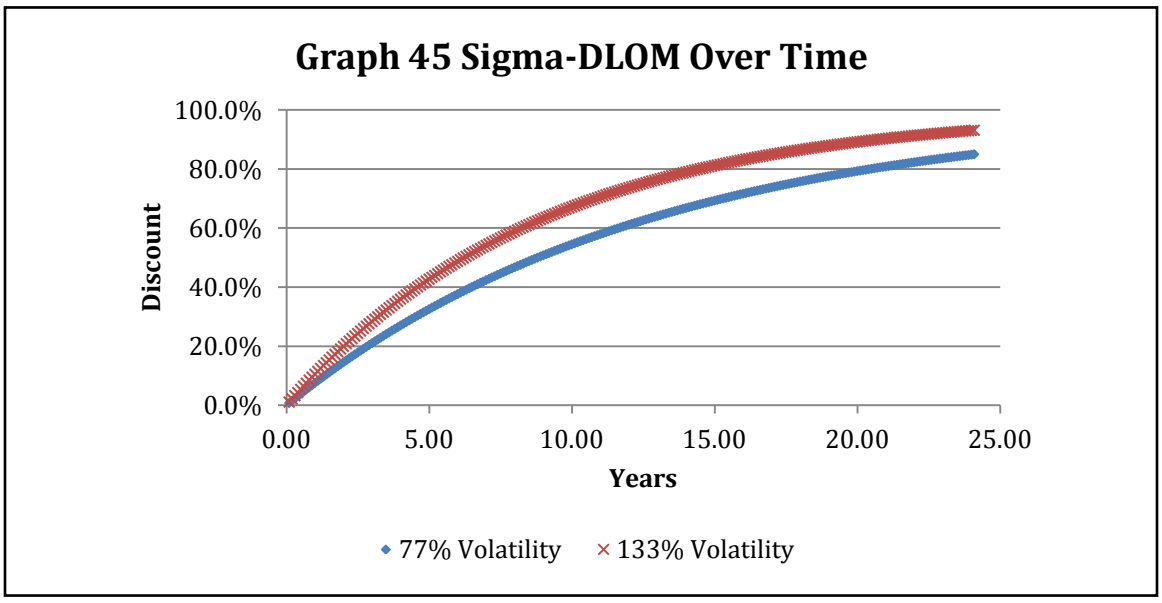

Graph 41 Sigma-DLOM & Pluris 1
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
Discount
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 1
Sigma DLOM
Fitted Curve


Graph 42 Sigma-DLOM Pluris 1 Residuals
2%
1%
0%
-1%
Difference of Model - Fitted Curve
0%
50%
100%
150%
200%
250%
300%
350%
400%
Volatility
Pluris 1 Sigma DLOM Residuals





Graph 45 below shows the result of the time test. The curve has a concave shape that approaches but never exceeds 100%. This is the correct theoretical performance, which is a characteristic of a present value function, one of the fundamental aspects of the curve.



In summary, the Stockdale Sigma DLOM model matches the middle-of-the-data curve better than any other model. It was developed using FMV 2 year data and the same curve shape as the middle-of-data curve so it should be expected to match. However, the curve works well for Pluris 1 and 0.5 data even though it was not developed using this data or these disposal periods. In addition the curve works appropriately over time, approaching but never exceeding 100%.

Do LEAPS Discounts Work?

In a related matter, an analysis was performed to determine whether the use of LEAPS to determine DLOMs appears reasonable. LEAPS is an acronym for long term equity anticipation securities which is a type of option with initial expiration dates of two to three years. The computation using a LEAPS is that the discount equals the LEAPS put option value over the stock price, which is the same concept used in the Black-Scholes put option model. With the LEAPS, actual observed data is used to compute the put value instead of a theoretical formula.

The question studied is whether the restricted stock data supports this computation. The complete study is shown on pages 99 to 101 of *BVR's Guide to DLOM 5th Edition*.[14]

An issue with this study is that there are few data points. Mature companies tend to issue LEAPS and immature companies tend to issue PIPEs. And because of that, there's little crossover. Only 22 companies could be found that had both a LEAPS and a PIPE. Based on this limited data, a comparison showed that the discounts based on the LEAPS with an expiration of less than one year appeared to match the restricted stock discounts determined from the Pluris database at a time close to the LEAPS computation, but those with expirations of greater than one year do not. The Pluris data is all one-year era holding period or half year era holding period. So, this provides a rough indication that the LEAPS discounts correspond to the Pluris discounts. Overall it seems to justify the whole put option concept, but using a very limited sample. The LEAPS put option provides a discount that is specific to the time period associated with the expiration date of each option and there is not a specific procedure to adjust this discount to the appropriate disposal period for a privately held company.

14 *BVR's Guide to DLOM*, 5th ed., pp. 99-101.

SUMMARY AND CONCLUSION

Valuation is a process of using theory and data to replicate a real world result. For DLOMs, volatility models can provide the theory element and restricted stock studies can provide the data element. A comparison of the volatility models to the RSS data shows that some work better than others.

The Longstaff model does not appear to provide useful results at volatilities expected for small and private companies. The Abbott transformation of Longstaff does appear to provide an upper limit, but not a midpoint. There are certain questions about the concept of performing this transformation, which are the dominance of the option in the computation and the fact that the transformation would convert any increasing function to the proper curve shape.

The Meulbroek model is very strong in theory, but appears to produce a value that is too high as volatility increases but to perform properly over time. The model does have two associated problems. First, it produces a zero discount at average market volatility but some discount for illiquidity should be appropriate for a security with this volatility if there is a market condition or restriction creating a disposal period. Second, both volatility and CAPM beta must be estimated to apply the model and this is difficult to do for a private company.

The Tabak model appears to go to a 100% discount too quickly both as volatility and disposal period increase, producing a result that is not very useful for private companies.

The other option models provide useful results in some ranges. They provide an indication of the midpoint of DLOM in some ranges of volatility and in some time frames.

The Sigma DLOM curve best matches the midpoint of the data over the entire range. This curve is grounded in a number of theoretical principles relevant to the DLOM but the form of the function developed is based on curve fitting and not on a unified theory such as that in the other volatility models.

The use of a LEAPS put option to determine a discount produces a result that is consistent with restricted stock data from the Pluris DLOM database. However, the size of the sample used to reach this conclusion is quite small as a result of inherent data limitations. The use of a LEAPS put option results in a discount specific to the period of the option, which is generally different than the disposal period for a privately held company.

List of Restricted Stock Studies for footnote 3

1. U.S. Securities and Exchange Commission, “Institutional Investor Report,” 92nd Congress, 1st Session, House Documents No. 92-4, Part 5, 1971.
2. Milton Gelman, “An Economist-Financial Analyst’s Approach to Valuing Stock of a Closely-Held Company, “ *The Journal of Taxation* (June 1972), 353-354.
3. Robert E. Moroney, “Most Courts Overvalue Closely Held Stocks,” *Taxes: The Tax Magazine* (March 1973), 144-155.
4. J. Michael Maher, “Discounts for Lack of Marketability for Closely Held Business Interests,” *Taxes: The Tax Magazine* (September 1976), 562-570.
5. Robert R. Trout, “Estimation of the Discount Associated with the Transfer of Restricted Securities,” *Taxes: The Tax Magazine* (June 1977), 381-385.
6. William F. Pittock and Charles H. Stryker, “Revenue Ruling 77-287 Revisited,” *SRC Quarterly Reports* (Spring 1983), 1-3, cited in *Quantifying Marketability Discounts*, by Z. Christopher Mercer, p. 63.
7. Richard D. Johnson, George A. Racette, “Discounts on Letter Stock Do Not Appear to Be a Good Base on Which to Estimate Discounts for Lack of Marketability on Closely Held Stocks,” *Taxes: The Tax Magazine* (August 1981), 574-581.

3

CROSS-BORDER TRANSACTIONS

by Howard E. Johnson, MBA, FCPA, FCA, FCMA, FCBV, CPA, CFA, ASA, CF, C.Dir
Managing Director, Veracap M&A International Inc., Toronto

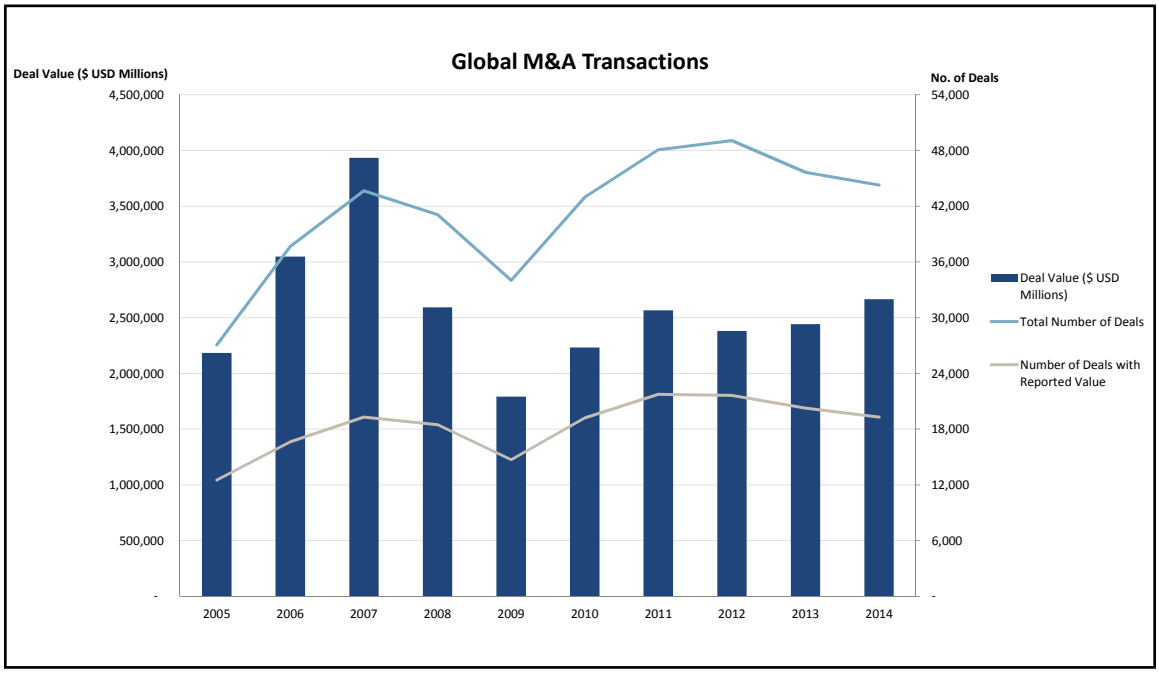
This paper examines trends and developments in cross-border transactions, both from a Canadian and U.S. perspective. It begins with a review of transaction statistics and commentary by the author, based on his experience as President of M&A International Inc., a leading mid-market investment bank with over 600 professionals in 42 countries. The statistics (which are based on data from S&P Capital IQ) and commentary have been updated from what was presented at the ASA-CICBV Conference in October 2014 to incorporate year-end 2014 information.

This paper also examines the potential benefits, risks and challenges of cross-border transactions. It concludes with a discussion of some of the key considerations for buyers contemplating a Canada-U.S. cross-border transaction. The author would like to thank Stephanie Lau, Analyst at Veracap M&A International Inc. for her assistance with this paper.

A Global Perspective

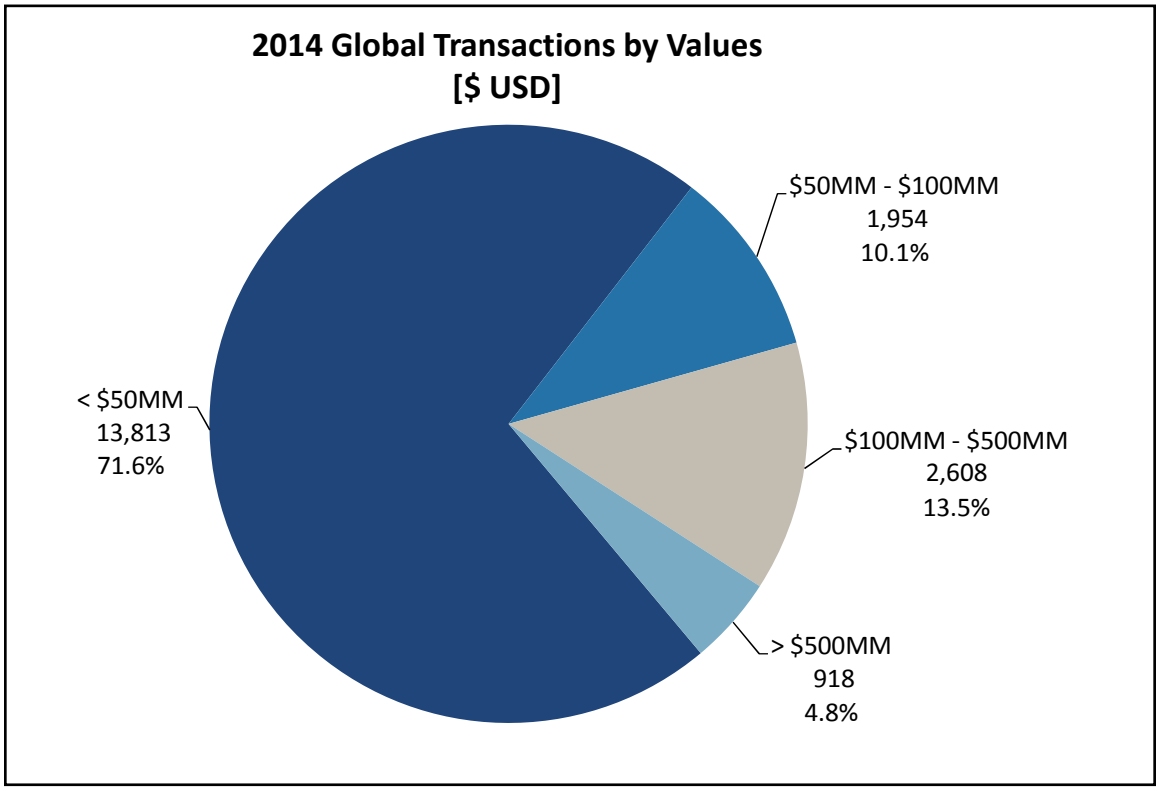
As a starting point, it is helpful to take a global perspective on transactions. As indicated in Exhibit 1, there were about 44,000 M&A transactions reported in 2014, which represents a slight decline from the previous year. However, aggregate transaction value was close to US$2.7 trillion, representing the highest level since 2007. It is important to note that values are not disclosed for more than 50% of transactions. This is particularly the case for smaller and mid-size deals involving privately held companies.

Exhibit 1



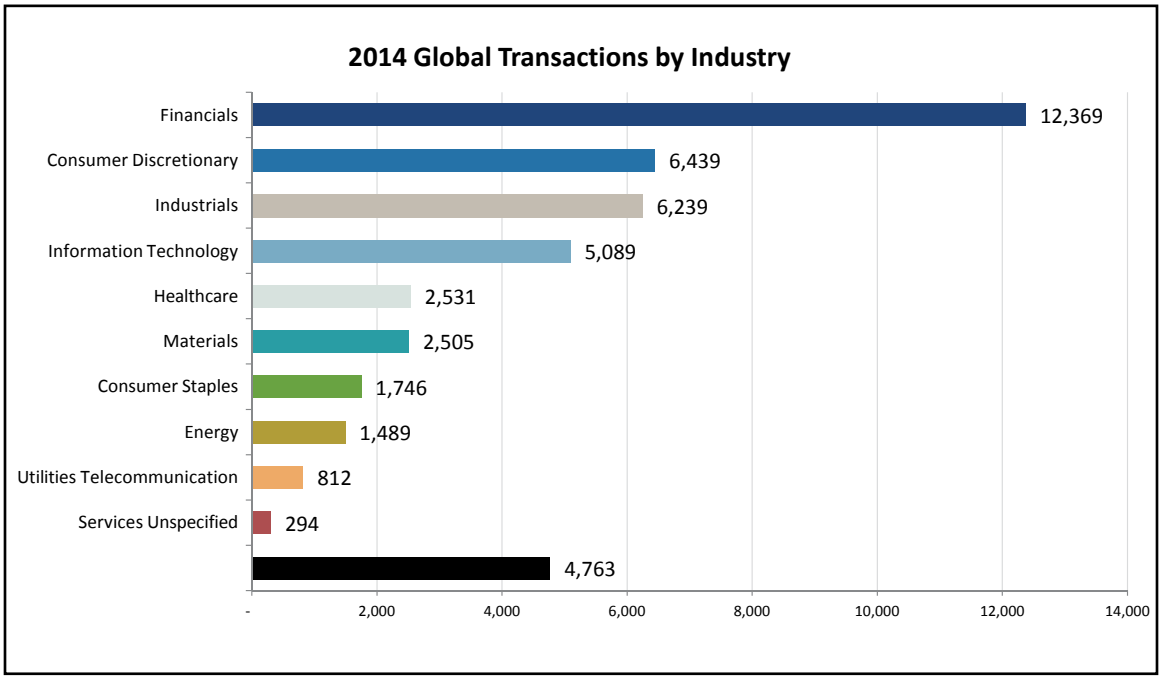
For transactions where values were reported, the vast majority (approximately 72% in 2014) had a value of less than US$50 million. Less than 5% of transactions were consummated for a value in excess of US$500 million (see Exhibit 2). This is within normal parameters. The median transaction size in 2014 was just under US$15 million, which reflects the continuation of an upward trend that began in 2010. As noted above, given that the value of many smaller transactions is not reported, the true median transaction value is likely lower.

Exhibit 2



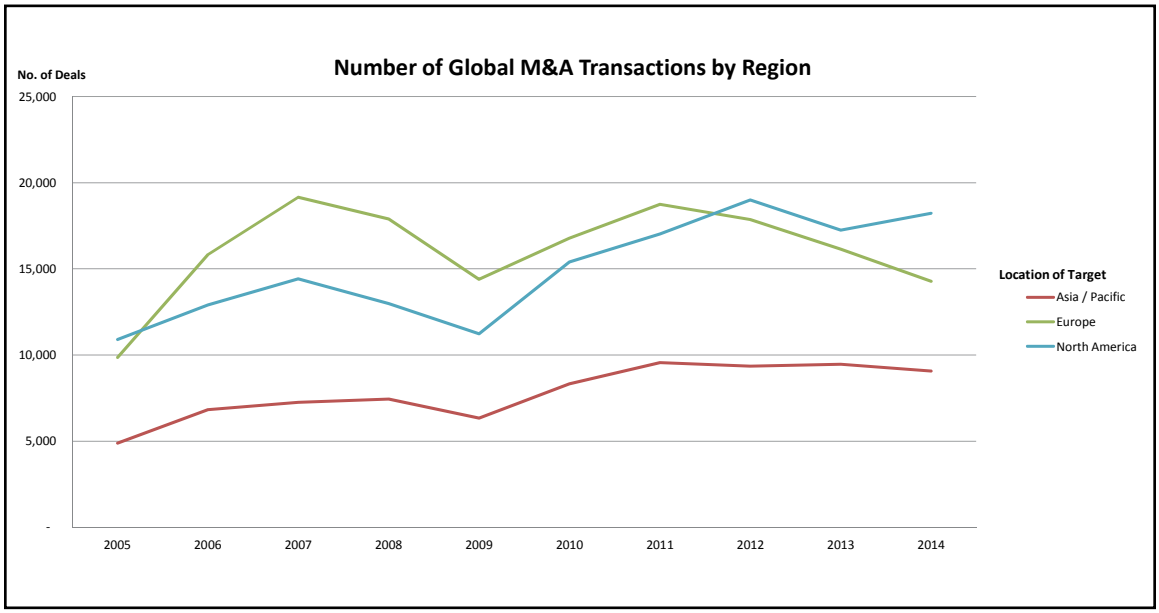
The financial services sector was once again the hottest sector, accounting for 28% of transactions in 2014. Other popular sectors (each of which accounted for more than 10% of total transactions in 2014) included consumer discretionary, industrials and information technology (see Exhibit 3).

Exhibit 3



On a regional basis, North America accounted for the largest number of transactions, based on the location of the target company (Exhibit 4). The number of transactions involving European targets continued to decline, likely due to the suppressed economic environment in that region. Asian companies represented the fewest number of target companies. This is partly explained by regional cultural differences, whereby many owners of Asian-based companies prefer to transition their business to family members, or they do not disclose that a sale has occurred.

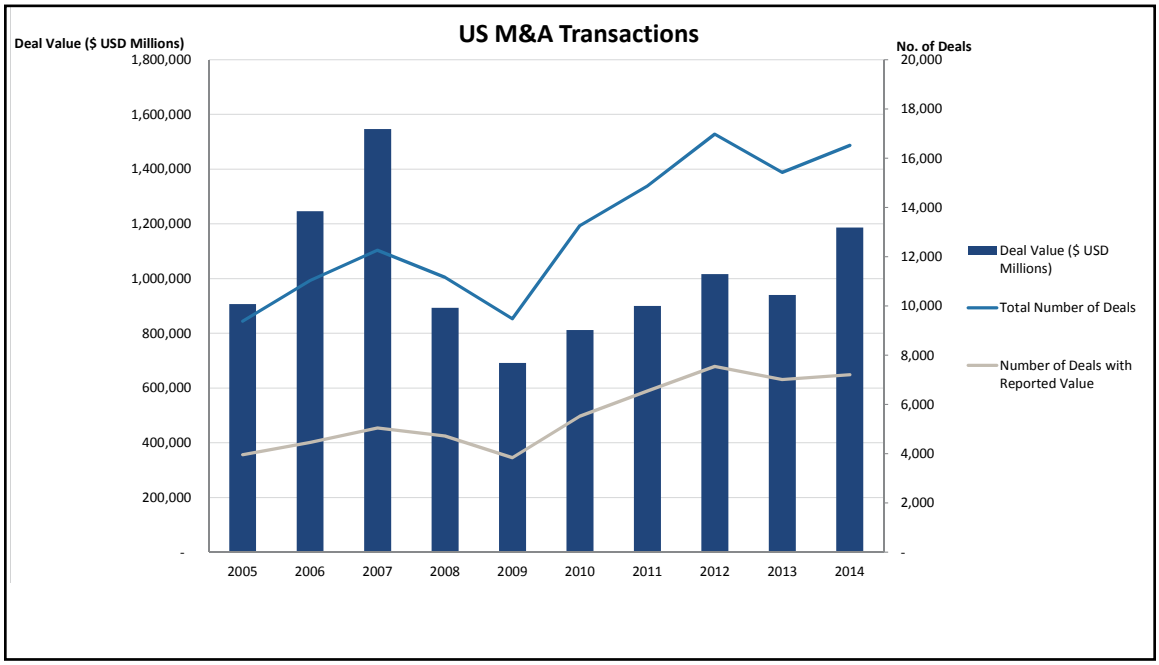
Exhibit 4



A U.S. Perspective

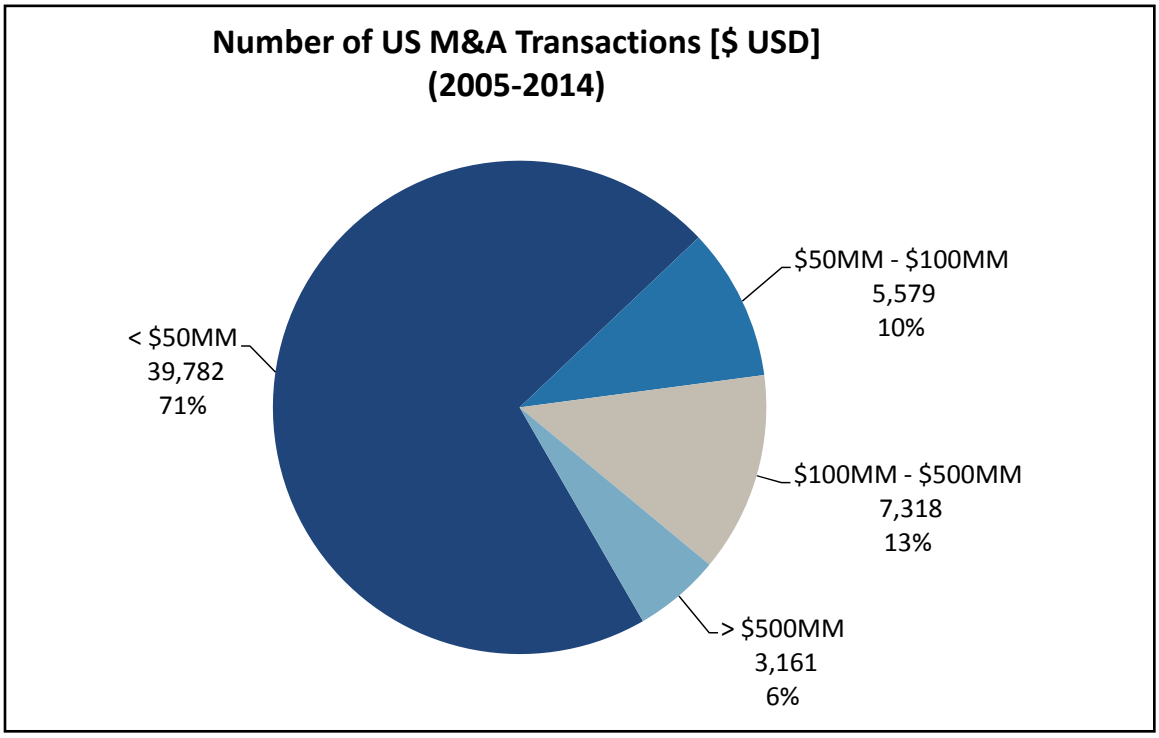
2014 was a strong year for M&A activity in the United States. The value of transactions amounted to almost $1.2 trillion, representing the highest level since 2007 (see Exhibit 5). The number of transactions was also near a record high, only being surpassed by 2012 (which was inflated as many sellers expedited the sale of their business to avoid tax changes that came into effect in 2013).

Exhibit 5



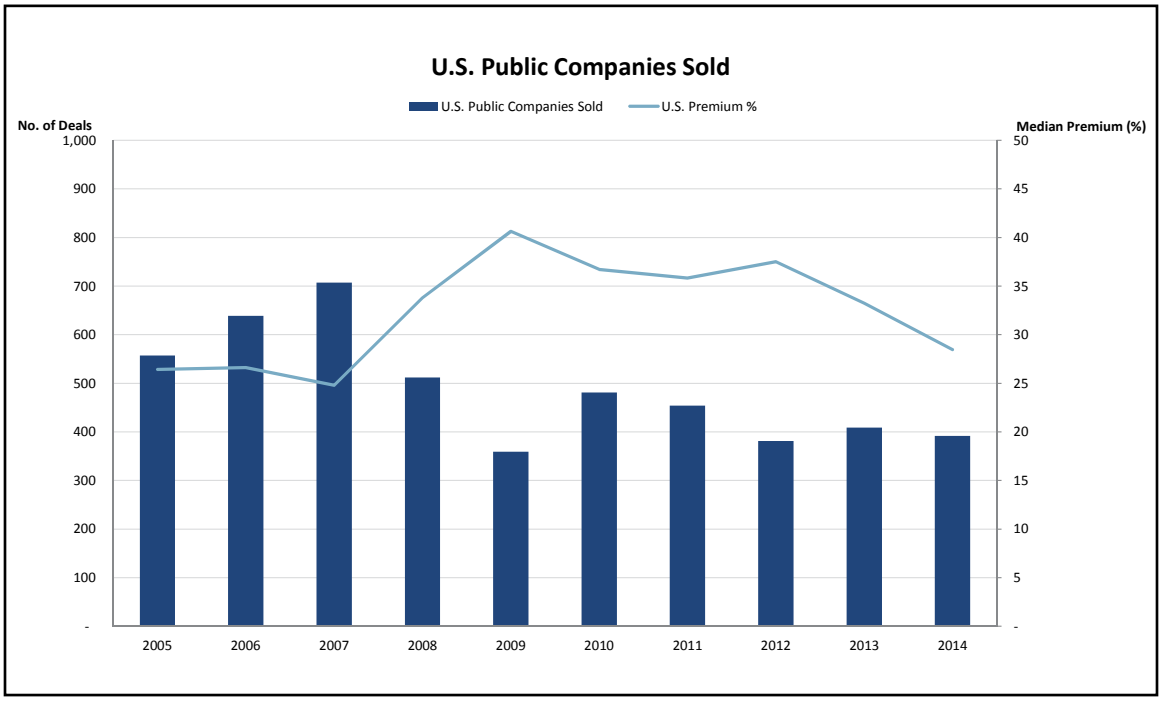
In terms of transaction size, over the past 10 years, approximately 71% of transactions with reported values in the U.S. have been for less than US$50 million, while about 6% are in excess of US$500 million (see Exhibit 6). The median transaction value in 2014 was US$16.3 million.

Exhibit 6



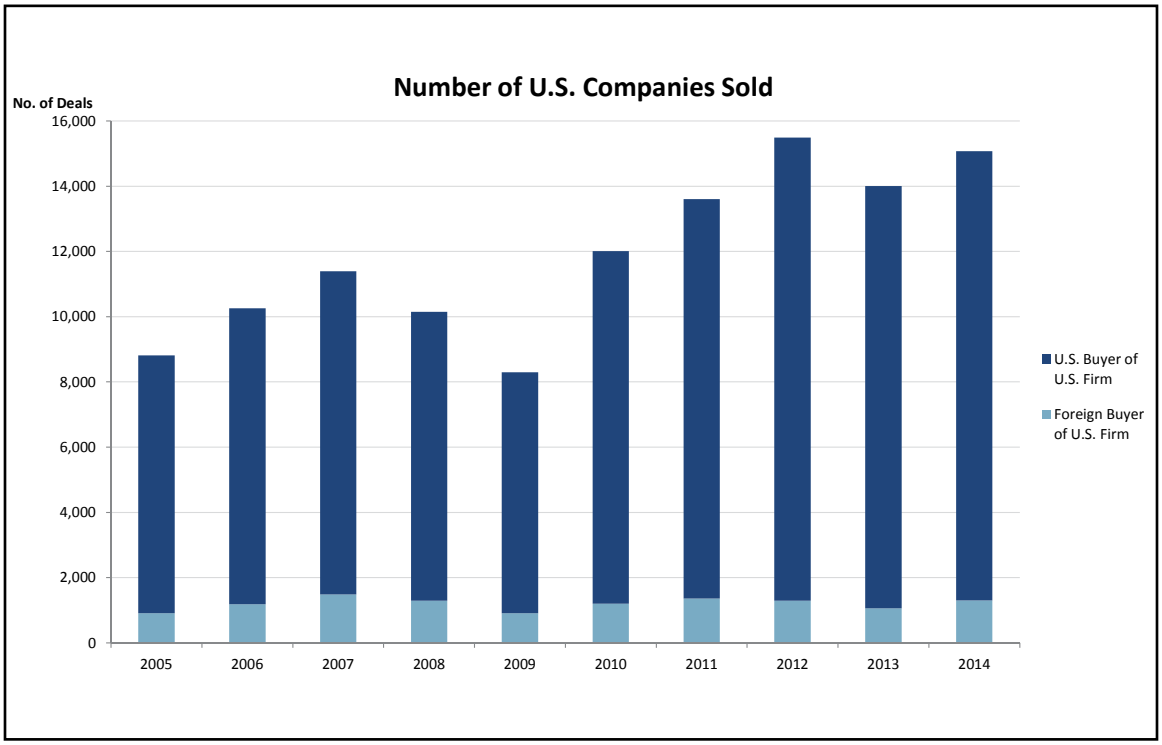
The large majority (approximately 95%) of U.S. companies sold in any given year are privately held. In fact, there were only 392 U.S.-based public companies sold in 2014, representing the second lowest level in the past 5 years (Exhibit 7). The takeover premium (measured as the price paid for the acquired shares vs. the trading price of those shares one month prior to the announcement) declined to 28%. The low number of transactions and takeover premiums are likely the result of buoyancy in the U.S. equity markets, which made public companies relatively expensive takeover targets in 2014.

Exhibit 7



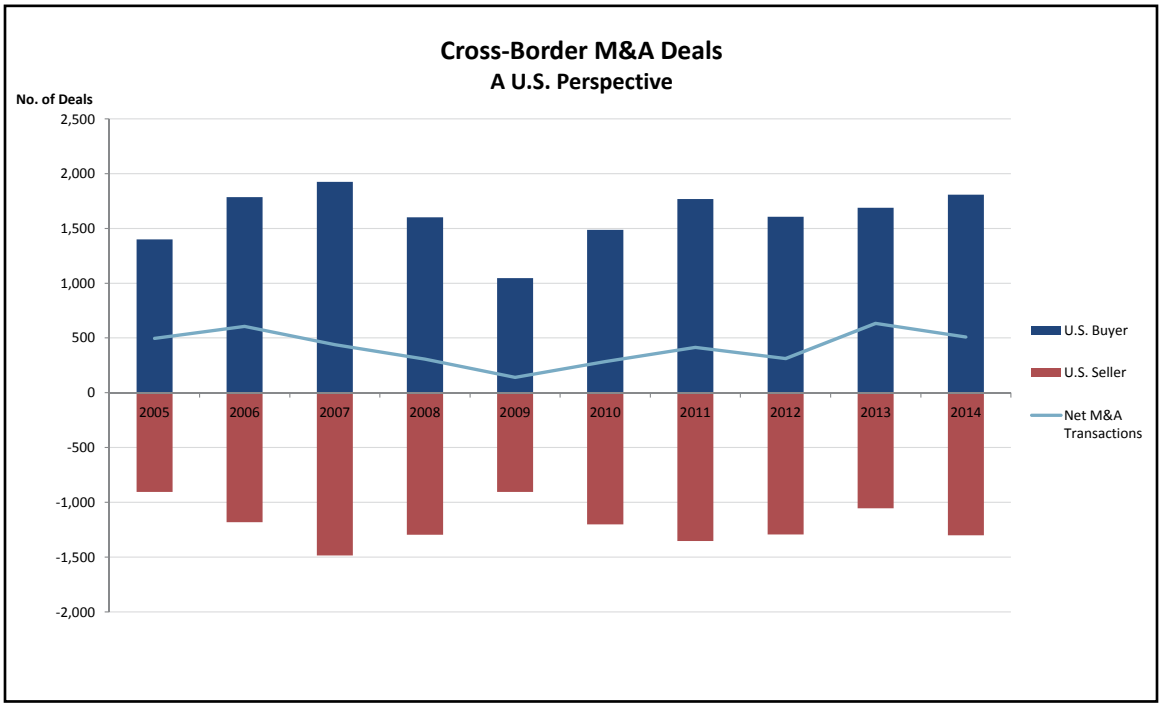
The vast majority of companies that are sold in the U.S. are acquired by another U.S. company. Foreign buyers typically represent only about 96% of acquisitions (Exhibit 8).

Exhibit 8



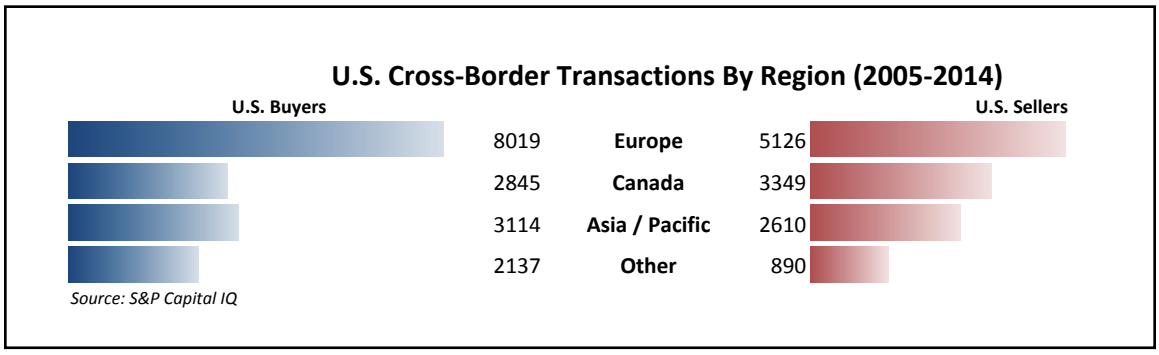
In each of the past 10 years, U.S. corporations have been more active in terms of the number of cross-border acquisitions than divestitures (Exhibit 9).

Exhibit 9



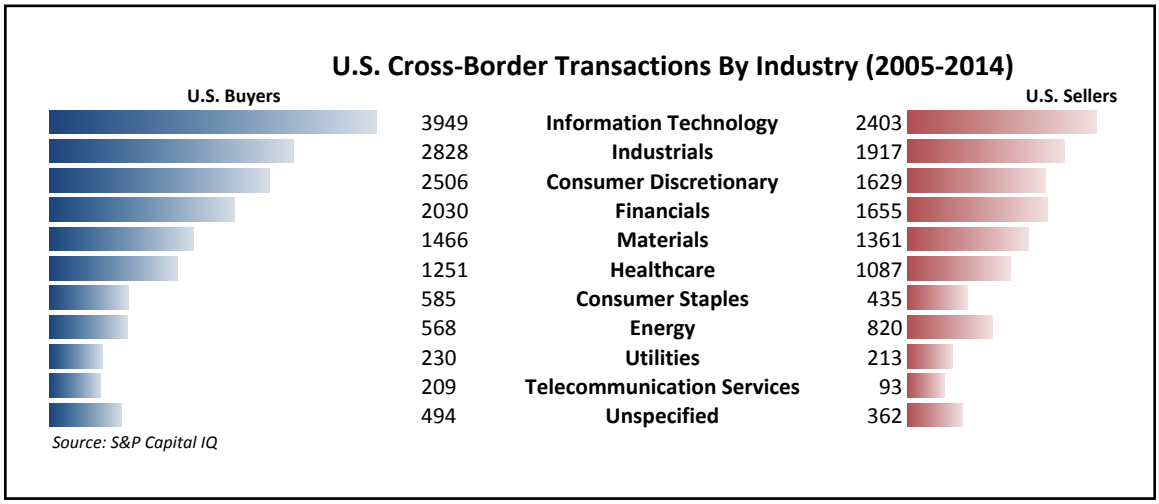
As indicated in Exhibit 10, over the past 10 years, European acquisition targets have been a favoured hunting ground for U.S.-based acquirers, far surpassing the number of European buyers of U.S. companies. The U.S. is a net seller to Canadian companies. U.S. buyers are also active in other regions, such as Latin America (Exhibit 10).

Exhibit 10



Over the past 10 years, U.S. companies have been net buyers in virtually every industry segment, except for the energy sector (Exhibit 11).

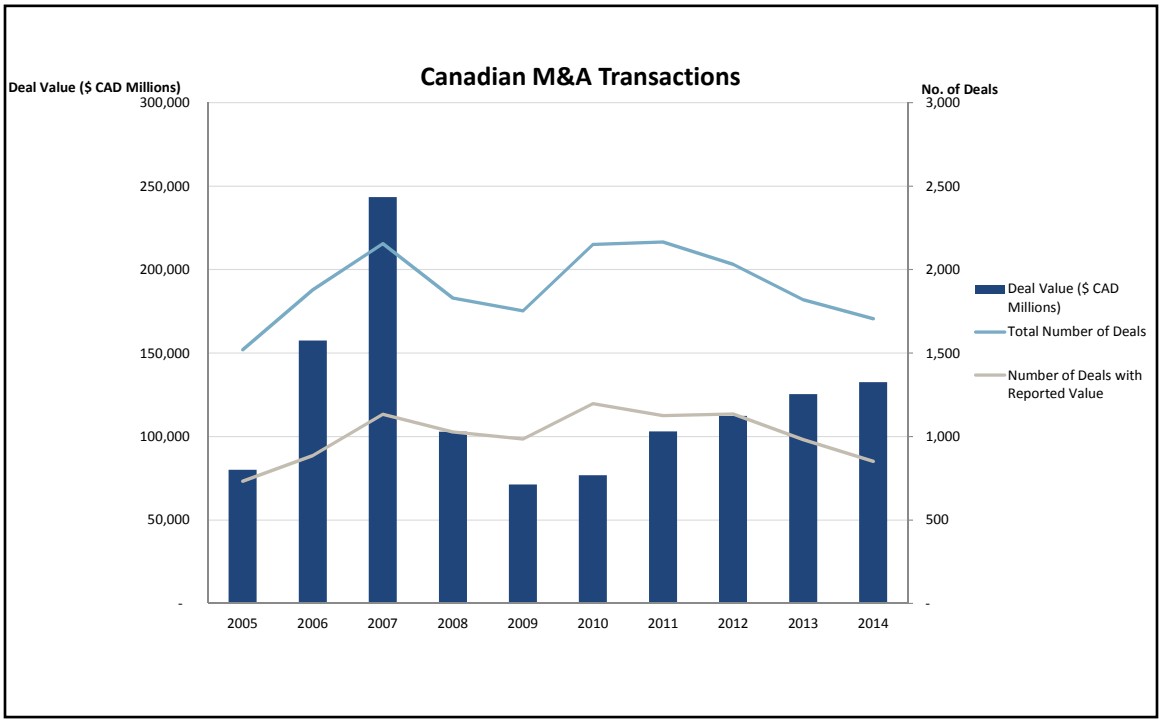
Exhibit 11



A Canadian Perspective

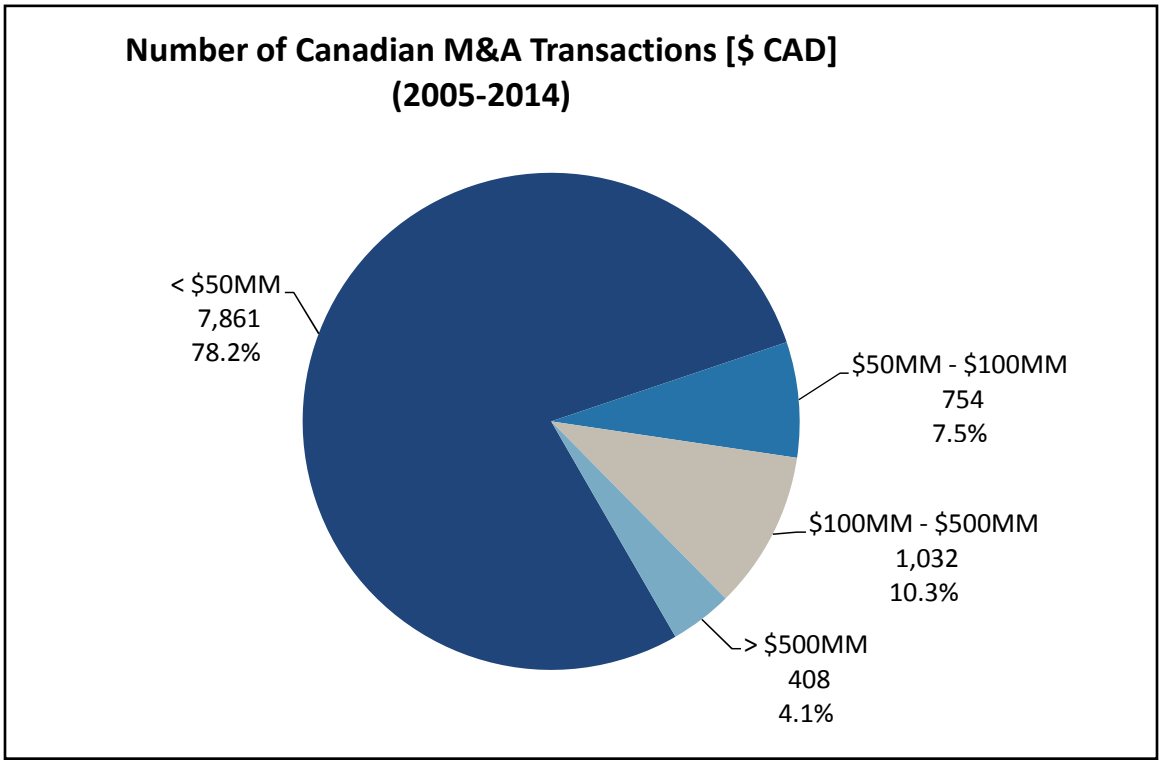
The number of Canadian companies sold has been on the decline for the past several years. While 2014 saw the largest deal value (among reported transactions), transaction value remained relatively flat in U.S.-dollar equivalent (Exhibit 12).

Exhibit 12



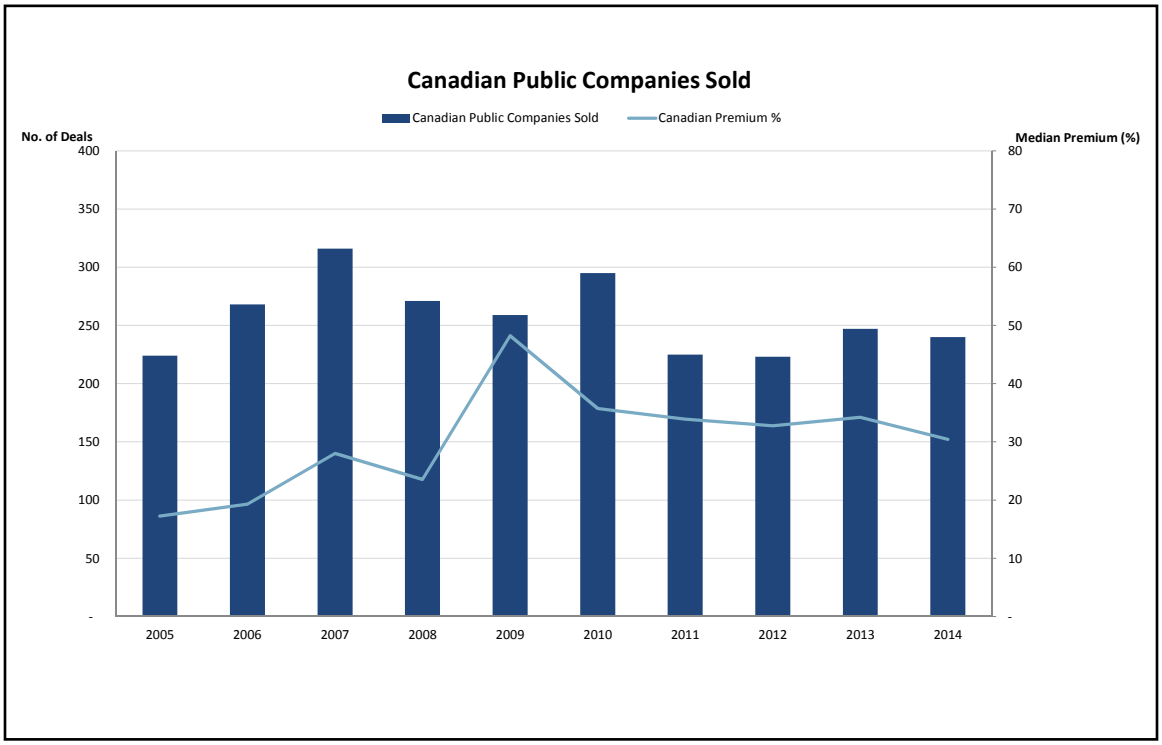
Compared to the U.S., Canada is much more a market of smaller companies. The median transaction value in Canada is approximately CDN$9.5 million. Furthermore, the transactions with a value of less than $50 million represented approximately 78% of all deals with reported values over the past 10 years, as contrasted with 71% in the U.S (Exhibit 13).

Exhibit 13



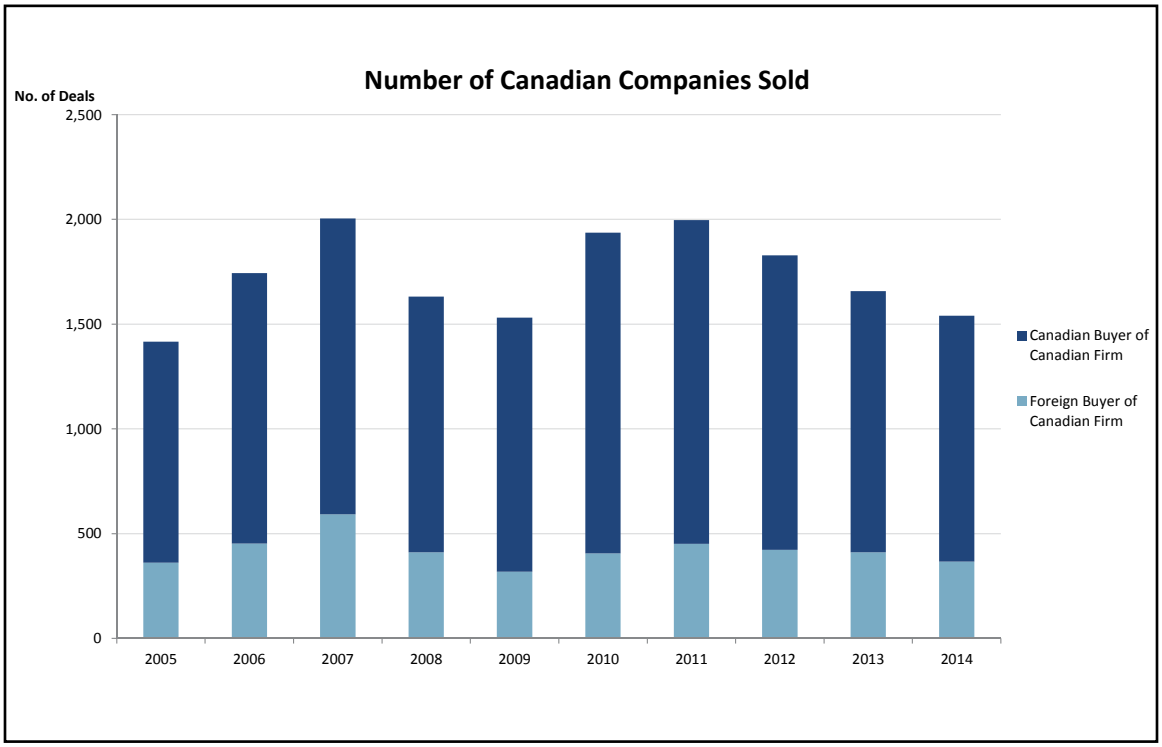
Approximately 14% of Canadian divestitures over the past 10 years represented a public company. This proportion is significantly greater than the level in the U.S. (less than 5%). The likely reason is that Canadian public companies are generally smaller than their U.S. counterparts, making the takeover of a Canadian public company more manageable. Furthermore, many Canadian public companies are “small-cap” and “micro-cap” entities, whose shares trade at relatively low valuation multiples due to their illiquidity. Consequently, they are relatively more affordable. The median takeover premium of Canadian public companies was approximately 30% in 2014 (Exhibit 14).

Exhibit 14



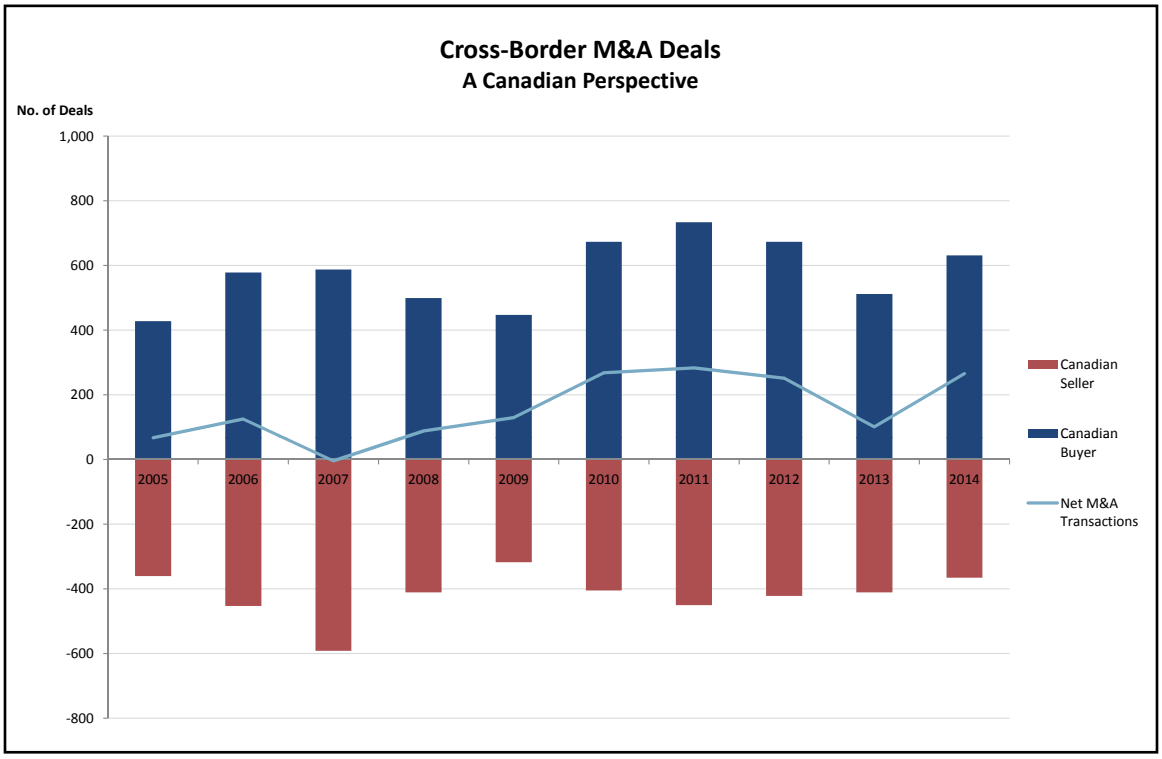
Over the past 10 years, approximately 75% of Canadian divestitures have involved a Canadian buyer (Exhibit 15). Canadian companies are most often the buyers for smaller companies, where it is not cost-efficient for a foreign buyer to undertake the time, effort and cost associated with a cross-border transaction.

Exhibit 15



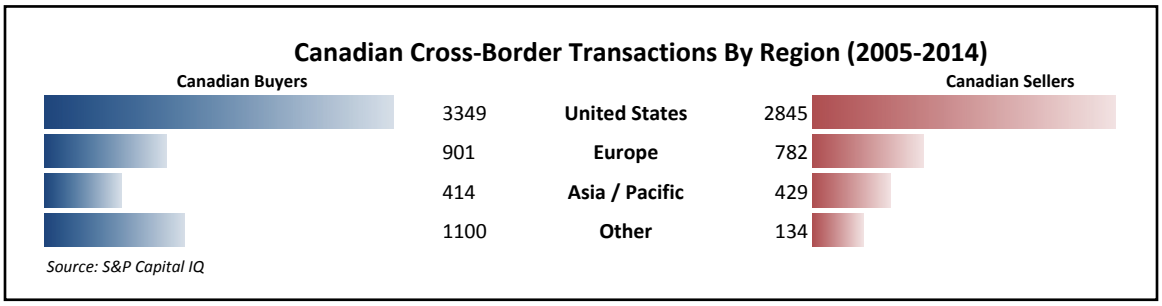
Despite much hype in the media about Canadian companies selling out to foreign buyers, the statistics reveal that Canadian companies have been more acquisitive abroad. In fact, Canadian buyers have been net acquirers in cross-border transactions in virtually every year since 2005 (Exhibit 16). This has been the case despite considerable fluctuation in the value of the Canadian Dollar against its U.S. counterpart over that time period. This indicates that corporate acquirers generally are not influenced by short-term fluctuations in exchange rates when making long-term investment decisions.

Exhibit 16



Canadian buyers have been particularly acquisitive in the U.S., where over the 10-year period ending in 2014, Canadian companies acquired 3,349 U.S. entities, as contrasted with 2,845 Canadian companies being sold to U.S. entities (Exhibit 17). Relatively few transactions have been consummated between Canada, Europe and Asia. However, Canadian buyers have been active in other regions, such as South America, particularly in the materials sector.

Exhibit 17

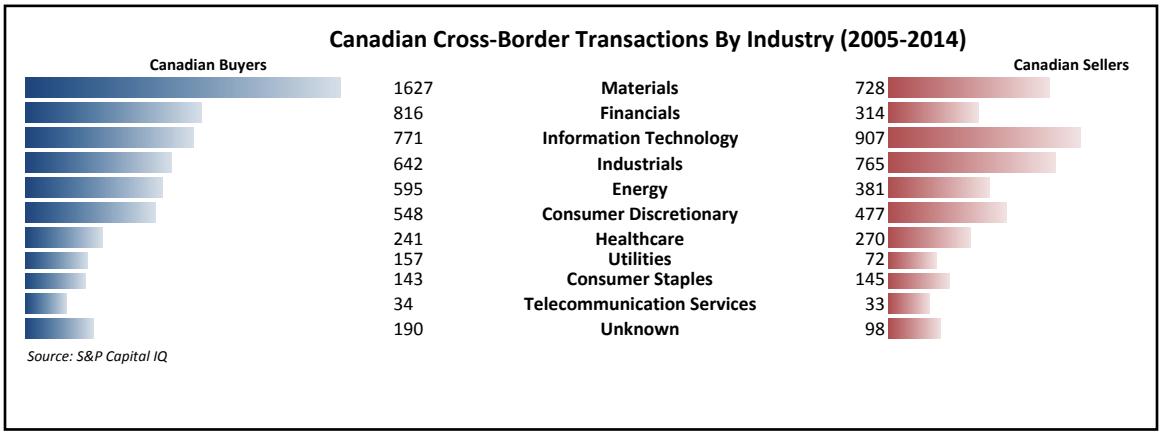


On a sector basis, Canadian companies are particularly acquisitive in the materials sector. This is not surprising given the large resource companies located in Canada, whereas many of the resources are physically located throughout the world. The financial sector has also been a popular area for Canadian companies, particularly since the economic crisis in 2008. Canada's

large financial institutions have used their strong balance sheets to acquire significant assets abroad, particularly in the U.S.

Canadian companies are net sellers in the areas of information technology and industrials.

Exhibit 18



Cross Border Opportunities and Benefits

Cross-border transactions can offer buyers significant upside potential, assuming that things unfold as expected. Among the key drivers for consummating cross-border deals are the following:

- **Revenue and profit growth.** Many economies, including the U.S. and Canada have experienced low to moderate growth in recent years. Many corporations have saturated their home markets. A cross-border acquisition can result in significant revenue and profit growth without cannibalizing home-market operations. Even by acquiring a company in another low-growth jurisdictions such as Western Europe, the additional revenue from the acquisition can be significant. Companies operating in relatively low-growth markets are more likely to sell for reasonable valuation multiples, thereby facilitating the creation of shareholder value for the buyer.
- **Diversification.** One of the greatest benefits of a cross-border transaction is the added degree of diversification it can bring to the buyer in terms of customer base, product/ service offerings, management team and other key parameters. Diversification is associated with risk-reduction, which can lead to shareholder value creation.
- **Economies of scale.** Cross-border transactions can result in significant economies of scale that may include centralized administration, production, design engineering, management and other aspects of the buyers` operations. However, potential economies of scale must be weighed against the challenges of dealing with logistical issues, local preferences and other dynamics of varied markets.
- **Access to lower-cost inputs.** Many buyers have benefited from acquiring a company in a low-cost jurisdiction (such as parts of Asia). For product providers, the benefits of low-cost labour must be weighed against the added costs of foreign shipping and possible logistical and operational issues.

- **Sharing of best practices.** A benefit of cross-border transactions that is often under-estimated is the sharing of best practices between the buyer and the seller. While best practice sharing is applicable in any transaction, the benefits can be even more pronounced when dealing with foreign markets that may have vastly different ways of doing things. Again, cultural differences may impact the ability to implement different practices.
- **Perception value**. Companies that operate in multiple jurisdictions are often viewed as being more valuable than their counterparts of a similar size due to the perception of market reach, diversification and growth potential. This can be particularly attractive for public companies and private equity firms looking to prepare their portfolio companies for sale.

Cross-border Risks and Challenges

While cross-border transactions offer upside potential, there are also significant risks and challenges that must be carefully considered. Some of the most notable are as follows:

- **Cultural differences.** There are vast differences in culture around the world that buyers often fail to appreciate. These differences reveal themselves in many ways, including work ethic, decision-making, and communication protocol. Cultural incompatibility is frequently cited as the primary cause of a failed acquisition, as it results in employee demotivation and the loss of key employees.
- **Language barriers.** Differences in language can hamper communication efforts between the buyer and employees of the acquired company. Differences in expectations and understanding result in errors, delays and aggravation for all parties. The buyer should secure communication channels with individuals at the acquired company who have a strong command of both the buyer's language and the seller's language (both verbal and written), and who can effectively convey messages in both directions.
- **Integration.** Attempting to fully integrate an acquired company in a foreign jurisdiction is fraught with challenges due to differences in culture, language, logistics and other reasons. However, abandoning integration efforts can result in a significant loss of synergies. Therefore, buyers must carefully consider potential integration issues and develop a comprehensive integration plan prior to consummating a transaction.
- **Transfer pricing.** In many cases, the buyer and the acquired company will transact among themselves for the purchase and sale of goods and services. This may include the sale of raw materials and finished goods, as well as the provision of corporate services by the parent company (e.g. centralized treasury, general management, etc.) to the foreign subsidiary. The price charged for goods and services among related parties operating in different countries will likely be subject to scrutiny by local tax authorities. Transfer pricing has been a hot topic in recent years, as governments around the world become increasingly concerned about profits being shifted to other jurisdictions. Therefore, the buyer should commission a sound transfer pricing study from a credible third party provider, to avoid the added costs and management time of issues relating to non-compliance.
- **Regulatory issues.** Regulatory requirements are becoming increasingly stringent around the world, particularly those dealing with environmental, employment and safety concerns. The buyer must be well-apprised of local regulatory issues and potential changes therein before consummating a transaction. The buyer should also ensure that the target company

has appropriate monitoring and control systems, and a strong record of regulatory compliance in order to avoid potential issues shortly after the closing of the transaction.

- **Geo-political risks.** Some parts of the world are exposed to significant geo-political risks that could include war, hyper-inflation, general strikes, political instability, the inability to repatriate funds and the expropriation of assets. The quantification of such risks can be very challenging due to the level of uncertainty involved. Therefore, buyers must carefully consider the consequences of acquiring a company that operates in an unstable environment. Not only is there the risk of a direct loss, but the buyer could be exposed to much broader reputational risk as well.
- **Monitoring costs.** The cost of monitoring and controlling the activities of a foreign subsidiary should not be underestimated. Financial and management reporting systems can be helpful, but they only report what has already transpired. Appropriate monitoring and control systems must be in place to proactively help ensure that operating performance does not significantly deviate from plan or that the target company is not subject to fraud or rogue decision-making.
- **Foreign exchange risk.** Cross-border transactions normally involve foreign exchange risk. This risk can be mitigated somewhat where the buyer finances the acquisition in the currency of the target company, or purchases goods or services in the currency of the target company. However in many cases the buyer remains subject to net foreign currency exposure, which must be carefully considered before consummating a transaction. The impact of negative foreign exchange fluctuations can be particularly harmful to public companies due to public equity market reactions to lower earnings.

U.S.-Canada Cross-border Considerations

As discussed above, numerous M&A transactions take place each year between the U.S. and Canada. Despite having significant similarities, there are also important differences between the two countries in terms of market dynamics and regulations which must be considered prior to consummating a transaction. Witness the recent high-profile retreat of Target stores from Canada, which resulted in that company taking a loss in excess of $5 billion after just two years, when it failed to establish itself in the Canadian market.

- **Valuation multiples**. As a general rule, Canadian companies tend to sell for lower multiples of EBITDA (earnings before interest, taxes, depreciation and amortization) than their U.S. counterparts operating in the same industry segment. This is partly because Canadian companies tend to be smaller than their U.S. counterparts. As such, they often do not attract the same number of large well-financed buyers, and many are more exposed to greater risk in terms of customer or market concentration. This can offer an advantage to U.S.-based firms looking to expand into Canada. In particular, U.S. public companies whose shares trade at relatively higher multiples may get a lift on the Canadian earnings they acquire for a lower multiple.
- **Taxation**. At the time of writing [2015], corporate income tax rates in Canada are lower than those in the U.S. The U.S. federal corporate tax rate is 35%. In addition, many states impose taxes on corporate profits, resulting in a total corporate tax rate of 40% or higher in some states. Conversely, the federal corporate tax rate in Canada is only 15%. Each province also imposes a tax on corporate profits, such that the overall corporate tax rate generally ranges between 25% and 30% in most parts of Canada. While Canada imposes a type of value-added tax (i.e. the Goods and Services tax or a provincial Harmonized

Sales Tax), there is no net cost to corporations. Canadian legislation also offers tax credits for qualifying research and development (R&D) activities in Canada. However, U.S.-based firms looking to take advantage of the lower Canadian tax rate may find it challenging when they try to repatriate the additional profits back to the United States. While U.S. companies will either be structured as an S-Corporation (for privately held companies) or a C-Corporation, no such structures exist in Canada (where in effect Canadian companies are structured similar to C-Corporations and taxed at the corporate level, with a second layer of taxation at the shareholder level).

- **Employment benefits**. While corporate tax rates are more favourable in Canada, personal income tax rates are significantly higher. This is partly because of Canada's universal health care system. The advantage to employers in Canada is that they do not have to fund the significant cost of basic medical care as an employee benefit. Rather, most Canadian companies supplement universal health care privileges with added medical benefits (e.g. dental coverage, eye glasses and semi-private rooms) at a relatively low cost.
- **Employment laws**. As a general statement, employment laws tend to be more favourable to employees in Canada than in the U.S. in terms of entitlement to severance pay, notice periods, maternity leave and other privileges. This can make it challenging for acquirers of Canadian companies to realize synergies through headcount reductions. By comparison, some states have "employment at will," which means that terminations can be effected with little direct economic cost.
- **Competition law**. There are various tests for informing the Federal Trade Commission of a pending takeover transaction in the U.S. But in general, transactions with a *value* of less than US$76.3 million need not be reported [in 2015]. By contrast, the Canadian Competition Bureau requires disclosure where the acquired company *revenues* of CDN$86 million or more [in 2015], regardless of value. Furthermore, the Canadian Competition Bureau will become involved with transactions in certain culturally-sensitive industries (such as publications), regardless of the transaction size. FTC or Competition Bureau involvement adds time, cost and complexity to a transaction. A buyer should ensure that their legal counsel is familiar with the pertinent legislation and how to make the experience as painless as possible.
- **State and provincial regulations**. Various states and provinces impose regulations ranging from how companies can conduct business, to product labelling and form filing. As a general statement, such requirements tend to be more onerous in the U.S. than in Canada, particularly for companies operating in multiple states. The exception in Canada is Quebec, which imposes strict language requirements.
- **Transaction closing**. Most transactions in Canada are effected by a "plan of arrangement," which is a relatively simple court procedure. By contrast, U.S.-based transactions are normally conducted by way of a merger, which can be more costly and time consuming to effect.
- **Deal points**. There are some differences in usual deal points in Canada vs. the U.S., such as those involving indemnity provisions and so-called baskets and caps (i.e. minimum and maximum amounts). These deal points tend to be more in favour of the buyer in Canada compared to the U.S.

Conclusions

M&A activity has been buoyant in recent years, particularly in the U.S. Cross-border transactions are becoming increasingly prominent, as corporate buyers seek incremental growth opportunities and diversification. However, the potential benefits of cross-border deals must be tempered with a critical assessment of the risks involved.

4

CONGRATS ON YOUR IPO! NOW WHAT?

by Amanda Miller, Ph.D., Executive Director, Ernst & Young (EY) Valuation
by David Dufendach, ASA, CPA, ABV, Partner (Retired), Grant Thornton

Executive Summary

For some companies, achieving a successful initial public offering represents graduation to a new stage in the business life cycle. The uncertain development stage period in which new capital is necessary, expensive, complex, and conditioned upon achievement of risky milestones is followed by a more mature stage. The door may now be open to issue debt on more normal terms; share-based compensation is easier to value and explain; and future equity, if needed, may be cheaper and simpler to raise.

For a company that completes its IPO while still in a development stage, however, the need for new capital may persist, and management may find that raising capital remains expensive, complex and conditional. These challenges may be particularly applicable for companies where success depends on R&D, as well as for companies that depend upon finding and developing natural resources.

This article will explore some of the issues facing post-IPO development stage companies, addressing some common, and maybe not so common, types of financial instruments issued in the capital-raising process, and then focusing in depth on the valuation issues related to these securities. In some cases, post-IPO financings can be highly dilutive to existing investors, creating significant valuation challenges.

Why do post-IPO companies use complex financings?

Most companies approaching an IPO wait until they have established revenues and profits, attracting public market investors not only with their prospects for continued growth but also with their track record of success. In a few industries, however, public market investors will support an IPO based on their perception of the potential of achieving outsized returns. These industries include those where success depends on R&D (e.g. biotech or medical devices), as well as those where success depends on finding and developing natural resources (e.g. oil and gas exploration).

For companies that complete an IPO before they have reached profitability, the public stock provides new opportunities for raising the capital they need to fund development. Typically, these companies either face contingencies, such as new products or projects with substantial risks of failure, or are otherwise unable to raise “normal” debt and equity. More established companies may also find themselves unable to raise capital using “normal” vehicles due to distress or to fund speculative investments. Companies in financial distress are found in a variety of industries, and at a variety of stages of development, and fall outside our primary focus on development stage companies.

What types of securities are involved?

Investments in public companies outside of the initial public offering or secondary offerings are generally referred to as Private Investment in Public Equity ("PIPE") transactions. These transactions typically incorporate preferential features relative to the common stock, to enable the company to raise a substantial amount of capital at one time. The most frequently encountered instruments include:

- Convertible notes
- Preferred stock
- Common stock
- Warrants
- Licensing agreements
- Put / Call structures

Each of these is described in more detail below:

Convertible notes are a hybrid instrument that provides for a minimum contractual return (principal repayment plus any interest) as well as the potential to participate in the upside appreciation in the company's stock. Both more established companies and development stage companies may use convertible notes, most often, in situations where they do not have the ability to raise further "normal" debt or want to preserve cash. For example, more established companies often enter into convertible notes that are subordinated to their senior debt, or when they need an unusually large amount of capital at one time (e.g. to fund a merger). Development stage companies often do not have sufficient operating cash flow to service "normal" indebtedness, and thus may enter into senior convertible notes to defer repayment (or the corresponding dilution impacts, if the investors convert on the upside). The interest on the convertible note will be lower than the rate that the company would have paid for a non-convertible debt instrument with similar features, and may be Paid-In-Kind (PIK), or paid in cash. To make up the difference, the convertible note includes an equity sweetener (the conversion feature), allowing investors to obtain a sufficient return relative to the higher risks. Not only do these sweeteners allow the borrower to "blend" down the interest rate to more acceptable levels, but they also may make the difference with respect to getting the financing at all, i.e., there may not be a rate of interest high enough to otherwise induce the lender.

Development stage companies or distressed companies may also enter into a different type of convertible note, when the company would prefer to obtain an equity financing but the need for capital is so extreme that the company does not have enough authorized shares outstanding to support the required investment. In these cases, the convertible note may automatically convert into stock upon shareholder approval to increase the number of authorized shares. These types of financings typically include onerous features, such as immediate repayment at twice the invested capital, if the shareholder approval is withheld.

Typical key features of convertible notes may include:

- Conversion rights, where the conversion price is typically set at a premium to the current public stock price, often in the 30% to 35% range.
- Conversion price resets, where the investor is protected against dilution from future rounds of financing, reducing the conversion price to ensure that the current security is not disadvantaged relative to subsequent financings. Two common variants include:
  - Partial ratchets, where the conversion price is adjusted according to a formula that takes into account the size of the new transaction relative to the total outstanding capital
  - Full ratchets, where the conversion price is set directly to the price in any new transaction

  These features may also contractually apply only to the next financing (or a specified number of financings), over a fixed timeframe, or for the entire life of the instrument.

- Embedded puts, calls, soft calls, which enable the investor to require repayment or the company to prepay the note (or force conversion) before the contractual maturity. Put features enable the investor to require repayment, and may apply either on a specified date or range of dates, and generally increase the value of the note to the investors. Call features and soft calls enable the company to prepay or force conversion of the note, and generally limit the upside, reducing the value of the note to the investors. Put and call features also may be contingent on the company's future stock price or on specified events (e.g. change of control, default).
- Make-whole provisions, which entitle the investor to the full interest (through a given date) and principal that they would otherwise have received, in the event of an early termination of the agreement (e.g. upon a change of control or other put/call feature). In some cases, make whole provisions may specify that the investors will receive an additional payment to offset the truncated term of the conversion feature.
- Tranched features/options on future notes, where the investor or the company or both have the right to buy or sell an additional tranche or tranches of the convertible note at the same or similar terms, most often if specified milestones are met. Since achieving these milestones is typically a positive event for the company, but the convertible note terms are typically similar to the original note terms, a mutual agreement to transact in an additional tranche or tranches of the convertible note often increases the value to the investors. On the other hand, this agreement also provides the company with security that they will have capital available when they need it, after meeting each milestone, and can reduce the overall financing cost. In some cases, tranched financings are structured as options, giving the company the right to issue more notes or the investors the right to buy more notes, without a balancing right for the other party. In these cases, it is important to consider the potential evolution of value of the convertible notes over the relevant timeframe, as well as who actually would decide whether to exercise the option.
- Restrictions on conversion, which may be designed to prevent too many shares from entering the market at once and diluting the public common stock, or may be designed to prevent any given investors from holding too large a percentage of the voting stock (typically 10%, to avoid classification as an "affiliate"). These restrictions may not be considered in the valuation of the instrument as they often are considered an attribute of the size of the position (effectively, a block restriction) rather than applying at the level of an individual unit of the securities (the unit of account).
- Other sweeteners, which may include warrants, as discussed below, or alternative contingent repayment features.

Preferred Stock is an equity security that has rights as defined, including, potentially, the right to a return of invested capital plus dividends (debt-like preferred), the right both to a return on invested capital and to convert at the investors' option (convertible note-like preferred), or the mandatory right and obligation to convert into the common stock upon a specified event (equity-like preferred). Companies may use preferred stock rather than straight debt or convertible notes when they are seeking a particular tax treatment, and preferred stock rather than common stock when there are insufficient authorized shares. Preferred stock may include any of the features discussed above. Even equity-like preferred stock often will still include ratchet features to provide down-round protection through the point at which it converts into common, or restrictions on conversion to avoid any investor having too large of an interest in the voting stock.

Warrants allow investors to receive shares of stock after paying a specified strike price. Warrants may take the place of conversion features (be issued as a package along with normal debt) or be issued in conjunction with convertible notes, preferred stock, or common stock. When warrants are issued with debt, convertible notes, or certain types of preferred, the aggregate value

underlying the warrants issued is typically referred to as the "warrant coverage", and is typically established as a percentage of notional (e.g. "20% warrant coverage"). The number of warrants equals the warrant coverage divided by the current stock price or some multiple of the current stock price (e.g. the conversion price for the convertible note). The warrant strike price may equal that same price, or may equal a penny or other low value. Penny warrants are effectively equivalent to the underlying stock, but typically do not vote, and thus may be issued when the company or the investors want to avoid any investor having too large a position, or when a shareholder vote is required to authorize sufficient shares. Typical features of these instruments may include:

- Strike price/conversion price resets, which allow the investor to maintain or partially maintain their ownership percentage if a new financing occurs at a lower price.
  - Partial ratchets
  - Full ratchets
- Enhanced payoffs, where the warrants are paid out according to a specified formula upon certain events
  - At time of exit/change of control, where the warrants may be paid out based on the Black-Scholes option value, but using a short term volatility that includes the date of announcement of the transaction. This volatility can be quite high (over 400%), making the warrant payoff approach the full value of the shares even if the strike price was originally equal to the stock price.
  - Upon other events, where the warrants are paid out at an interim milestone, such as a financing or licensing agreement. These structures are less common, but sometimes are used, for example, when the warrant holder is a strategic investor or a non-employee service provider.
- Conversion / exercise rights and restrictions, which allow the warrants automatically to convert into stock or into another class of warrants or to be exercised under specified circumstances
  - If the company has too few authorized shares
  - In complex capital structures (e.g. LLC with public parent or subsidiary)

Other financing structures that provide investors with enhanced returns include *licensing agreements* and various *put/call structures*. There are many variations, such as:

- Royalty payments that depend on future revenues or earnings, possibly with a tiered structure
- Put / call arrangements where the company and the investors have agreed to complete a transaction at a future date, but the future transaction price depends on multiple of revenues or earnings or achievement of milestones. Note that the timing of the put /call agreement may span several years, and that the term for the put and call may not match. In analyzing these agreements, it is necessary to consider the interaction between the put and call features — for example, it may be optimal for the investors to exercise a call, even if the call is "out of the money," to avoid having the company exercise its put at a later date, or vice versa.

What are the challenges in performing valuations for highly dilutive financings in public markets?

In performing valuations for these types of financings, the valuation specialist faces a complicated web of issues, including the need to understand highly specialized accounting guidance and related audit requirements, as well as complex valuation techniques and models:

- Understanding of pertinent GAAP/IFRS guidance
- Understanding audit issues (auditing standards ISA 620, *Using the Work of an Auditor's Expert,* for audits performed in accordance with International Standards on Auditing, or AU336, *Using the Work of a Specialist*, for U.S. SEC registrants)
  - Appropriateness of valuation methodology
  - Appropriateness of key assumptions
  - Reasonableness of results
- Identification of key features
  - Features that must be bifurcated and accounted for separately
  - Features that must be explicitly modeled, even if they don't need to be bifurcated
  - Features that can be combined
  - Features that can be ignored
- Selection/design of appropriate model(s)
- Identification of key assumptions
  - Consideration of future/uncertain events
  - Use of/reconciliation with market observations (traded price)
- Internal model consistency

The valuation specialist does not have to be an expert in the accounting and auditing issues listed above, but should be familiar with key aspects of this guidance as it relates to the valuation process. In particular, it is important to have the accounting experts identify the appropriate accounting treatment for the securities and which features, if any, must be bifurcated or must otherwise be considered explicitly in the analysis, before beginning the work. It is also important to consider whether the accounting indicates that the securities issued in a multi-element transaction will be measured at absolute fair value or relative fair value, and whether the transaction in aggregate should be considered to be at fair value.

What valuation techniques/models are appropriate?

Although the value of some complex securities may be approximated with discounted cash flow techniques, the financial instruments that are the primary focus of this article generally require more complex models:

- Scenario-based Discounted Cash Flows ("DCF") models
  - Scenario-based DCF models are useful in the instances when the probability distribution of outcomes is multimodal, i.e., the potential outcomes are clear and distinct (for example, as would be the case with a drug approval). One of the key inputs to a scenario-based DCF model is the probability assigned to each scenario, which can be difficult to estimate and subjective. Another challenge is to estimate the applicable discount rate for the financial instruments, given the nature of the risks and the investors' required rate of return. Therefore, this approach may be most appropriate when the risks are diversifiable, or used in combination with the other models described in the following paragraphs (for example as an input to a lattice model or a simulation) when the risks are market-correlated but the distribution is multimodal. An example of the latter approach is presented in the following section.
- Decision tree analysis
  - Decision tree analysis can be used in the cases where the ultimate payoff is dependent on one or more decisions over time. It involves forecasting future outcomes as well as assigning probabilities to these outcomes and taking into consideration prior events (by assigning conditional probabilities for example). Similar to scenario-based DCF models, the estimation of probabilities may be difficult and subjective.

- Binomial and other lattice models
  - Lattice models are used to value complex financial instruments where the ultimate payoff depends on the performance of an underlying metric such as stock price. Binomial lattices are used to project a range of values for the relevant metric (for example, equity value, common stock price, or interest rates) in the future with a certain probability distribution that is predefined by the user. Binomial lattices are useful for instruments whose payoff is non-linear. Additionally, binomial lattices are flexible enough to account for contractual features (such as the potential for early termination), which can have significant influence on the value of a financial instrument.
- Simulation techniques
  - Similar to lattice models, simulation techniques are used to project a value in the future with a certain probability distribution. Since the underlying metric can be simulated over time, simulation techniques are useful for path-dependent instruments (i.e., instruments whose payoff is dependent on earlier outcomes).

Another factor that must be considered is the scope of the model, that is, does the instrument need to be valued in an "all-inclusive" model that captures the entire capital structure, or can it be valued using simpler techniques that focus on a subset of the capital structure, or even just on the security itself?

What key inputs and assumptions are required?

Once the appropriate model is selected, it must be populated with various inputs and assumptions. The accounting guidance for measuring fair value requires that these inputs must maximize the use of available market information. However, it is often the case that key assumptions cannot be observed in the market. These are developed using a combination of management representations, market data, and valuation specialist judgment. Key inputs and assumptions may include detailed consideration of (by definition) uncertain future events:

- Future financing plans
  - Single versus multiple rounds
  - Dilutive versus non-dilutive
- Potential change of control events
  - Estimation of exit values
  - Estimation of exit timing
  - Associated probabilities
- Impact of product/project failure
  - Single product entity
  - Multi-product entity

As mentioned, market observations, and particularly, the traded price of common stock, must be considered in the valuation process. However, these observations frequently present challenges:

- Standard PIPE
  - Investors buy common at current market price, but also receive warrants as a sweetener
  - Effectively, transaction was at a discount to traded price
- Highly dilutive PIPE
  - Convertible note, preferred stock or warrants that represent a significant fraction of the company's fully-diluted shares
  - Market cap reflects only common stock * traded price
  - Stock price typically remains unchanged or even rises upon announcement

  - Using public price in the valuation model may imply that value to investors was 4x to 10x the invested capital

Thorny issues arise when the “best practices” modeling technique produces values that do not readily reconcile to market observations.

A few observations:

- Based on the discussion above, the choice of a model and the identification of key assumptions may appear to be independent steps in the process, but they are often selected simultaneously.
  - Some assumptions can be addressed only by the use of specific models.
  - Some models may require that assumptions be modified (in reasonable ways) prior to populating the model.
- The valuation specialist should “design in” certain features from inception, such as capturing certain metrics (other than the desired value itself) that will make the internal quality control process and the external audit process more efficient.
- Although the initial deliverable may often be valuation schedules, with a narrative report to follow, it is important to outline the narrative description of certain models and key assumptions as early in the process as possible, and to discuss the planned methodology and assumption with the auditor’s valuation specialists and the appropriate accounting resources before investing significant time in development. This step will often expose errors, omissions, and inconsistencies prior to the issuance of valuation schedules.

Example

As an example, consider a warrant on common stock that includes a down round protection feature, also referred to as a “full ratchet anti-dilution feature.” Specifically, consider a warrant that has the feature that if any equity securities or convertible notes are issued at a price per share below the contractual strike price for the warrant, the strike price is adjusted to equal the issue price for the new financing and the number of warrants is increased so that the aggregate strike price is preserved.

To illustrate the valuation approach, consider the following assumptions:

- Common stock price: $1/share
- Strike price: $1/share
- Time to maturity: 2 years
- Expected time to the next financing: 0.5 years

The other critical assumption used in the analysis is an assumption about how the equity value will evolve. The Black-Scholes Option Pricing Model and other widely-used option pricing methodologies such as lattice and simulation models assume that future stock prices will follow a lognormal distribution, and use volatility to describe the range of future outcomes. Typically, valuation specialists will estimate volatility based on the company’s historical stock price volatility, or based on comparable publicly traded companies if the company does not have sufficient post-IPO trading data. Some companies also have traded options, which provide a basis for estimating implied volatility; if available, implied volatilities provide a forward-looking measure of volatility over the short term. Neither of these measures, however, captures the impact of potential jumps in the stock price, as may be expected for biotech companies or other companies with a multimodal distribution of outcomes. In these situations, securities may be structured so that the ratchet takes effect after the results for the next key milestone are known.

Using the Black-Scholes model with an expected 80% volatility, assuming that the public stock price already incorporates dilution and ignoring the down-round protection feature, the value of the

warrant would be $0.4341. Although it is possible to incorporate a dilution adjustment to this value, in an efficient market, after the transaction is disclosed, the traded common stock price should already incorporate the information about the warrants, so no dilution adjustment would be needed. However, additional modeling is needed to incorporate the down-round protection feature.

To appropriately capture the down-round protection feature, the valuation analysis needs to consider not only the stock price at expiration, but also the stock price at the date of the next financing. One approach for incorporating this feature is to use a Monte Carlo simulation analysis. The analysis would start with the stock price as of the valuation date and simulate it forward to the expected financing date. If the simulated stock price at the financing is less than the strike price for the warrants, the analysis would consider the contractual adjustment to the warrant strike price and number of warrants. Finally, the analysis would continue simulating the stock price to the contractual maturity of the warrant, calculate the payoff and discount to the valuation date. Using this approach with the same assumptions as used in the Black-Scholes model, the value of the warrant including the down-round protection feature is $0.5608, an increase of about 30%. If the down-round protection feature can only be triggered at the first financing date, then it would also be possible to do the analysis using a lattice model, using the lattice to capture the distribution of stock prices at the financing date, calculating the change in the strike price and number of warrants as applicable based on this stock price, and then estimating the payoff using a closed form model based on the adjusted terms.

If the stock price is expected to change more dramatically when a milestone is met, it would be more appropriate to use a scenario analysis to model the impact of the milestones, and then use a lognormal distribution within each scenario. For example, suppose the company is expecting to raise the next financing right after completing its Phase II trials. If the results are positive, the stock price would be expected to increase upon announcement. Conversely, if the results are negative, the stock price would be expected to decline upon announcement. The Monte Carlo simulation model or lattice model can incorporate the jump by modeling the impact on the stock price — for example, depending on the type of company and how dependent it is on this product, it might be reasonable to assume that the stock price would be multiplied by five in case of positive results and divided by ten in case of negative results. Since the common stock price as of the valuation date reflects all future potential outcomes, the up and down factors and the associated probabilities should be calibrated such that the model's average simulated stock price reconciles to the publicly traded stock price. For this example, an 18.4% probability of success (and 81.6% probability of failure) calibrates the model to the current stock price of $1 per share. Using this framework and assuming that the volatility aside from the jump is 50%, the value of the warrant is $0.9395. The 50% volatility represents the volatility driven by factors other than company-specific milestones and can be estimated as the median volatility of a selected set of diversified pharmaceutical companies. Intuitively, the higher value is reasonable as the scenario based Monte Carlo model implicitly increases the volatility of the underlying stock.

The $0.9395 value also can be approximated using a 'hybrid' Black-Scholes, assuming that in the downside scenario, the ratchet drops to "at the money" and the holder therefore receives ten times as many warrants. This calculation would use the Black-Scholes call option model as follows:

Value = 18.4% * Call Option (S = 5, K = 1, r = 1%, vol = 50%, Dividend= 0%, T = 2) +
81.6% * 10 * Call Option (S = 0.1, K = 0.1, r = 1%, vol = 50%, Dividend= 0%, T = 2)

The value using the hybrid Black-Scholes calculation is $0.9404.

Warrant values

	Without Ratchet	With Ratchet
Case 1: Black-Scholes	$0.4341	n/a
Case 2: Simulation	$0.4344	$0.5608
Case 3: Simulation with jump	$0.7396	$0.9395
Case 4: Black-Scholes approximation of jump	$0.7394	$0.9404

In all the examples above, the calculations relied on the publicly traded stock price of $1 per share. In some cases, especially when the company needs to raise significant additional capital to survive, the company may issue convertible notes, preferred stock or warrants that represent a significant fraction of the company's fully-diluted shares. In such situations, using the public stock price to value these securities may imply unrealistic total enterprise values, and may imply that the day one value of the securities is higher than the price paid in the transaction. Given the emphasis in the accounting guidance on maximizing the use of observable inputs, accounting for these transactions can be challenging, and we recommend that clients and valuation specialists consult with the audit firm's fair value accounting and valuation resources prior to deciding on the valuation approach.

CONCLUDING REMARKS

To summarize, achievement of a successful IPO does not eliminate the need for valuation specialists, particularly for development stage companies. Complicated, non-standard financing structures, coupled with equally complicated GAAP/IFRS guidance, leads to the need for valuation techniques that satisfy accounting and auditing requirements, as well as valuation best practices.

Finally, we suggest that valuation specialists keep Einstein's Razor in mind when developing solutions to these needs — "make things as simple as possible, BUT NOT SIMPLER."

About the Authors

Amanda Miller, Ph.D., served as EY's representative to the AICPA "Cheap Stock" task force for the guide that was published in 2013, and is also co-chair of the AICPA PE/VC task force. In addition, she serves as EY's National Audit Assist Leader for the valuation practice, directing audit assist policy and procedures. Her projects focus on assisting clients in understanding fair value issues, and on valuing complex securities such as options, warrants, preferred & common stock, performance awards, convertible notes, debt and related embedded derivatives, loan portfolios and contingent considerations. She holds a Ph.D. and dual masters' degrees from Stanford University, and dual bachelors' degrees from the California Institute of Technology.

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5

AROUND THE WORLD IN EIGHTY VALUATIONS

A Research Study of Differences in the Approach to and Application of Business Valuation Theory and Methodology from Different Regions Around the World.[1]

by Prem M. Lobo, CPA, CA, CBV, CFE, CFF, CPA (Illinois)
by Matt Bottomley, CPA, CA, CBV, CFE[2]

"It's really useful to travel, if you want to see new things."
Jules Verne, Around the World in Eighty Days

"….there is a logic to everything on this earth and nothing is done without a reason…."
Jules Verne, The Adventures of Captain Hatteras

"No matter what people tell you, words and ideas can change the world."
Robin Williams, from Dead Poets Society

1.0 PROLOGUE

In Jules Verne's book *Around the World in Eighty Days*, the characters Phileas Fogg, an Englishman, and Passepartout, his French valet, set out from London by train, aiming to circumnavigate the globe in eighty days or less. Fogg had wagered £20,000 with his acquaintances at the Reform Club that this could be done. During the ensuing journey, Fogg and Passepartout encounter many adventures and obstacles, from rescuing a woman in India, to being chased by a detective who mistakes Fogg for a bank robber, to missing travel connections and having to improvise new plans. In the end, Fogg and Passepartout somehow make it back to London just in time, having gained a day because they travelled eastwards. Fogg wins his wager, but, more important, gains a wealth of knowledge about the world from his travels.

In the spring of 2014, two Canadian Chartered Business Valuators embarked on a similar journey of discovery. While perhaps not quite as eventful as Fogg's travels, our field research took us to Paris, New York, Montreal, and of course our home town of Toronto, while our office research touched on various countries around the world. Our objective was to identify and understand material differences that may exist in the approach to and application of business valuation theory and methodology around the world, and, if so, what some of these differences were, and the reasons for the same. Our objective was not motivated by a wager, but by a curiosity to explore differences in international valuations, so that Canadian CBVs, counsel, clients and adjudicators could perhaps better understand the reasons for differing approaches, positions and methodologies taken by business valuators from around the world. The results of our research are set out herein.

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1 Prepared for the 2014 Ian R. Campbell Research Initiative of The Canadian Institute of Chartered Business Valuators. The views expressed herein are those of the authors and do not necessarily reflect those of the Canadian Institute of Chartered Business Valuators.

2 Brief biographies of the authors are set out in Appendices B and C, respectively.

We certainly enjoyed conducting and synthesizing our research in support of the observations, recommendations and conclusions which follow. We hope the result adds to the canon of valuation knowledge in this very important area of international valuations, as we ourselves certainly gained a wealth of knowledge from this process.

2.0 INTRODUCTION

In recent years, we as Canadian CBVs and as an Institute have seen a trend towards the "internationalization" of business valuations. As Canadian businesses continue to expand internationally, there have been more cross-border purchase and sale transactions, mergers and acquisitions, corporate reorganizations as well as cross-border income tax disputes and other kinds of litigation involving Canadian entities, which often result in Canadian CBVs reading non-Canadian business valuation reports and having to work with, negotiate with or otherwise deal with non-Canadian business valuators. For example, international arbitrations (cross-border legal or trade disputes which are adjudicated in a "neutral" jurisdiction such as London, Geneva, Paris or Toronto) have proliferated, and valuators from different countries have been called as expert witnesses to assist the arbitrators in such cases.

In the course of our practice, we, the authors, have had the opportunity to review non-Canadian business valuation reports. We have occasionally noted that there are differences in the content of and manner in which the reports are set out, the professional standards that are required to be adhered to, the methodologies employed and the data used for valuation calculations. We were curious as to whether such differences were systemic, based on geography (which we refer to as "geo-professional differences" herein), or based on the facts and circumstances of each valuation context.

This research paper offers our observations as to the extent, if any, of systemic geo-professional differences in the approach to and application of business valuation theory and methodology around the world, and, if so, what some of these differences are, and the reasons for the same.

3.0 RESEARCH QUESTIONS AND RELEVANCE: DO GEO-PROFESSIONAL ORIGINS MATTER?

Stated in more detail, our research aimed to explore the following questions:

i. Are there geo-professional differences in the **approach to valuations** — i.e., in the valuation theory and standards employed by valuators? What are the relevant valuation standards that govern the preparation of valuation reports in different countries? How do these standards differ and how are they similar? What contribution do the standards make toward creating or reducing differences in the application of business valuation theory and methodology around the world?

ii. Are there geo-professional differences in the **application of business valuation theory and methodology**? If so, what are some of these differences? For instance, do business valuators from one country or economic region have different criteria or rationales to determine if a capitalized cash flow approach versus a discounted cash flow approach is more appropriate? Do valuators from one country or economic region tend towards using empirical research data when setting discount rates, or do they prefer to use more professional judgment? What level of detail do valuators from different countries or economic regions go into when preparing their valuations? Are there particular nuances as to how calculations are undertaken by valuators from different countries?

iii. To the extent identifiable, what are the **reasons** for any identified differences in the professional approach between jurisdictions? What are the implications of these differences (or lack thereof) to business valuators, the counsel and clients that retain them, and the adjudicators that hear their testimony?

3.1 Relevance

In our view, understanding geo-professional differences in the approach to and application of business valuation theory and methodology will be useful to Canadian CBVs who review non-Canadian valuation reports and negotiate with or otherwise deal with non-Canadian valuators. Understanding geo-professional differences will result in a greater appreciation of the context behind why a non-Canadian valuator may have selected a particular methodology over another seemingly plausible one, why professional judgment was exercised in a particular manner, why a particular level of detail was utilized or why a calculation was undertaken in a particular fashion. This will enable Canadian CBVs to potentially "bridge the geographic gap" between opposing valuation reports and potentially lead to more efficient purchase and sale transactions or more amicable or diplomatic interactions between valuators in litigation disputes.

Understanding geo-professional differences in business valuation would also be relevant to litigation counsel and clients that retain CBVs, as well as adjudicators (judges, arbitrators) who have to review valuation reports and hear valuation testimony. Understanding the geo-professional context behind the choice of approach and methodology used by a Canadian versus a non-Canadian valuator would help develop a better appreciation of the respective positions of the different valuators.

4.0 RESEARCH METHODOLOGY

In order to address our research questions, we focused on particular countries with significant economic ties to Canada (the "Identified Countries," as explained in Section 4.1 below). Our methodology incorporated the following elements:

i. With respect to the **approach to** valuations, we obtained, analyzed and compared the valuation standards governing the preparation of valuation reports in each of the Identified Countries.

ii. With respect to the **application of** business valuation theory and methodology, we:

   (a) Obtained, analyzed and compared valuation reports (where available) from these countries; and,

   (b) Conducted interviews with litigation counsel and adjudicators wherein we discussed, from their experiences, specific examples of differences (or lack thereof, as the case may be) in valuation reports from the Identified Countries.

iii. We summarized our findings based on the above procedures.

4.1 Identified Countries

In order to maximize the depth of our analysis, we chose to focus on a smaller rather than larger group of countries. We chose countries that had significant economic ties to Canada and which ranked in the top 10 of Canada's export partners. Due to language differences, we did not

include countries from Asia (we were able to obtain English valuations for all of the other countries). The countries we chose were as follows:[3]

Table 1

Country	$ CDN Exports in Millions (2013)	Rank in Terms of Value of Canadian Exports to Country (2013)
Canada	N/A	N/A
United States	358,535	1
United Kingdom	14,752	3
Germany	4,073	7
Netherlands	3,677	8
France	3,321	10

4.2 Methodology Notes

We focused our research on valuations of business interests and intellectual property as opposed to quantifications of financial loss. However, where a loss quantification included a valuation as part of the loss calculation, we included the report in our analysis.

We did not include equipment or real estate appraisals. While these sometimes have similar valuation methodologies to business interests and intellectual property, the valuation methodologies are sufficiently different as to warrant separate treatment and we therefore chose to exclude them.

The valuation reports we analyzed were prepared in various contexts, including the quantification of business value in domestic proceedings and international arbitration matters, tax purposes, purchase and sale transactions and matrimonial disputes.

Given our focus on geographical differences in the approach to and application of valuation theory and methodology, a number of the business valuation reports we analyzed involved international arbitration matters, and a number of the interviews we conducted involved international arbitration counsel and arbitrators.

5.0 SCOPE OF REVIEW AND ACKNOWLEDGMENTS

In preparing this paper, we have reviewed and relied upon the documents, information and interviews as set out in Appendix A.

In addition to the many individuals we interviewed in the course of preparing this paper, we are particularly grateful to the following individuals for their valuable insights, guidance and feedback with respect to our research:

i. Mr. H. Scott Fairley, Partner, WeirFoulds LLP, Toronto, Canada.

ii. Ms. Michelle Levac, Transfer Pricing Specialist, Canada Revenue Agency, Ottawa, Canada, Chair of the CICBV Research Committee and Member of the Board of Directors of The Canadian Institute of Chartered Business Valuators.

3 Source: Statistics Canada, Canadian International Merchandise Trade, 2004 to 2013. http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getInstanceList&SDDS=2201&InstaId=13843&SurvId=879.

iii. Ms. Mary Jane Andrews, Partner, Advisory Services, KPMG, Halifax, Canada, Chair of the Board of Directors of the International Institute of Chartered Business Valuers and past chair of the Board of Directors of the Canadian Institute of Chartered Business Valuators.

iv. Mr. Michael Badham, Executive Director, International Institute of Business Valuers, Toronto, Canada.

v. Ms. Jutta Menninger, Head of Taxes, Brose Group, Munich, Germany.

vi. Mr. Andrew Pike, Managing Director, AN Valuations, Leiden, The Netherlands.

6.0 SUMMARY OF SIGNIFICANT FINDINGS

With respect to the reports and standards we reviewed and the interviews we conducted, and pursuant to our research methodology, scope of review, caveats and limitations as set out herein, our significant research findings are as follows:

Table 2

Summary of Significant Findings	
i)	There are geo-professional differences in the approach to and application of business valuation theory and methodology from around the world.
ii)	There do not appear to be significant differences with respect to the structure of valuation reports and the choice of methodologies used.
iii)	Differences do exist with respect to the level of detail employed in valuation reports, the degree to which key assumptions and scope limitations are explicitly disclosed, and whether conclusions are arrived at by averaging various methods or using one method, among other differences as set out herein.
iv)	U.S. valuation standards tend to be more detailed, technical and prescriptive as compared to CBV Standards and IVS, which allow for greater application of professional judgment on the part of the valuator.
v)	U.S. valuation reports appear to make more reference to empirical market data and finance theory (such as CAPM), tend to contain more calculation details and tend to be lengthier than Canadian and European valuation reports.
vi)	In terms of disclosure of assumptions, independence and limitations, Canadian and U.S. valuation reports tend to have more robust disclosures.
vii)	Notwithstanding geographic similarities and differences in valuation reports, and notwithstanding the level of detail used, it is ultimately the reasonableness of valuation conclusions in the context of commercial reality that leads to whether a valuation is seen as credible by the various users of valuation reports such as clients and adjudicators.

Table 3

Recommendations

i) Given the disparity in level of detail between Canadian, U.S. and other identified country valuations, perhaps it might be useful to harmonize those standards that are more prescriptive with those that are less so. Written guidance from the relevant valuation organizations would be helpful in order to initiate the harmonization process.

ii) Guidance from the IVSC or enhancements to IVS with respect to required disclosures and professional and ethical responsibilities of valuators would be beneficial to reduce differences in this area between Canadian/U.S. and European valuation reports.

iii) Given comments from adjudicators that the spirit of independence is not always being adhered to in valuation reports, additional standards addressing ethics and the independence of valuators, with specific guidance and examples, would be most beneficial with respect to all valuation standards, and particularly with respect to IVS.

iv) Currently, there is no consensus with respect to one uniform set of valuation standards to be used on an international basis in the valuation of business interests and intellectual property. Establishing some consensus in this regard would be most beneficial to enhance consistency, transparency and understandability in valuation reports, irrespective of geography.

7.0 ANALYSIS OF DIFFERENCES IN THE APPROACH TO VALUATIONS — VALUATION STANDARDS

7.1 Overview

In order to identify and understand any geographic differences in the approach to valuations, we obtained, analyzed and compared the valuation standards governing the preparation of valuation reports in each of the Identified Countries.

Based on our research, the following valuation standards are primarily used in each of the Identified Countries with respect to the valuation of business interests:

Table 4

Country	Valuation Standards for Business Interests
Canada	Valuation standards of The Canadian Institute of Chartered Business Valuators ("CICBV" and "CBV Standards")
United States	Business Valuation Standards of the American Society of Appraisers ("ASA" and "ASA Standards")

Country	Valuation Standards for Business Interests
United States (cont'd)	Professional Standards of the National Association of Certified Valuation Analysts ("NACVA" and "NACVA Standards") Statement on Standards for Valuation Services of the American Institute of Certified Public Accountants ("AICPA" and "SSVS") Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation ("AF" and "USPAP")
United Kingdom	International Valuation Standards of the International Valuation Standards Council ("IVSC" and "IVS")
Netherlands	IVS
Germany	IVS Principles for the Performance of Business Valuations of the Institut Der Wirtschaftsprufer ("IDW" and "IDW S 1")
France	IVS

As our research focuses on the valuation of businesses or business interests, we did not analyze valuation standards relating to financial reporting. For instance, United States Generally Accepted Accounting Principles ("US GAAP") and International Financial Reporting Standards ("IFRS") have very detailed standards and requirements on when to calculate the fair value of investments and financial instruments, the allocation of fair value upon the purchase and consolidation of a business and goodwill impairment testing. However, these standards focus on consistency and clarity of financial statement information, and not the valuation of business interests. Therefore, we do not further address US GAAP and IFRS herein.

In order to identify differences and similarities between the different sets of business valuation standards, we will first briefly summarize each of the standards set out in Table 4 above.

7.2 Canada — The Canadian Institute of Chartered Business Valuators and CBV Standards

Founded in 1971, The Canadian Institute of Chartered Business Valuators (CICBV) is nationally and internationally recognized as the pre-eminent business valuation organization in Canada. The CICBV establishes practice standards, educational requirements and ethical guidelines which support and promote the integrity of the CBV profession for the benefit of the public. The CICBV promulgates various practice standards as well as practice bulletins. CBV Practice Standards relate to the following areas:

i. Valuation Reports

ii. Advisory Reports

iii. Expert Reports

iv. Limited Critique Reports

v. Fairness Opinions

vi. Investment Entity Review Reports

The CICBV also promulgates a Code of Ethics governing the overall conduct of its members.

We focused our analysis on Standards 110, 120 and 130 which deal with valuation reports. A summary of these standards is as follows:

Table 5

I: Standards No. 110, 120 and 130 of the Canadian Institute of Chartered Business Valuators (Valuation Reports)	
i) Overview	
Number of pages	10 pages (excluding glossary of terms)
ii) Standard 110	Report Disclosure Standards and Recommendations
Types of Valuation Reports	Comprehensive Valuation, Estimate Valuation, Calculation Valuation (Standard 110 provides a brief definition of each)
Report Structure	Report introduction (to whom the report is being provided, valuation date, purpose etc.) Definitions of value Report scope of review Description of valuation approach and methods used Description of valuation calculations, summary of relevant financial information etc. Restrictions and qualifications Conclusion of value
iii) Standard 120	Scope of Work Standards and Recommendations
General Standards	Valuation should be performed by people having adequate technical training and proficiency, gather sufficient appropriate valuation evidence, disclose any qualifications and limitations
Specific Standards	Sufficient understanding of the subject of the valuation and relevant financial statements Brief mention of need to consider key valuation components and assumptions Brief explanation of normalization adjustments, capitalization rates, reliance on 3rd parties Brief mention of key valuation components and assumptions
iv) Standard 130	File Documentation Standards
	Working papers should be maintained; valuation work to be documented Include all working papers necessary to understand valuation assumptions

7.3 U.S. — American Society of Appraisers ("ASA") and ASA Standards

National Association of Certified Valuation Analysts ("NACVA") and NACVA Standards

American Institute of Certified Public Accountants ("AICPA") and Standards for Valuation Services ("SSVS")

The United States has the distinction of having at least three organizations that promulgate valuation standards; the ASA, NACVA and AICPA, as well as one organization, the Appraisal Foundation ("AF"), that sets quality control standards that valuators have to follow in a variety of circumstances (known as Universal Standards of Professional Appraisal Practice "USPAP").

The American Society of Appraisers is an organization of professional appraisers representing all appraisal disciplines: Appraisal Review and Management, Business Valuation, Gems and Jewelry, Machinery and Technical Specialties, Personal Property and Real Property.[4]

The ASA also promulgates the "Principles of Appraisal Practice and Code of Ethics" which provide guidance with respect to the independence, ethical and competence requirements of its members.

The ASA's business valuation standards are summarized as follows:

Table 6

IIa: Business Valuation Standards of the American Society of Appraisers (with summary descriptions of selected standards)	
i) Overview	
Number of pages	39 pages (excluding glossary of terms)
ii) BS-I	General Requirements for Developing a Business Valuation
Introduction	Report introduction (to whom the report is being provided, valuation date, purpose etc.)
Types of Valuation Reports	Appraisal, Limited Appraisal, Calculation (BS-I provides a brief explanation of each)
	Overall commentary on collecting sufficient, relevant information for the valuation, using appropriate valuation methods and procedures, documentation and reporting
iii) BS-II	Financial Statement Adjustments
iv) BS-III	Asset-Based Approach to Business Valuation
v) BS-IV	Income Approach to Business Valuation
vi) BS-V	Market Approach to Business Valuation
	Commentary on the relevance of financial statement adjustments and when to use the asset, income and market approaches
vii) BS-VI	Reaching a Conclusion of Value
	Discussion of using a weighted average of various methods and use of informed judgment to determine the relative weights to apply to each method
viii) BS-VII	Valuation Discounts and Premiums

4 http://www.appraisers.org/About

IIa: Business Valuation Standards of the American Society of Appraisers - Continued (with summary descriptions of selected standards)	
ix) BS-VIII	Comprehensive Written Business Valuation Report
	Disclosures regarding independence and reliance on data supplied by others
	Definition of the valuation assignment
	Business description including discussion of management, competition, history and major assets
	Analysis and discussion of financial statements and adjustments
	Discussion of valuation methodology and reasons for selection of methodology
x) BS-IX	Intangible Asset Valuation
xi) SBVS-1	Guideline Public Company Method
xii) SBVS-2	Guideline Transaction Method
xiii) AO-1	Financial Consultation and Advisory Services
xiv) PG-1	Litigation Support: Role of the Independent Financial Expert
xv) PG-2	Valuation of Partial Ownership Interests

NACVA is a U.S.-based organization focused on training and certifying financial professionals in the disciplines of business and intangible asset valuation, financial forensics including damages quantifications, and fraud detection and prevention.[5] NACVA's business valuation standards are summarized as follows:

Table 7

IIb: Professional Standards of the National Association of Certified Valuation Analysts (summary only)	
Number of pages	10 pages (excluding glossary of terms)
Overview	Sets out ethical standards and professional standards for members to adhere to
	Discusses two types of report - valuation engagement and calculation engagement
	High level overview of items to consider in arriving at a valuation conclusion
	High level overview of items to include with respect to report structure and disclosures

The AICPA created a set of valuation standards (as well as the specialist designation Accredited in Business Valuation, "ABV") in response to the increasing number of AICPA members involved in performing business valuation engagements, with the intent to improve the consistency and quality in the practice of such engagements. The AICPA's business valuation standards are summarized as follows:

5 http://www.nacva.com/

Table 8

IIc: Statement on Standards for Valuation Services of the American Institute of Certified Public Accountants (summary only)	
Number of pages	63 pages (excluding glossary of terms)
Overview	Sets out overall engagement considerations relating to independence, ethical standards and professional standards for members to adhere to Discusses two types of report - valuation engagement and calculation engagement Detailed discussion of items to consider in arriving at a valuation conclusion including valuation methodologies, valuation adjustments, financial and non-financial information to consider, setting out valuation assumptions and documentation of analyses undertaken Detailed discussion of items to include in a written valuation report, including report structure, sources of information, valuation methodologies selected and reasoning, representations of the valuator and representations with respect to information used

In addition to the ASA, NACVA and AICPA, the AF is authorized by the U.S. Congress to set the Uniform Standards of Professional Appraisal Practice, or USPAP, which represents the quality control standards applicable for real property, personal property, intangibles, and business valuation appraisal analysis and reports in the United States and its territories.

USPAP was first developed in the 1980s by a joint committee representing the major U.S. appraisal organizations. The AF was formed by these same groups, along with support and input from major industry and educational groups, and took over administration of USPAP.

USPAP provides a minimum set of quality control standards for the conduct of appraisals in the United States. USPAP requires that appraisers be familiar with and correctly utilize those methods which would be acceptable to other appraisers familiar with the assignment at hand and acceptable to the intended users of the appraisal.

USPAP consist of 10 Standards which cover the development and reporting of valuations, as well as Statements regarding specific practices in appraisal, and Advisory Opinions which are advisory rather than binding.

7.4 Germany — Institut Der Wirthschaftsprufer ("IDW") and IDW S 1

The IDW is a privately-run organization established to serve the interests of its members, which comprise both individual public auditors as well as public audit firms. The IDW was established on a voluntary basis as opposed to statute.

The IDW promulgates the "Principles for the Performance of Business Valuations," or IDW S 1.[6] This standard sets out the principles to be applied by German public auditors when carrying out business valuations. The standard describes the significant general principles to be applied. However, IDW S 1 indicates that "each valuation needs to be addressed individually. To this extent, the principles can only form a framework within which individual solutions must be determined for specific cases."[7]

The IDW's business valuation standard (IDW S 1) is summarized as follows:

6 The IDW also promulgates standard IDW S 5, which relates to the valuation of intangible assets.
7 IDW S 1, Section 1, Par. 1.

Table 9

III: IDW S 1 of the Institut Der Wirthschaftsprufer (summary only)	
Number of pages	36 pages (English translation as at December 2, 2008)
Overview	Sets out overall principles to be applied by German public auditors when carrying out business valuations Provides an overview of business valuation principles Discusses analysis of cash flows and projection of future cash flows Discusses basic principles of capitalization of future cash flows and application of dividend discount and DCF methods Overall guidelines with respect to setting a discount rate and using the WACC method Brief overview of documentation and reporting requirements

7.5 The Netherlands — Nederlands Instituut voor Register Valuators ("NIRV")

We understand that the NIRV is an organization that promulgates valuation standards in the Netherlands. However, through our research and discussions, we also understand that membership in the NIRV is not extensive, and the NIRV standards are not currently widely adopted in practice. Valuations in the Netherlands tend to be prepared pursuant to some of the other widely accepted valuation standards discussed herein (particularly IVS as further described in Section 7.6 below).

7.6 U.K., Germany, Netherlands and France — International Valuation Standards Council ("IVSC") and International Valuation Standards ("IVS")

The IVSC is an independent, private sector organization which was created following discussions between the U.K. and U.S. valuation professions in the late 1970s. Its operational headquarters are in London. The organization is mainly funded through membership subscriptions and sponsorship by valuation professional bodies, valuation providers and valuation users. The IVSC currently has 74 member bodies from 54 countries.[8]

The organization has three main bodies:

i. a Board of Trustees responsible for the strategic direction and funding of the IVSC and for appointments to the Standards Board and Professional Board;

ii. a Standards Board with autonomy over its agenda and the creation and revision of valuation standards and supporting technical guidance; and,

iii. a Professional Board to promote the development of the profession around the world.

The main objectives of the IVSC are to:

i. Develop high quality international standards and support their adoption and use;

8 http://www.ivsc.org/content/about-international-valuation-standards-council-ivsc

ii. Facilitate collaboration and cooperation among its member organizations;

iii. Collaborate and cooperate with other international organizations; and,

iv. Serve as the international voice for the valuation profession.

The IVSC publishes International Valuation Standards ("IVS") which are reviewed and revised periodically.

At this time, the IVS has not been universally adopted in all countries (for instance, in Canada and the U.S., although efforts are underway). Some countries have adopted IVS as national standards (e.g. Australia, New Zealand, Romania, South Africa, Turkey). Other countries have adopted IVS as national standards with amendments to meet requirements of national legislation. Meanwhile, professional organizations have associated with the IVS, such as the Appraisal Institute of Canada, the Royal Institution of Chartered Surveyors ("RICS") and the ASA (for non-U.S. reports). Ongoing IVS adoption efforts continue.[9]

The IVS are summarized as follows:

Table 10

IV: International Valuation Standards of the International Valuation Standards Committee (with summary descriptions of selected standards)	
i) Overview	
Number of pages	32 pages (including IVS Framework and IVS 101 to 201, excluding asset valuation standards and standards IVS 220 to 310, excluding explanatory comments and guidance)
Structure of IVS	IVS Definitions IVS Framework - sets out generally accepted valuation principles and concepts for applying all other standards IVS General Standards - 3 general standards set forth requirements for all valuation engagements IVS Asset Standards - 6 asset standards set forth any additions to the general standards IVS Valuation Applications - address common purposes for which valuations are required and any additions to the general and asset standards for those purposes Technical Information Papers - support the application of requirements in other standards. Includes TIPs on DCF, cost approach for intangible assets and valuation of intangible assets
ii) IVS Framework	Commentary on objectivity, competence of valuators, basis of value, definition of market value, overview of valuation approaches and valuation inputs
iii) IVS 101	Scope of Work
iv) IVS 102	Implementation
v) IVS 103	Reporting Disclosure of assumptions, restrictions, valuation methodologies and rationale, purpose of valuation, extent of investigation and nature and source of information provided

9 "IVSC: Its Role, Today's Standards Setting Environment and Current Projects." Presentation by Steve Sherman and Tom Boyle of the IVSC, July 25, 2013.

IV: International Valuation Standards of the International Valuation Standards Committee - Continued	
vi) IVS 200	Brief commentary on additional scope of work and implementation criteria for valuing business interests
vii) IVS 210	Brief commentary on additional scope of work for valuing intangible assets

7.7 Analysis and Commentary

We reviewed and analyzed all of the standards set out above in order to identify any significant differences and similarities among them. Our observations are as follows:

i. All of the reporting standards generally set out the same or similar structure for valuation reports. For instance, all of the standards require a report introduction, definitions of value, descriptions of valuation approach, restrictions and qualifications and so on. We note that the German IDW S 1 standard is less detailed than the other standards in this regard.

ii. Most of the standards generally set out similar scope of work requirements. For instance, all of the standards require that valuation work be properly supervised, performed by people with adequate technical training and proficiency, that sufficient and appropriate valuation data be gathered and the extent of work undertaken and any limitations be disclosed. IDW S 1 does not include scope of work requirements.

iii. With respect to ethical and professional standards, U.S. valuation standards tend to discuss the independence, ethical responsibilities and objectivity of valuators in more depth. CBV Standards themselves do not discuss independence in depth, but the CBV Code of Ethics does cover the ethical responsibilities of a valuator. The IVSC has the "Code of Ethical Principles for Professional Valuers" as well as the "Competency Framework for Professional Valuers," dealing with the expected competence and ethical considerations of professional valuators.

iv. When compared to CBV Standards, IDW S1 and IVS, U.S. valuation standards overall are distinctively lengthier, more prescriptive, and set out the required elements of valuation reports in more detail. CBV Standards, IDW S1 and IVS, for instance, tend to outline the potential valuation methodologies that can be used in broad terms, whereas there are individual ASA Standards for each of the asset, income, and market approaches (BS-III, IV and V, respectively), as well as additional standards that discuss the guideline public company and guideline transaction approaches (SBVS-1 and 2, respectively). Similarly the SSVS contains a fairly detailed discussion of items to include in a written valuation report as well as an illustrative list of assumptions and limiting conditions for a business valuation.

v. Following from the above, CBV Standards, IDW S 1 and IVS set out overall valuation principles and frameworks, allowing for a greater exercise of prudent professional judgment by business valuators in terms of the selection of valuation methods that best meet the needs of particular valuation contexts, how to disclose items such as assumptions and scope limitations and how to arrive at and express a conclusion of value. We noted from

our interviews with counsel and arbitrators (discussed in Section 9 below) that, often, the ability to exercise prudent professional judgment rather than strictly follow technical rules is seen as a positive attribute, as it results in valuation conclusions that are relevant and make sense given commercial reality.

vi. Canadian and U.S. standards explicitly define different types of valuation reports, representing different levels of analysis. CBV Standards define three report levels: comprehensive, estimate and calculation valuations, which are closely mirrored by the ASA's appraisal, limited appraisal and calculation valuation report definitions. Meanwhile, NACVA Standards and SSVS both define and discuss two report levels: valuation and calculation engagements. Based on our review, IVS and IDW S 1 do not set out explicit definitions of different types of valuation reports. The IVS does mention a "valuation review" engagement where the reviewer is not expected to provide their own opinion of value, but no other types of reports are referred to.

vii. With respect to arriving at valuation conclusions, ASA Standard BS-VI suggests that more than one valuation method be employed, with a weighted average of the methods being used to arrive at a conclusion of value. None of the other valuation standards suggest or recommend that more than one valuation approach be used and that a weighted average be calculated. At the same time, none of the other valuation standards preclude this either.

viii. All things considered, we found Canadian valuation reporting standards to be robust yet concise in their requirements, clearly laid out and easy to understand and flexible in allowing for the exercise of professional judgment, as opposed to requiring adherence to specific rules. By comparison, U.S. valuation standards were far more detailed and prescriptive. Meanwhile, IVS appeared to be concise, yet somewhat more difficult to follow, as the same IVS Framework and General Standards are generic and meant to apply to the valuation of business interests as well as other asset classes. Moreover, certain areas of the IVS, such as recommendations with respect to independence and objectivity, were less detailed than their Canadian and U.S. counterparts.

7.8 Conclusion — Differences in the Approach to Valuations

Having reviewed and analyzed the various valuation standards used in the Identified Countries, it would appear that:

i. There are no significant differences between valuation standards in terms of the basic structure and disclosure requirements of valuation reports. However, some standards provide more detailed guidance than others in this regard.

ii. Differences exist in the level of detail required by the various standards, with U.S. valuation standards tending to be more detailed and prescriptive than CBV Standards, IDW S 1 and IVS, and with respect to how conclusions are to be determined (using a single methodology versus using a weighted average of more than one methodology), among other differences.

iii. CBV Standards, IDW S 1 and IVS allow for greater application of prudent professional judgment on the part of the valuator. As we will see shortly below, our review of Canadian and European valuation reports reflected a difference between the application of professional judgment between reports.

8.0 ANALYSIS OF DIFFERENCES IN THE APPLICATION OF VALUATION THEORY AND METHODOLOGY — REVIEW OF VALUATION REPORTS

8.1 Obtaining Valuation Reports

In order to analyze geo-professional differences with respect to the application of business valuation theory and methodology, we obtained, analyzed and compared valuation reports (where available) from the Identified Countries which were prepared in the past 10 years (2005 to 2014, inclusive).

We encountered considerable difficulties in obtaining valuation reports to analyze and compare. Due to the confidentiality of information contained therein, most practitioners and counsel were understandably reluctant to provide us with valuation reports. Nevertheless, we were able to, upon providing confidentiality undertakings and/or obtaining client permissions, view various valuation reports at the premises of counsel. The valuation reports we analyzed were as follows:

Table 11

Country	Number of Valuation Reports
Canada	17
United States	9
United Kingdom	7
Netherlands	2
Germany	4
France	6
Total	45

We appreciate that analyzing the above number of reports may not represent a statistically valid sample. Our observations may not be reflective of all valuation reports from the Identified Countries for all valuation contexts. However, they do provide a useful basis from which to draw observations and inferences. Many of our observations and inferences were corroborated in our interviews with legal counsel and arbitrators as set out in Section 9 below.

8.2 Caveats

Our observations from our review of valuation reports are set out below. We have summarized our individual observations into “consensus” observations. With respect to this, we caution that:

i. In summarizing “consensus” observations, some of the variability and differences between individual valuation reports from a particular country are inevitably lost. Nevertheless, we tried to capture the overall factual characteristics of valuation reports from each identified country as accurately as possible.

ii. Given the difficulties in obtaining valuation reports to analyze and compare, the observations set out below represent our factual findings from the valuation reports we did obtain and analyze and, as such, reflect the facts and contexts for which the valuations were prepared.

iii. We did not summarize all differences and similarities into the tables below, but chose ones that, in our view, were more significant and representative of the overall population reviewed. Other differences and similarities may exist.

8.3 Structure of Valuation Reports

We first analyzed and compared valuation reports for their structure — i.e., whether they contained an introduction section, scope of review, scope limitations, the extent to which disclosures and contextual discussions were present, etc. We noted the following:

Table 12

	Canada	U.S.	U.K.	Netherlands/ Germany	France
I: Structure of Valuation Report					
Report introduction					
States to whom the valuation report is being provided	Yes	Yes	Yes	Yes	Yes
Description of shares or assets being valued	Yes	Yes	Yes	Yes	Yes
Effective date of valuation	Yes	Yes	Yes	Yes	Yes
Type of report or extent of due diligence	Yes Comprehensive, estimate or calculation of value	Yes Appraisal, limited appraisal or calculation	Not explicitly stated	Not explicitly stated	Not explicitly stated
Statement of independence	Comparatively detailed	Comparatively detailed	Comparatively less detailed	Brief/not included	Brief/not included
Definition of value (fair market value etc.)	Yes	Yes	Yes	Yes	Yes
Scope of review					
Scope of review included	Yes	Yes	Yes	Yes	Yes
Any scope limitations disclosed	Often	Sometimes	Often	Sometimes	Sometimes
Restrictions and qualifications	Yes	Yes	Yes	Yes	Yes Comparatively brief

	Canada	U.S.	U.K.	Netherlands/ Germany	France
Disclosure of significant assumptions	Yes - explicitly listed	Yes - explicitly listed	Included in report body	Included in report body	Included in report body
Background facts	Concise	Detailed	Detailed	Concise	Concise
Overview of valuation methodologies	Yes	Yes	Yes	Yes	Yes
Discussion of appropriate methodology	Comparatively detailed	Comparatively detailed	Comparatively less detailed	Comparatively less detailed	Comparatively less detailed

Commentary:

Our commentary with respect to the above observations is as follows:

i. Valuation reports from the Identified Countries all have reasonably similar structures. Most valuation reports seem to include the same key structural elements, albeit in different order.

ii. For the most part, only the Canadian and U.S. valuation reports explicitly defined the type of report or extent of due diligence undertaken. Canadian valuation reports specified whether the valuation was a comprehensive, estimate or calculation valuation report. U.S. valuation reports also had similar terminology (appraisal, limited appraisal, calculation). While the extent of analysis was described in the text of the valuation reports from the other Identified Countries, this tended to not be explicitly stated up front and sometimes was only included in peripheral comments made in various sections of the report. Stating this up front would, in our view, be helpful to the reader.

iii. Canadian, U.S. and U.K. valuation reports tended to have more robust disclosures with respect to independence of the expert, whereas reports from the other Identified Countries had either brief or, in some cases, no such disclosure. Given the focus on independence of experts in recent years in Canada, the U.S. and the international stage, explicit and uniform disclosures about independence would add to the credibility of valuation reports.

iv. With respect to scope limitations, it appears that the Canadian and U.K. valuation reports tended to disclose scope limitations more often than the reports from the other Identified Countries. This is likely a result of the valuation contexts themselves and a result of Canadian valuation standards and IVS being more prescriptive in terms of outlining exactly what information was not available, versus information that was available and relied on.

v. With respect to disclosure of significant assumptions, while all valuation reports set out assumptions in the text of the report, Canadian and U.S. valuation reports explicitly set out the significant assumptions in a separate section or appendix. We found this helpful in terms of understanding the key facts and assumptions underpinning each valuation.

vi. The U.S. and U.K. valuation reports we reviewed had rather extensive background sections, which included commentary on the subject company or asset being valued, the industry, economy, competitive companies and demographic trends. In our view, we found that the U.S. valuation reports included background information that some users may find too detailed or not completely relevant to the valuation exercise being undertaken.

8.4 Valuation Methodology

We analyzed and compared valuation reports for the valuation methodology employed — i.e., whether there was a tendency towards a particular valuation method, whether valuation discounts or premiums were applied, the level of detail delved into and the extent to which empirical market data were referred to in order to calculate risk premiums and other valuation inputs.

As part of our general summary below, we took into consideration the context of each valuation report and excluded situations with particular circumstances/contexts that might distort our overall observations.

We noted the following:

Table 13

	Canada	U.S.	U.K.	Netherlands/ Germany	France
II: Valuation Methodology					
Normalization adjustments to forecasted cash flows	Yes - Various adjustments	Yes - Various adjustments	Yes - Various adjustments	Yes - Comparatively fewer adjustments	Yes - Comparatively fewer adjustments
Level of detail used to calculate normalization adjustments	Comparatively less detailed	Detailed	Comparatively less detailed	Comparatively less detailed	Comparatively less detailed
Tendency towards use of a particular valuation method (market comparables; discounted cash flow; capitalized cash flow; adjusted net realizable value etc)?	No particular tendency noted	No particular tendency noted; see below	No particular tendency noted; see below	No particular tendency noted	No particular tendency noted
Conclusions based on one primary valuation method or average of two or more methods?	One primary method. Secondary method used to corroborate	Use of two or three methods, with conclusion based on weighted average of methods	Use of two or three methods, with conclusion based on weighted average of methods	One primary method	One primary method

	Canada	U.S.	U.K.	Netherlands/ Germany	France
II: Valuation Methodology - Continued					
Determination of discount rate/capitalization multiple					
Tendency to use Capital Asset Pricing Model (CAPM) or build up method to obtain cost of equity	Both build up and CAPM	CAPM	CAPM	Both build up and CAPM	Both build up and CAPM
Extent of use of empirical market data for risk premiums	Considerable - Use of market research studies to establish some risk premiums	Extensive - Numerous market research studies referred to establish risk premiums	Considerable - Use of market research studies to establish some risk premiums	Some use of market research studies.	Some use of market research studies.
Use of finance models other than CAPM or build up to establish cost of equity	No	Yes	No	No	No
Discounts					
Control premium or minority discount applied	Yes - Minority discount	Yes - Either applied, where relevant	Yes - Either applied, where relevant	Yes - Minority discount	Yes - Minority discount
Use of empirical market data for minority discount	No - Qualitative criteria	Yes - Frequently	Yes - Sometimes	No - Qualitative criteria	No - Qualitative criteria
Discount for lack of marketability	Yes - Often included with minority discount	Yes	Yes - Often included with minority discount	No	No
Use of empirical market data for marketability discount	No - Qualitative criteria	Yes - Frequently	Yes - Sometimes	No - Qualitative criteria	No - Qualitative criteria

Commentary

Our commentary with respect to the above observations is as follows:

i. We noted a difference in how valuation methodologies were employed in the valuation reports from the Identified Countries. Such differences did not relate to a tendency towards a particular valuation method (discounted versus capitalized cash flow, for instance) but, rather, in the level of detail undertaken and extent to which empirical market data was examined to arrive at inputs such as risk premiums used in valuation calculations.

ii. Overall, we noted that the U.S. valuation reports tended to be considerably more detailed with respect to consulting empirical market data to arrive at risk premiums, minority and marketability discounts and normalization adjustments. The Canadian and U.K. valuation reports tended to rely slightly less on empirical market data, and even less so by the valuation reports from the remaining Identified Countries.

iii. Valuation reports from the U.S. and U.K. tended to rely on the Capital Asset Pricing Model ("CAPM") to establish the cost of equity used in valuation calculations. Reports from Canada and the other Identified Countries used either CAPM or a risk adjusted build-up method.

iv. With respect to estimating the appropriate equity risk premium, beta, size premium and company specific premium, the U.S. valuation reports tended to examine a considerably greater set of empirical market studies, and employed a considerably more detailed calculation regime than any of the valuation reports from the other Identified Countries. Notwithstanding this, we found that, in the U.S. valuation reports, the discussions of which market studies were examined and which data was considered was somewhat hard to follow due to the level of detail set out.

v. We noted a tendency, in the Canadian valuation reports, to use one discount percentage to reflect both minority interest and marketability issues, and, where a controlling interest was valued, we noted no instances of a control premium being applied. In contrast, in the U.S. valuation reports, we noted that minority and marketability discounts were applied separately, and control premiums for controlling interest were often considered and applied, likely due to the higher frequency of the CAPM approach being utilized.

vi. With respect to valuation methodologies, the Canadian valuation reports tended to consider various methods and then select one primary method for valuation calculations. A secondary method might then be used to test the reasonableness of the primary method. With respect to the U.S. and U.K. valuations, we noted a tendency to use two or more valuation methods to arrive at value figures, and then a weighted average of the methods would be undertaken to arrive at a valuation conclusion. Valuation reports from the other Identified Countries tended to use one primary valuation method.

vii. Where a weighted average was used, in some cases we questioned the appropriateness of using two or more methods, as it seemed that some of the methods used may not have been appropriate for the specific company being valued. For instance, it may not make sense to use an adjusted net realizable value method to value a company that is clearly a going concern with positive future cash flow, and to include this method as part of a weighted average calculation that also includes a discounted cash flow and capitalized cash flow valuation.

8.5 Reconciliation of Valuation Conclusions/Reasonableness Check

Table 14

	Canada	U.S.	U.K.	Netherlands/ Germany	France
III: Reconciliation of Valuation Conclusions/Reasonableness Check					
Use of other valuation methodologies as a reasonableness check	Yes - Always	Yes - Done as part of the weighted average of different valuation methods	Yes - Always	Yes - Always	Yes - Occasionally/ Briefly
Calculation of tangible asset backing and assessment of reasonableness of implied goodwill	Yes - Always	No	No	No	No
Consideration of prior valuations or purchase offers, or other value indicators	Yes	No	No	No	No

Commentary

Our commentary with respect to the above observations is as follows:

i. The majority of valuation reports we reviewed employed some measure of a reasonableness check of valuation conclusions, usually involving the use of a secondary valuation method to corroborate a primary method's conclusions.

ii. The calculation of tangible asset backing, calculation of implied goodwill and assessment of reasonableness of the implied goodwill figure tended to be prevalent in Canadian valuation reports but not in U.S., U.K. or other valuation reports.

iii. While the U.S. valuation reports tended to focus on empirical market data and detailed analyses of items such as normalization adjustments, the reports we examined did not appear to consider past valuations or prior purchase offers as another check of valuation conclusions. This was also the case with valuation reports from other Identified Countries. Many of the Canadian valuation reports we examined did, to varying degrees, consider prior valuations and purchase offers, when applicable. We note, however, that the above observation may be a result of contextual differences among the various valuation reports examined.

8.6 Overall Observations with Respect to Valuation Reports Reviewed

Table 15

	Canada	U.S.	U.K.	Netherlands/ Germany	France
IV: Overall Observations with Respect to Valuation Reports Reviewed					
Clarity of valuation conclusions	Clear	Clear - Extra details due to weighted average of different valuation methods	Clear - Extra details due to weighted average of different valuation methods	Clear	Clear
Succinctness of valuation report	Usually succinct	Usually voluminous	Usually voluminous	Usually succinct	Succinct
Clarity of valuation calculations/ schedules	Clear and well organized	Clear - However, level of detail adds complexity	Clear and well organized	Reasonably clear	Reasonably clear

Commentary

Our commentary with respect to the above observations follows below. Note that these are broad overall observations.

i. With respect to the clarity of valuation conclusions, we found that the Canadian, Dutch, German and French valuation reports tended to provide comparatively more clear and concise conclusions. While conclusions in the U.S. and U.K. valuation reports were also clearly presented, the additional level of detail necessitated by undertaking a weighted average method added an extra level of detail which perhaps detracted from the clarity of the overall up front conclusion.

ii. We found the Canadian, Dutch, German and French valuation reports to be generally more succinct in their disclosure. Meanwhile, the U.S. and U.K. valuation reports we reviewed tended to be comparatively more lengthy. The US reports in particular tended to have additional appendices that set out market and economic data such as interest rates, support for risk premiums, economic forecasts and details on comparable companies. We found that in a number of U.S. valuation reports, the additional information included in the appendices was not directly utilized as part of the valuation calculations, but was included on more of an “FYI” basis.

iii. With respect to the clarity of valuation calculations and schedules, we found that all valuation reports presented valuation calculations in a reasonably clear and logical fashion. The level of detail contained in many of the U.S. valuation reports we reviewed added to the overall length and complexity of valuation schedules, making them somewhat more difficult to follow in some cases.

9.0 ANALYSIS OF DIFFERENCES IN THE APPLICATION OF VALUATION THEORY AND METHODOLOGY — INTERVIEWS WITH LITIGATION COUNSEL AND ARBITRATORS

9.1 Interviews

In order to further analyze geographic differences with respect to the application of business valuation theory and methodology, we conducted interviews with litigation counsel and arbitrators wherein we discussed, from their experiences, specific examples of differences (or lack thereof, as the case may be) in valuation reports from the Identified Countries.

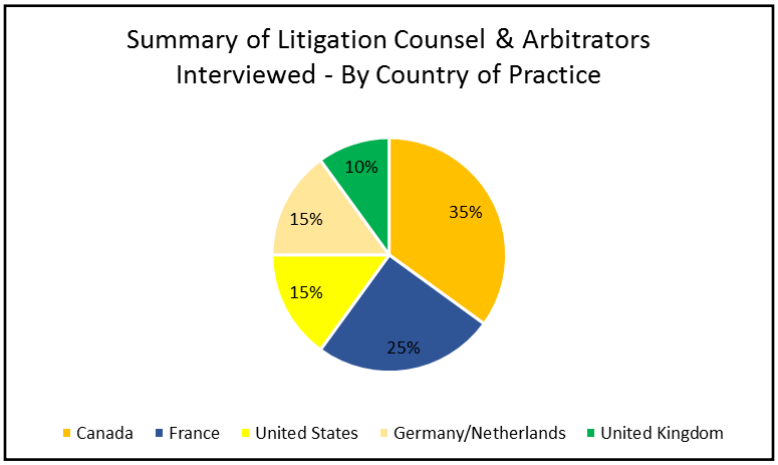
Many of our interviewees practise in the field of international arbitration, and, therefore, have had occasion to review valuation or loss reports or hear valuation or loss testimony from valuators of different countries. Interviews were conducted either in person in Paris, New York, Montreal, or Toronto, or via telephone call. Counsel and arbitrators shared their candid views on valuation reports with us on the condition that we would not disclose their identities or the facts of the cases they were describing. The number of litigation counsel and arbitrators we interviewed were as follows:

Table 16

Litigation Counsel	41
Arbitrators	14
Total	55

The geographic breakdown of these individuals based on their country of practice is summarized below:

Exhibit 1



We are extremely grateful to all the counsel and arbitrators who gave so generously of their time and insights in order to make this part of our research possible.

9.2 Caveat

Some counsel and arbitrators were able to review valuation reports from past cases they had been involved in before being interviewed by us. However, in most cases, past valuation reports were not readily available and, therefore, the majority of our interviewees relied upon their recollections of key aspects of valuation reports and valuation testimony. Recollections are not as strong as hard factual data, but they provide a useful insight into which particular differences between valuation reports made a greater impression on and remained in the minds of counsel and arbitrators.

The results of our interviews and our commentary with respect to them are set out below.

9.3 Structure of Valuation Reports

Table 17

I: Structure of Valuation Report	
Overall Comments	
	Valuation reports are generally well laid out, and generally summarize the mandate, conclusions and methodologies in a logical manner.
	Valuation reports that are concise yet which have undertaken adequate due diligence to support valuation calculations are preferred by arbitrators to those that are voluminous.
	Arbitrators prefer valuation reports that set out scope limitations and assumptions explicitly in the report rather that having to infer these from the body of the report.
Specific Comments	
	U.S. valuation reports tend to be larger in size and contain more detail. Some arbitrators indicate this somewhat detracts from the overall flow or understandability of the report.
	Canadian and U.S. valuation reports tend tohave more robust disclosures with respect to the independence of the valuator preparing the report than valuation reports from other countries.

Commentary

Our commentary with respect to the above observations is as follows:

i. It is interesting and generally consistent with our own analysis of valuation reports that counsel and arbitrators view valuation reports from the Identified Countries as having generally similar structures. The differences arise with respect to characteristics such as length and the extent of disclosure of such items as assumptions and scope limitations.

ii. U.S. valuation reports tend to be seen as larger in size and containing more detail relative to valuation reports from the other Identified Countries. Overall, arbitrators expressed a preference for more concise reports.

iii. Interestingly, while U.S. and Canadian reports were seen as having more robust disclosures with respect to independence, it was a recurring comment among arbitrators that valuators are not always in compliance with the spirit of independence. For instance, arbitrators indicate that in some cases, valuators make assumptions upon instructions from counsel when such assumptions are not within the qualifications of the valuator to prove or substantiate. In the eyes of arbitrators, this results in less credible valuation conclusions. In other cases, some of the legal counsel and arbitrators we interviewed felt that in some circumstances, valuators appear to have intentionally attempted to overstate or understate valuation conclusions.

iv. Counsel indicated that they were not always made aware of the specific independence standards or codes of ethics that were adhered to in the preparation of valuation reports, and that explicit disclosure of this would be particularly helpful.

This concern with respect to independence often manifests itself upon cross examinations of valuation experts at hearings and is not evident from the reports in and of themselves. In addition, this concern does not appear to restrict itself to valuation conclusions from any one of the Identified Countries, but is a general concern across geographical boundaries.

9.4 Valuation Methodology

Table 18

II: Valuation Methodology	
Overall Comments	
	There is no discernable pattern in terms of whether valuation reports from particular identified countries tend to use a certain valuation methodology (DCF vs CCF) over another. By and large, valuation reports appear to use whatever methodology makes sense in each specific valuation context.
	The level of detail and extent to which empirical market data is referred to in order to arrive at discount rates and other valuation inputs does not necessarily result in a more credible valuation conclusion. It is the competence of the valuator and the overall reasonableness of the conclusion that are more credible than technical details.
Specific Comments	
	U.S. valuation reports tend to have a greater reliance on finance theory in order to arrive at discount rates and other valuation inputs.
	French valuation reports sometimes do not fully explain the rationale behind selection of particular risk premiums or minority/marketability discounts.
	Canadian valuation reports tend to explain the selection of valuation methodology in a logical and concise manner.

Commentary

Our commentary with respect to the above observations is as follows:

i. There does not appear to be a geographic pattern in the use of one particular valuation methodology over another. Counsel and arbitrators perceived the valuators as utilizing the most appropriate methodology given the facts of each valuation context.

ii. It is also notable that the level of detail relied upon with respect to valuation inputs such as risk premiums does not automatically result in more credible valuations in the eyes of arbitrators. One arbitrator remarked upon how it was possible to take comfort in the technical aspects of market data and statistics, but to miss the commercial reality of what an appropriate value ought to be, or, in rare cases, to use technical analyses to intentionally calculate higher or lower valuation conclusions.

iii. A number of counsel remarked that French valuation reports sometimes did not provide sufficient discussion of valuation methodologies or the rationale behind the selection of particular valuation inputs. This is particularly the case in French civil court proceedings, when courts appoint their own valuation expert instead of having valuation reports advanced by valuators from the parties involved in a proceeding. In these situations, the perception is that, without the motivation of potential cross examination, the court appointed experts do not adequately explain the basis for their assumptions and calculations, but rely upon their experience and expertise to substantiate their valuation calculations.

iv. Overall, U.S. valuation reports are seen as relying more heavily on finance theory and empirical market data in order to arrive at discount rates and other valuation inputs.

9.5 Reconciliation of Valuation Conclusions/Reasonableness Check

Table 19

III: Reconciliation of Valuation Conclusions/Reasonableness Check	
Overall Comments	All valuation reports attempt some degree of reasonableness check of valuation conclusions. However, just because a reasonableness check is performed does not mean that the valuation conclusion is indeed reasonable in the eyes of the adjudicator. The valuation conclusion has to be consistent with commercial reality.
Specific Comments	Canadian and U.S. valuation reports tend to provide multiple data points to assist in the reconciliation/reasonableness of valuation conclusions relative to valuation reports from the other identified countries.

Commentary

Our commentary with respect to the above observations is as follows:

i. Consistent with comments we heard about adhering to independence in appearance but not in fact or spirit, we heard comments from arbitrators that while most valuation reports attempt reasonableness checks, this does not mean that the underlying conclusion is necessarily reasonable.

ii. Notwithstanding that, we found it encouraging that the arbitrators singled out Canadian and U.S. valuation reports as having more rigorous checks of reasonableness and having more data points to arrive at the reasonableness of conclusions than valuation reports from the other Identified Countries.

9.6 Overall Observations with Respect to Valuation Reports and Valuation Testimony

Table 20

IV: Overall Comments with Respect to Valuation Reports and Valuation Testimony	
Overall Comments	In the view of most counsel and arbitrators, there is no significant or material difference in the structure or methodology used in valuation reports from the identified countries. Differences arise in the level of detail that some valuation reports delve into in arriving at valuation conclusions. Factual details that take into account various legal scenarios are understood and appreciated by arbitrators. However, what is perceived as excessive detail in arriving at valuation inputs used in valuation calculations is seen as distracting, and does not result in a valuation conclusion being more credible relative to a valuation that is based on less empirical data but is prepared by a competent valuator who can explain the valuation in a professional and logical manner.
Specific Comments	When testifying in court/arbitrations, U.S. and Canadian valuators tend to be more flexible when asked about the impact on their valuation conclusions of using different or alternate assumptions than those used in their reports. Valuators from the other identified countries tend to have more difficulty in adopting alternate assumptions and assisting the court/ arbitration panel with how their conclusions would change if these assumptions were adopted and used. Canadian and U.K. valuation experts in particular are seen as having a good reputation in terms of the independence and credibility of their valuation conclusions. When comparing U.S. and Canadian valuation reports, Canadian valuation reports are seen as more succinct and convey valuation conclusions in a comparatively clearer fashion.

The above observations are largely self-explanatory. Therefore, we will not further expand on them.

10.0 SIGNIFICANT FINDINGS AND RECOMMENDATIONS

The significant findings from our review and analysis of valuation standards, valuation reports and interviews conducted are as follows:

i. On balance, there are geo-professional differences in the approach to and application of business valuation theory and methodology from around the world.

ii. There do not appear to be significant differences with respect to the structure of valuation reports and the choice of methodologies used.

iii. Differences do, however, exist with respect to the level of detail employed in valuation reports, the degree to which key assumptions and scope limitations are explicitly disclosed, and whether conclusions are arrived at by averaging various methods or using one method, among other things.

iv. The U.S. valuation reports consistently make more reference to empirical market data and finance theory, and tend to contain more calculation details, which likely accounts for their relatively more voluminous size relative to reports from the other Identified Countries. This is likely attributable to and consistent with the fact that U.S. valuation standards are also generally more prescriptive, rules based, and require additional details with respect to valuation methodology, discounts and premiums, the use of the guideline company method and so on.

    It is indeed interesting that, notwithstanding the greater emphasis on detail and market data, U.S. valuation reports were not perceived as having an additional advantage over other Identified Countries or other valuation reports by the individuals we interviewed. In fact, arbitrators suggested that somewhat less technical detail would be preferable, and suggested that it is not the extent of detail that is important but, rather, whether the details are relevant and result in valuation conclusions that make sense given commercial reality.

    Given the often wide disparity in level of detail among U.S., Canadian and other identified countries in the valuations that we reviewed, coordination among the CICBV, U.S. valuation bodies and the IVSC with respect to the level of detail would be useful to harmonize those standards that are more prescriptive with those that are less so, in some form of written guidance from the relevant valuation organizations.

v. In terms of disclosure of assumptions, independence and limitations, Canadian and U.S. valuation reports tend to have more robust disclosures. This is likely attributable to and consistent with the fact that Canadian and U.S. valuation standards tended to contain additional guidance in these areas, relative to IVS. This, in turn, may be the result of the fact that Canadian and U.S. valuation standards have been developed and in practice for a considerable period of time, and have been refined continuously over time. Moreover, recent years have seen a greater emphasis on independence in the Canadian and U.S. court systems, and this may be reflected in Canadian and U.S. standards and/or valuation reports.

    The reports and standards from other Identified Countries tended to have less robust disclosures in this regard. Given that the other Identified Countries use IVS, perhaps some further guidance from the IVSC or enhancements to IVS with respect to required dis-

closures and professional and ethical responsibilities of valuators would be beneficial to reduce differences in this area.

vi. It is concerning to us that arbitrators had a generally skeptical view of the independence of valuators and valuation reports. This is certainly not a view that the valuation profession should allow to linger. Given comments that the spirit of independence does not always appear to be adhered to, additional standards addressing ethics and the independence of valuators, with specific guidance and examples, would be beneficial with respect to all standards, and, particularly, the IVS.

vii. We noted from our review of valuation standards that CBV Standards and IVS tend to be more concise and less technical, and allow for greater exercise of professional judgment on the part of valuators. It is interesting, given this "freedom," that Canadian valuation reports tended to gravitate towards more disclosures, details and reconciliations of valuation conclusions. Meanwhile, the European valuation reports appeared to gravitate towards somewhat less disclosure, details and reconciliations of valuation conclusions. In other words, the Canadian and European valuation reports appear to have differing interpretations of what is sufficient and appropriate report disclosure.

11.0 CONCLUSION

In the book *Around the World in Eighty Days,* Fogg and Passepartout make it back home just in the nick of time, after circumnavigating the globe in eighty days. It took us almost that same period of time to research and write this paper, and it is perhaps fitting that we conclude it in the nick of time as well.

We have learned that there **are** differences in the approach to and application of business valuation theory and methodology around the world through our research, as demonstrated in the different valuation standards used and in valuation reports themselves. The differences do not relate to the structure of valuation reports. Rather, differences emerge in the underlying detail and the overall conceptual approach to valuations — more technical versus more professional judgment based, for example.

In order to reduce the number of differences across jurisdictions, certain aspects of valuation standards used around the world may need to be enhanced, while some technical aspects of other valuation standards may need to be tempered. Among the potential enhancements seems to be the need for a greater focus on independence and objectivity among valuators. This could result in clients and adjudicators having greater confidence in the independence of valuation conclusions.

The results of our research will help fellow valuators and their clients generally understand what to expect (in terms of level of detail, disclosures, weighted averaging of conclusions etc.) when a valuation report from one of the Identified Countries comes across their desks, and will help them better understand the regulatory context (i.e. the valuation standards) pursuant to which the valuation report may have been prepared.

Perhaps one of the most compelling ancillary findings of our research is that despite various similarities and differences in valuation reports from around the world, and despite differences in the level of detail used, it is ultimately the reasonableness of valuation conclusions in context of commercial reality that leads to whether a valuation is seen as credible.

In the next few years, the valuation profession will likely continue to seek ways to harmonize international valuation standards and practice. We hope this paper assists in some capacity to identify some of the major differences and areas of focus. In any case, we look forward to enthusiastic dialogue on the subject between our valuation colleagues from around the world.

APPENDIX A

SCOPE OF REVIEW

In preparing this paper, we have reviewed and relied upon the documents, information and interviews set out below:

I: Valuation Standards and Valuation Organizations

1. Canadian Institute of Chartered Business Valuators — Valuation Standards 110, 120, 130 and Code of Ethics.
2. Business Valuation Standards of the American Society of Appraisers — Standards BS-I to BSIX, SBVS 1 and 2, AO-1, PG 1 and 2.
3. Professional Standards of the National Association of Certified Valuation Analysts.
4. Statement of Standards for Valuation Services of the American Institute of Certified Public Accountants.
5. Professional standards of the National Association of Certified Valuation Analysts.
6. Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation.
7. International Valuation Standards of the International Valuation Standards Committee — IVS Definitions, Framework, General Standards, Asset Standards, Valuation Applications and Technical Information Papers.
8. Principles for the Performance of Business Valuations (IDW S 1) of the Institut Der Wirthschaftsprufer.
9. NIRV Standards of the Nederlands Instituut voor Register Valuators.
10. Information pertaining to the background and organization of the IVSC as per http://www.ivsc.org/content/about-international-valuation-standards-council-ivsc.
11. Presentation: “IVSC: Its Role, Today’s Standards Setting Environment and Current Pr ojects.” Presentation by Steve Sherman and Tom Boyle of the IVSC, July 25, 2013.
12. Information pertaining to the background and organization of the ASA as per http://www.appraisers.org/About.
13. Information pertaining to the background and organization of the NACVA as per http://www.nacva.com/.
14. Information pertaining to the background and organization of the AICPA as per http://www.ivsc.org/content/about-international-valuation-standards-council-ivsc.

II: Macro Economic Data

15. Statistics Canada, Canadian International Merchandise Trade, 2004 to 2013. http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getInstanceList&SDDS=2201&InstaId=13843&SurvId=879.

III: Valuation Reports

16. Valuation reports (45 in total, on a confidential basis) from countries in different geographical jurisdictions including: Canada, United State of America, United Kingdom, Netherlands, Germany and France.

IV: Interviews

17. Interviewed 55 litigation counsel and arbitrators (41 counsel, 14 arbitrators, on a confidential basis) relating to observed differences, if any, in the approach to and application of business valuation theory and methodology by different valuators from the identified countries.

18. Mr. H. Scott Fairley, Partner, WeirFoulds LLP, Toronto, Canada.

19. Ms. Mary Jane Andrews, Partner, Advisory Services, KPMG, Halifax, Canada, Chair of the Board of Directors of the International Institute of Chartered Business Valuers and Member of the Board of Directors of the Canadian Institute of Chartered Business Valuators.

20. Mr. Michael Badham, Executive Director, International Institute of Business Valuers, Toronto, Canada.

21. Ms. Jutta Menninger, Head of Taxes, Brose Group, Munich, Germany.

22. Mr. Andrew Pike, Managing Director, AN Valuations, Leiden, The Netherlands.

V: Additional Research

23. Presentation entitled “An Assessment of the Valuation Profession and International Valuation Standards” by Elvin Fernandez (July 22-24, 2010).

24. Article entitled “International Arbitration: Would a Single Set of Global Valuation Standards Assist Parties in Testing Expert Valuation Evidence” by Geoff Senogles and Phil Hersey (October 2013).

25. Paper entitled “Global Unification of Business Valuation Standards” by Elizbieta Izabela Szczepankiewicz (2013).

26. Valuation and Common Sense (4th Ed.) by Professor Pablo Fernandez, IESE Business School, Madrid (July 2013).

27. Paper entitled “Market Risk Premium Used in 82 Countries in 2012: A Survey with 7,192 Answers” by Professor Pablo Fernandez, Javier Aguirreamalloa and Luis Corres (January 2013).

APPENDIX B

Prem Lobo CPA, CA, CBV, CPA **(Illinois),** CFE, CFF
Principal | plobo@cohenhamiltonsteger.com

Professional Experience

Prem Lobo is a Principal at Cohen Hamilton Steger & Co. Inc. Prem specializes in the quantification of damages, business valuations and forensic accounting. His practice has been focused exclusively in this area since 2001. In 2013, Prem was named the "Top Chartered Business Valuator under 40" by the Canadian Institute of Chartered Business Valuators ("CICBV") and in 2014, he was awarded the Communicator Award by the CICBV.

Prem is located in Toronto, Ontario, but his practice has encompassed various jurisdictions across Canada, the United States, Europe, South America and the Caribbean. Prem was formerly an Associate Director in a major international consultancy's Disputes and Investigations practice.

Prem has been involved in the quantification of damages with respect to breach of contract, misrepresentation, intellectual property matters, class action lawsuits and expropriation proceedings, among other commercial matters. He has been involved in preparing business valuations for shareholder disputes, purchase price allocations, corporate acquisitions, tax litigations, and for various transactions. Prem has conducted forensic accounting investigations with respect to alleged fraud, accounting improprieties and non-arm's length transactions, among others.

Prem's damages quantification, business valuation, and forensic accounting experiences have encompassed a diverse range of industries including manufacturing, oil and gas, software development, power generation, pharmaceuticals, financial services, real estate, retail and others.

Prem has prepared or assisted in the preparation of numerous expert reports and affidavits and has appeared as an expert witness at trial and at mediation proceedings.

Prem is a frequent public speaker and writer, and has published articles and papers in numerous legal and accounting periodicals including the Journal of Business Valuation, CA Magazine, Business Valuation Digest, the Advocates' Journal, Commercial Litigation Review and Class Action Defence Quarterly. Prem has taught accounting courses at the undergraduate and graduate levels at York University's Schulich School of Business and the University of Ontario. Prem has authored or co-authored six accounting-related text books and study guides.

APPENDIX C

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Professional Experience

Matt Bottomley is an Equity Research Associate at Canaccord Genuity Corp., focusing on the Canadian healthcare and life science industry. Matt has extensive business valuation and damage quantification experience and has been practicing exclusively in the area of business valuation and market research since 2012, with a current focus on Canadian pharmaceutical companies.

Matt's business valuation experience has involved a wide breadth of companies and industries including manufacturing, construction, automotive, technology, aerospace, real estate, financial services, entertainment and pharmaceuticals.

Matt has been involved in the quantification of damages with respect to shareholder disputes, breach of contract, expropriations, misrepresentation, income tax disputes, intellectual property matters as well as a variety of forensic accounting examinations, including international corporate fraud investigations.

Matt has authored a number of presentations and articles which have been presented at various conferences and seminars in matters ranging from loss quantification in the context of expropriations, to best practices for expert valuators to consider when placing evidence in Canadian courts. Matt has written for the Lawyers Weekly and is an active member of the Young Valuators Group of the Canadian Institute of Chartered Business Valuators.

Matt received his Honours Bachelor of Commerce from McMaster University in 2007.

6

INDEFINITENESS IN ACCOUNTING — THE CASE OF TRADEMARKS IN CANADA

by Christof Binder, PhD, MBA[1]
by Bill Stamatis, CPA, CFA, ASA BV/IA[2]

The valuation of an intangible asset is based on its useful life, among other factors like cash inflow generating capability and risk. For trademarks,[3] valuators regularly opt for an indefinite life, when no obvious factors exist that would limit the future economic life of the trademark. However, almost all brands are finite, and only a small proportion of all brands ever introduced have the potential to exist a hundred years and longer. Assuming indefiniteness can have two serious effects — one on value and one on accounting. The following article discusses such effects and suggests some guidelines and tools to analyze the lifecycle of a brand and to estimate its remaining useful life (RUL). It also presents new research that examines indefinite-lived trademarks in Canada and traces their reporting over the past 10 years.[4]

The Accounting Framework

Determination of useful life and amortization of intangible assets is governed by accounting standards. Generally all the established accounting standards require that entities assess whether the useful life of an intangible asset is finite or indefinite. International Financial Reporting Standards (IFRS), in particular, state that an intangible asset should only be regarded as having an indefinite useful life when, based on all of the relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows for the entity.[5] Therefore, if management has the intention and the ability to maintain an intangible asset so that there is no foreseeable limit on the period over which the asset is expected to generate net cash inflows for the entity, the asset is regarded as having an indefinite useful life.

More important, 'indefinite' does not mean 'infinite'.[6] There does not need to be an expectation that the cash inflows generated by the asset will go on forever but simply that, at the date of assessment, there is no foreseeable point at which the cash inflows will cease.

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2 Bill Stamatis, CPA, CFA, ASA BV/IA, is a Partner of Deloitte LLP in Toronto. He is the Vice-Chair of the International Institute of Business Valuers and serves on the Education Committee of the American Society of Appraisers. Bill performs many valuations of trademarks and other intangible assets for financial reporting and tax purposes.

3 The terms trademark, brand and tradename will be used interchangeably.

4 This article is based on an earlier version covering the reporting of indefinite lived trademarks in the U.S. Christof Binder and Robert B. Morrison, "Indefinite Is Not Infinite—Solving a Dichotomy in Trademark Valuation," Business Valuation Update, Vol. 21 No. 5, May 2015, pp. 1-12.

5 IAS 38:88.

6 IAS 38:91.

If an intangible asset is determined to have an indefinite useful life, it shall not be amortized until its useful life is determined to be no longer indefinite. Instead, the asset shall be tested for impairment at least once in each reporting period by comparing their recoverable amounts with their carrying amounts.[7] An additional impairment test is required whenever there is an indication that an intangible asset may be impaired.[8]

If an asset has been assessed as having an indefinite useful life, resulting in the asset not being amortized, that assessment is revisited each period to determine whether events and circumstances continue to support an indefinite useful life for that asset. If not, the change in indefinite life assessment is accounted for as a change in accounting estimate in accordance with IAS 8.

Legally, the protection of trademarks can be renewed and extended any number of times, and economically trademarks can successfully subsist for a very long time as long-lived brands like Coca-Cola, Colgate or John Deere demonstrate.[9] For these reasons, trademarks are often assigned an indefinite life. However, the decision to assign an indefinite life to a trademark has two important effects. In discounted cash flow (DCF) based valuation, indefiniteness results in infiniteness — revenues or cash flows are projected into perpetuity. In accounting, the problem is only postponed. Like any other assets, trademarks are wasting. At some point in the future a decision must be taken as to the finiteness of the trademark's life.

IAS 38:93 states that "*Uncertainty justifies **estimating** the useful life of an intangible asset on a prudent basis, …* " This wording suggests that the standard setters preferred — whenever possible and advisable — an estimated definite to an indefinite life.

To avoid misunderstandings, it is not the intention of the authors to motivate valuators and accountants towards avoiding indefinite lives in valuations. For example, for goodwill this would be simply impossible. We would, however, like to increase the awareness of the problems inherent in infiniteness, and when and how to estimate a finite RUL of trademarks.

Observations in the Accounting Field

Indefinite-lived intangibles were introduced into corporate accounting in the United States through FAS 142 in 2001, and internationally through IAS 38 in 2004. Less comprehensive guidance existed prior to these dates under both under U.S. GAAP and IFRS. In Canada, CICA 3062 was introduced simultaneously with FAS 142 (replaced by CICA 3064 in 2008), and IFRS/IAS became mandatory for public enterprises since 2011. Under these rules, valuators and accountants are required to consider the option of indefiniteness in their valuation of trademarks. In a recent article, Rüssli and Binder analyzed in detail what useful lives valuators and accountants applied in the field since 2003.[10] According to MARKABLES[11] data, one half of all trademark valuations performed between 2003 and 2013 assume an indefinite life. For the remaining half of trademarks with a finite life, the RUL ranged from less than 6 months to a maximum of 50 years, with an average of 10.7 years.

Assuming that corporations develop detailed business plans and forecasts for a five-year period, a RUL of five years and less would be equivalent to a clear intent to cease the brand and its products or to replace it by another brand within this period. Therefore, the determination of trademark RUL in such cases is more a part of corporate business planning than a specific estimation by the valuator. Based on the MARKABLES data, 36% of all trademarks with definite RUL[12] fall

7 IAS 38:107.
8 IAS 38:108.
9 We all tend to forget the numerous brands and trade names that disappeared. In mature industries, the number of vanished brands is much higher than the number of those that remain.
10 Stefan Rüssli and Christof Binder, "The useful life of trademarks," World Trademark Review, Dec. 2014, pp. 22-25.
11 MARKABLES is a self-service online database providing comparables from over 6,700 audited and published trademark valuations worldwide: www.markables.net.
12 Corresponding to 18% of all trademarks in the sample.

into this category of "clear intent to cease." In the remaining cases of RUL extending beyond the five-year planning period,[13] the valuator had to analyze and estimate RUL. Only 39% of these trademarks were assigned a definite life by the valuator; and 61% received the status of indefiniteness.

These are the averages over a 10-year period. When looking at the trend it is apparent that valuators increasingly try to be more precise and to determine definite RULs more frequently. During the observation period the share of indefinite lived trademarks decreased from 80% in 2004 down to 40% in 2013, and the average RUL of the finite lived trademarks decreased from 12 years to 10 years. There seems to be an increasing awareness among valuators and accountants of the importance of assigning an appropriate and reasonable life to trademarks where able and of the difficulties that can arise from indefiniteness.

As for Canada, 62% of all trademarks were assigned an indefinite life. Indefiniteness in Canada is thus more frequent than in U.K. (28%) and U.S. (49%), but less than in Germany (77%) and France (88%).

From Ambiguity to Clarity?

IAS 38 expressly states that "*The term indefinite does not mean (the same as) infinite…*" To account for this, the International Accounting Standards Board (IASB) developed two additional concepts. One is that indefinite-lived assets shall be tested at least annually for impairment. The second is that the RUL of an indefinite lived asset shall be reviewed annually to determine whether events and circumstances continue to support an indefinite useful life. In other words, the standard setters did in no way contemplate the creation of an asset category that would sit on the balance sheet forever.

With this in mind we tried to understand what happens to accounted trademarks once they are assigned indefiniteness, and to find out if IASB's vision of a later finiteness would come true. Therefore, we analyzed how 50 brands (or brand portfolios) that had been valued and accounted between 2004 and 2007 with an indefinite life developed in the accounts in the years thereafter. The sample was taken from the MARKABLES database[14] and included the 50 largest trademarks (or trademark portfolios) resulting from business combinations and reported in between 2004 and 2007 by entities listed in Canada. We traced the reporting of these trademarks from 2004 until 2014 reporting season.

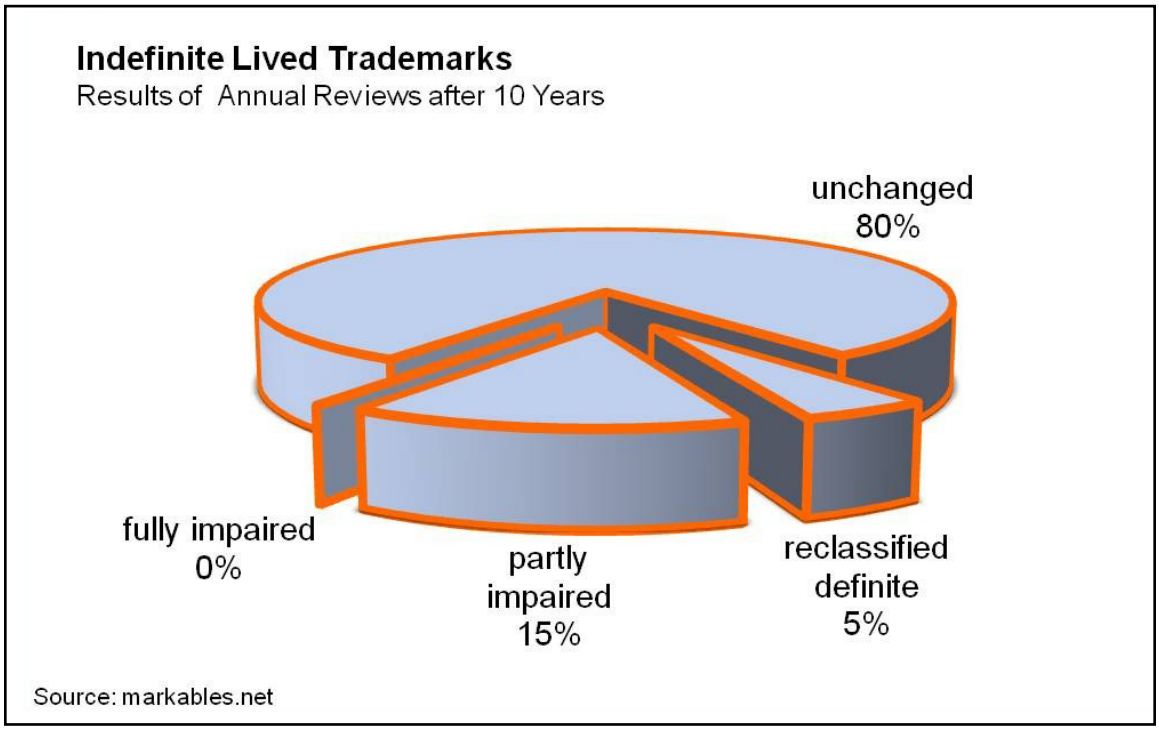
A first finding is that nine brands (18%) from the original sample later became part of another transaction, resulting in a new business combination and a new valuation. In these cases, the issue of infiniteness sorted itself out and eventually restarted from zero.

The remaining 41 brands were presumably subjected to annual impairment test and RUL review. The results of these reviews after nearly 10 years are illustrated in Exhibit 1. 80% of the brands remained unchanged, and the remaining 20% experienced some sort of depreciation:

- Six brands (15%) were partly impaired. The impairments range from 3% to 90% of the original value, with an average impairment of 42%, or 4% per year.
- None of the brands was fully impaired.
- Two brands (5%) were reclassified as definite-lived, with RUL of five years for both brands.

13 82% of all cases.

14 www.markables.net. The number of trademarks reported by Canadian listed corporations is considerably smaller than in the U.S., resulting in a population of 50 cases observed, against 100 cases for the US study.

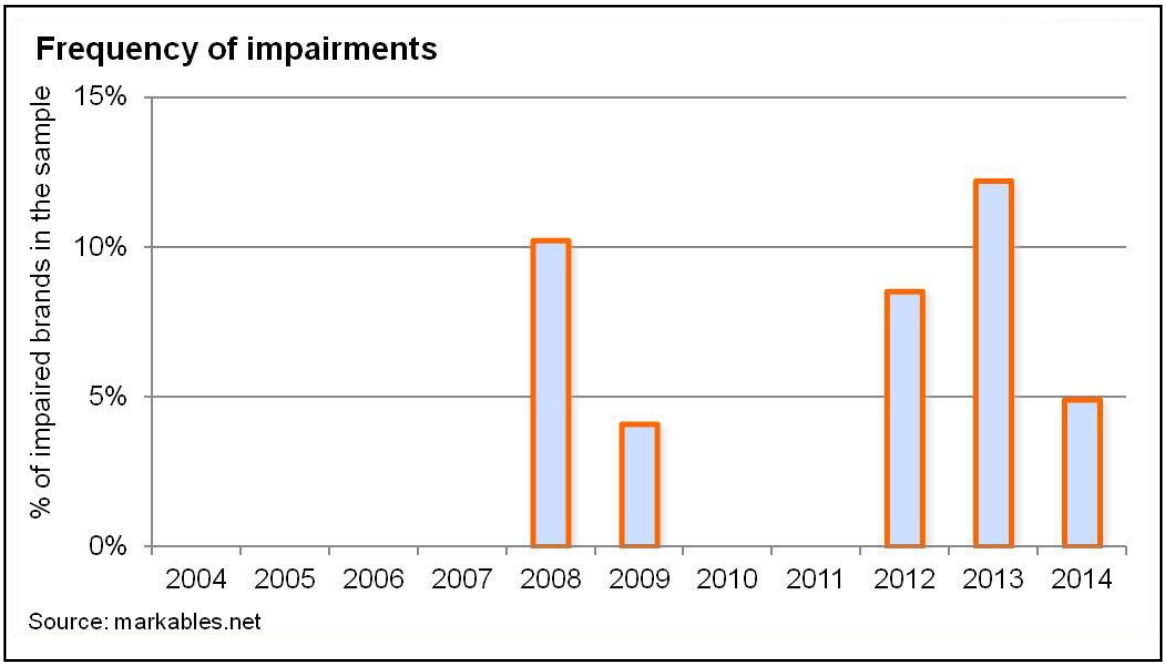


At the end of 2014, the overall value of the trademarks in the sample stood at 92% of its original value. This corresponds to an average annual impairment of less than 1%. Interestingly, the impairments accumulate in the very last part of the observation period. Leaving aside the extraordinary impairments due to the financial crisis in 2008/2009, impairments occurred only since 2012 (see Exhibit 2), but not in any of the previous years. Apparently, the issue of indefiniteness became a factor only since 2012.

If compared to the impairment of indefinite trademarks of reporting issuers in the U.S.,[15] Canadian reporting issuers lag in all aspects. In the U.S.:

- the trademark value of the sample stood at 83% after 10 years (versus 92% in Canada)
- only 47% of the brands remained unchanged (versus 80%)
- impairments (or regular amortizations after reclassification) happened much more frequently. The average impairment frequency in the U.S. stood at 11.5% (versus 4.2%).

15 See footnote 4.



There are two major conclusions from this analysis.

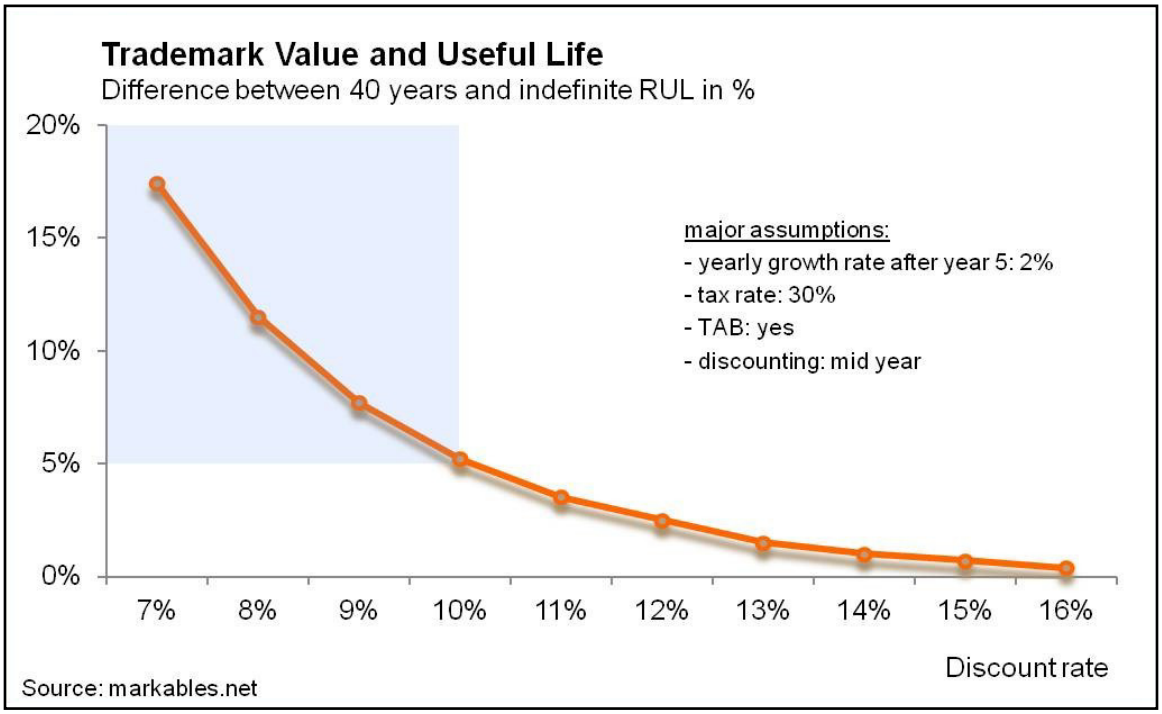
1. A substantial part of all indefinite lived trademarks remains "untouched" during the 10-year period. This tends to happen when the original valuation was conservative and the business ended up growing above expectations. In this situation, the impairment test of the brand will necessarily result in a fair value being higher than its carrying value. The problem is that after 20 years, brands will have the same financial statement measurement amount as 20 years prior, but, in reality, they have little to nothing in common with the original brands.
2. Once indefinite — always indefinite. Only in very few cases the option of shifting from indefiniteness to finiteness was chosen. Valuators and accountants who opted for indefiniteness in their original valuation seem to maintain this preference permanently; they continue to prefer annual impairment testing and irregular impairments over a determination of RUL and regular amortization. While not subject to empirical testing, reasons for this may include difficulty in estimating an RUL, lack of objective, observable data, management belief that the trademark will exist into perpetuity, and management's aversion to amortization expense. This approach is, however, not fully in line with IAS 38 stating "*The term indefinite does not mean (the same as) infinite.*" At some point in time, an end of the trademark's life should be foreseeable.

The Discounting Sensitivity of Indefiniteness

Almost all published trademark valuations apply the relief from royalty method or — in rare cases — the multi-period excess earnings method. Both methods are income approaches that project future earnings from the trademark and discount them to a net present value (NPV). In instances where the RUL is deemed indefinite, the projection of future earnings extends into perpetuity — *the projected income stream will not stop.* As a result of discounting, the contribution of earnings to NPV diminishes over time. The higher the discount rate, the sooner future earnings from the trademark become negligible for its present value.

Simply speaking, the result of a valuation will be different depending on the length of the RUL and the length of the income projection into the future. An income over 200 years is obviously more than the same income over 35 years. This increasing effect over time is overlapped by the discounting. The key question here is at what discount rate the difference between a (long) finite RUL and an indefinite RUL becomes negligible.

This is what some valuation professionals maintain. The validity of this view depends however on the discount rate. To illustrate this, we compared the NPV difference for a trademark with indefinite RUL to a trademark with a RUL of 40 years for different discount rates.[16] Exhibit 3 illustrates that the NPV difference is less than 5% if the discount rate is 10% and higher. For lower discount rates, the NPV difference is higher and approaches 20%.



It is a question of auditor materiality which difference would be acceptable. In the illustration, the 5% threshold would be surpassed at a discount rate of 10% or less, or at a net discount rate of 8% considering the 2% growth rate assumed. In these cases, the resulting trademark value would be more than 5% higher than in the 40 years RUL scenario.

Once again we cite IAS 38 which states: "*The term indefinite does not mean the same as infinite.*" Valuators must be aware that a valuation into perpetuity can result in an overstated value, depending on the discount rate. To avoid this, the valuator may either cap the RUL at a certain point in time, or account for the higher uncertainty of indefiniteness with a higher discount rate, or at the very least a higher discount rate in the outer years.

Understanding the Reasons for Trademark Obsolescence

Our above analysis showed that valuators frequently consider the RUL of a trademark as indefinite if and so long as its owner intends to continue to use the trademark or has no specified

16 We chose 40 years because finite lives of more than 40 years are rarely observable.

plans to the contrary. One half of all valued trademarks are assigned an indefinite life, and a large part of these remain indefinite for quite a long time. However, accounting into indefiniteness was neither the intention of the standard setters, nor is it advisable to follow this simplification in lieu of further analysis of all the factors that may cause the trademark's dormancy or extinction.[17] Valuators ought to perform a detailed RUL analysis before they opt for indefiniteness.

Before one starts to estimate trademark RUL it is important to understand what trademarks are used for, and why they can die. In their beginnings, trademarks emerge to provide for the clear identification and a condensed description of an offering (a product or service), and for an easy orientation of the target buyers. The marking or branding is a prerequisite to establish any commercial offering in the marketplace. Later in their lives, branding and brands become subject to more economic decisions. Accordingly, the returns attributable to a brand should be higher than the cost spent to maintain and develop it. Brand returns are quantified or estimated as additional sales volume plus additional price premium which would not be achieved without the brand, minus expenses for branding. A trademark will die if its use makes no more economic sense.

There are three major reasons why the use of a trademark may cease to make economic sense:[18]

a) Product obsolescence. The products or services sold under a trademark reach the end of their life cycle. With the products dying, the brand attached to them will die, too (Southern Bell, for example). This happens if and when the brand is closely associated with a specific product (a product brand) and has no or little flexibility to be switched to other products. This can be observed in the case of product specialist brands or product names. With short product life cycles — like in hi-tech or software industries — brands eventually move too slowly to climb on the bandwagon of the next product generation. Typically for such businesses, the value of a brand is relatively low compared to the value of technologies and customers. Sometimes, a product life cycle can end abruptly if the market is subject to governmental regulations or subsidies.

b) Trademark obsolescence. Through the course of the years, a trademark itself may grow old and outdated (Tenneco, for example). Often the products, services or ranges sold under a trademark change and innovate faster than the trademark can follow them. This phenomenon is typically called trademark obsolescence.

   Products and services sold under a trademark are continuously improved, renewed, adopted, refreshed or otherwise kept up-to-date. In most industries, this change is substantial. A Ford of today has little in common with a Ford of 1970. An Apple computer of today is very different from one of 1990. A fashion brand changes its complete range twice every year. Even for a trademark that seems to be immutable like Coca-Cola, the changes over time are substantial.

   Trademarks (or brands) are rather the opposite. Their main purpose is to provide recognition and trust to the existing customer base. But, at the same time they have to be innovative, launch new products, and renew themselves. Sometimes, brands are adapted too, for example through a modernized logotype. Essentially, brands are not made to keep pace forever with the dynamic product or service ranges sold under them, and one day they may become signs of the past for products of today.

17 John Elmore, "The Valuation of Trademark-Related Intangible Property", Willamette Insights, Winter 2015, p. 72.

18 In reality, these three reasons are not fully independent of each other and may overlap; for simplification, we discuss them independently here. Further, it is not helpful to include all and any extraordinary mortality risk like catastrophes, assaults, accidents, and so on in the analysis. If such incidental events happen, testing for impairment applies.

There are different root causes for trademark obsolescence.[19] The most important is technological innovation resulting in improved and/or cheaper products. Think of the changes happening in the handheld or PDA category. From walkman and MP3 player, integrating telephone, camera and small computer, to the smart phone. In dynamic markets, such changes can happen very fast. A second cause relates to changes in consumer behaviour. This does not necessarily involve innovation, often it relates to old or existing products. For example, low carb food products existed long ago, but their recent success results from a substantial shift in consumer preferences. Trademarks associated with the "old" behaviour may then be perceived to be out of date. A third cause relates to changes in social behaviour. In some areas of life, people want to be part of social groups, thereby being distinguishable from people belonging to other social groups. Often this is referred to as lifestyles, and it involves their selection of brands. Lifestyles change over time, and with age; trademarks may face difficulties to cope with such changes in lifestyles. Often, such changes in social behaviour relate to products where styles and look are important.[20]

c) Trademark consolidation. Sometimes, businesses own and operate more than one brand in the same category, often as a result of merger activities. In these cases, the trademark becomes subject to a corporate consolidation, whereby one trademark is replaced by another established trademark of the same owner to increase efficiency and to lower cost (Eaton's, for example). The cost of the re-branding plus the losses from customer confusion must be outweighed by the present value of future cost savings from dropping one brand. This is the simple principle, and in many cases it works provided that the business and customers of the abandoned trademark can be kept to a large extent. This is probably one of the most frequent reasons for a trademark to disappear, for the very simple objective of trademark economies of scale.

Peer Group Analysis of Trademark RUL

Accounting standards, textbooks, course materials and relevant literature provide an overview of the different factors that might influence the RUL of trademarks, but little to no guidance on methodologies and tools to quantify or estimate it. In a first step towards estimating trademark RUL, it is helpful for trademark valuators to understand the general mortality risk of trademarks in the subject industry. Two simple tools help to achieve this.

a) Randomly pick a population of competitor brands that were active in the subject industry five to 10 years ago. The composition of the population is less important; more important is the size (ideally 20 brands, minimum 10), and how many years passed since the observation of the population (ideally 10 years, minimum five). The source of such historic population can be: all participants at a specific trade fair at that time; all brands that advertised in the trade magazine at that time; the members' list of the industry association at that time; all brands that were then covered in the report of the consumer research or market intelligence company. Then find out which of these brands still exist today. By dividing the number of remaining brands by the number of brands in the former population, you get an approximate survivor ratio, and an annual mortality rate.

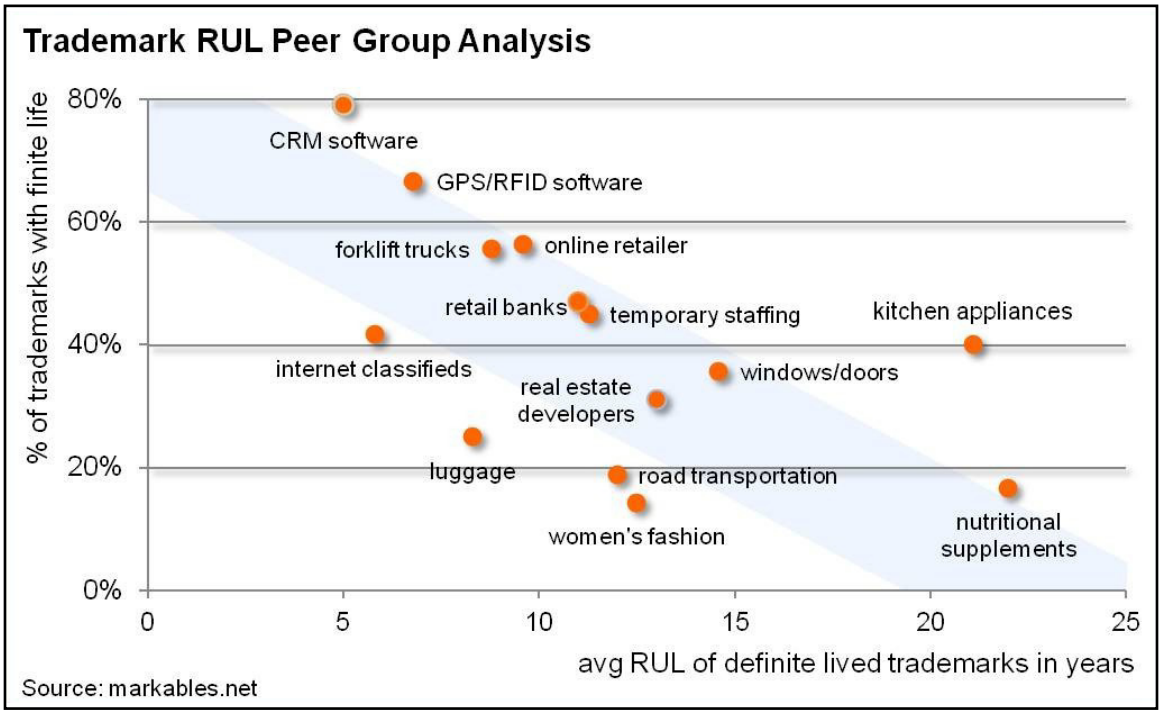
   If four out of 20 competitor brands that existed 10 years ago disappeared in the meantime, the average annual mortality rate would be 2%; assuming a constant mortality rate and

19 Smith and Richey use a different categorization, but discuss similar reasons for obsolescence risks. Gordon Smith, Susan Richey, "Trademark Valuation – A Tool for Brand Management," Wiley 2013, pp. 145-152.

20 It is surprising to see that 90% of fashion and sports brands are deemed to have indefinite lives while in reality many of them will likely not survive the next 20 years.

projecting this trend into the future, all brands will have disappeared by year 40, and the average RUL of the existing brands would be 20 years. Depending on its relative strength against competitors, a subject trademark will have an RUL below or above average.

b) It can be helpful to see how other valuators dealt with similar situations in the past. Therefore, you should have a look at the RULs assigned to other trademarks in the subject industry in earlier trademark valuations. Such data can be found in the financial reporting of listed companies in relation to their purchase accounting and accounting for intangible assets in connection with business combinations. One source is the MARKABLES database. Exhibit 4 illustrates the RULs found in peer group analyses for various industries based on MARKABLES data. The results show that a) trademark mortality risk differs by industry, and b) plentiful guideline data are available.



Such industry-based trademark mortality analyses rarely provide evidence for zero mortality or infiniteness. In almost all cases, some trademarks have disappeared in the observation period or are expected to disappear. Of course, the average RUL resulting from these peer group analyses is not directly applicable for the subject trademark. But it provides a first understanding of the trademark dynamics in the subject industry and a guideline if an indefinite RUL is justifiable or not.

Estimation of Trademark Specific RUL

The RUL of the subject trademark depends on some specific characteristics in relation to its environment and customers. The following analytical steps are helpful to understand the specific position of the subject trademark in various cycles and to provide a best estimate of RUL.

1. **Product lifecycle**. The product lifecycle theory provides five stages in the life of a product or service forming a typical S-shaped curve: introduction, growth, maturity, saturation, and decline. For RUL estimation, two aspects are important. First, it is important to understand

the current position of the trademarked products in the cycle. And second, it is important to anticipate the total length of the cycle. Products incorporating high-technology (like pharmaceuticals, software or semiconductors) can have very short life-cycles, sometimes not exceeding five years. Other products and services (for example coffee or hairdressing services) reached the saturation stage long ago, but exhibit no signs of decline.

2. **Brand specificity and brand architecture**. A brand will not necessarily die because the branded product has reached the end of its lifecycle. The ability of brands to keep pace with change and innovation depends very much on their specificity. Some brands are closely tied to a specific product, like pharmaceuticals or other product name brands. Such brands will necessarily die when their products reach the end of their lifecycles. Other brands are much less specific, having more flexibility in terms of the variance and modifiability of the products or services they carry. They can successfully absorb product variants and new product generations. For the life of such brands, numerous individual product life cycles add to one another, thereby separating the brand's life from products' lives.

   In RUL analysis, it is important to understand the brand architecture of the subject business. Often, businesses operate brands at different levels. Product brand names provide branding at the level of products or individual services. Corporate brand names or umbrella brands provide branding at the level of a company or business unit, grouping different products under one and the same branding. Often, branding incorporates a combination of both umbrella and product brand names. Obviously, product brand names will have shorter lives than corporate or umbrella brand names, and it is advisable to attribute different RULs to brand names at such different levels.

   On the other side, the valuator must understand that the level of specificity of a brand can affect its returns. A less specific brand may have a very long life, but at the same time may have a lower profit margin compared to a very specific specialist brand. In some way, this phenomenon relates to the issue of niche versus mass market branding strategy.

3. **Brand strength**. When a market begins to decline, not all brands will die at the same time or at the same rate. Some will disappear sooner, and some will survive until the very end, or even create the next upturn of the market. This is a question of the strength of each particular brand. Several factors determine brand strength with regards to its RUL.

   One factor is the relative size of the brand, or its relative market share compared to its competitors. Small brands will very likely disappear faster than market-leading brands. Another factor is relative growth. If the subject brand grew more slowly — or declined faster — than market average, it will likely disappear sooner than other brands. And a last factor is brand profitability. The more profitable a brand is relative to its competitors, the more likely it can survive until the final consolidation in its category.

4. **Industry consolidation cycle.** One major reason that trademarks disappear is trademark consolidation.[21] If a business owns and operates more than one trademark in the same category or segment, it has the option to merge one of the trademarks into another. This option should be considered and carefully analyzed by the valuator even if management expresses its intent to continuously use the subject trademark indefinitely in the future.

   The structure of an industry is often described by concentration measures. Concentration is a function of the number of competitors and their respective shares of the total market.

21 See further above.

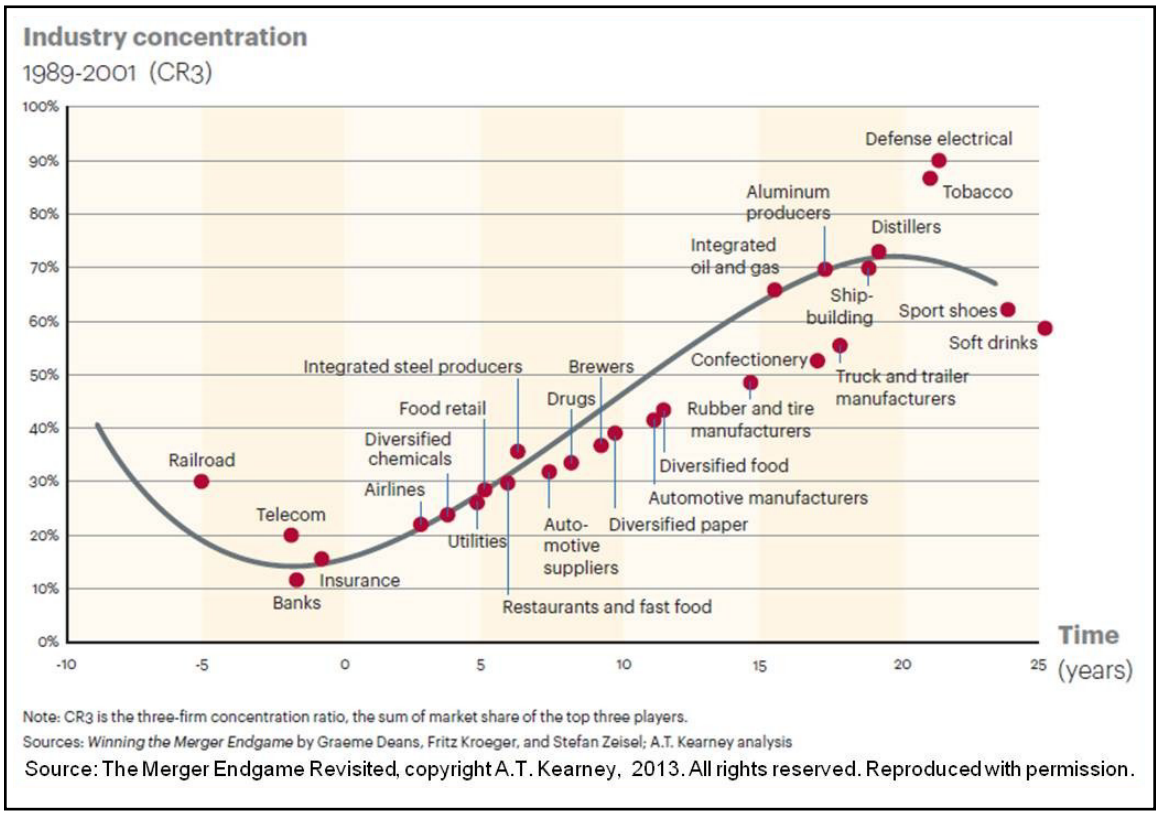
In competition and antitrust law, the Herfindahl index[22] is the most frequently used concentration measure. Another, more convenient concentration measure is the sum of the market share of the top three or top four players, described as CR3 or CR4 ratios. CR3 50% means that the top three players of the industry hold a combined 50% market share.

Structure and concentration rates of industries change over time. Typically, industries follow a concentration curve which resembles the S-shaped product life-cycle curve.[23] In the emerging stage of an industry, the concentration rate CR3 will be high (sometimes 100%), with very few competitors. The more promising and growing this new market, the more players will enter, thereby reducing the market share of each player and the CR3 rate. Very fragmented markets with many players can have CR3 ratios of less than 10%. With decreasing growth rates, the industry will start to consolidate through mergers. The number of players will decrease, and CR3 will increase to a maximum level. In very mature industries, there are not more than a handful of players left, and CR3 reaches 80%. In the mature stage of the curve, the need to consolidate further is very limited.[24] Sometimes, such mature industries decline to their demise; sometimes new small entrants make their appearance and attack the old players with new varieties, thereby reducing CR3 again. Exhibit 5 illustrates the typical S-shaped curve of industry consolidation. For the trademark valuator, it is important to understand the shape (the duration) of the S-curve of the subject industry and its current position on the curve.

22 The Herfindahl or Herfindahl-Hirschman Index (HHI) is a measure of market concentration and is expressed as: HHI = (s12 + s22 + s32 + … + sn2) x 100 where sn is the market share of the nth firm. The U.S. Department of Justice considers a market with an HHI of less than 1,500 to be a competitive market while an HHI of 2,500 or greater to be highly concentrated: www.justice.gov/atr/public/guidelines/hhi.html.

23 For further detail, see Graeme Deans, Fritz Kroeger, Stefan Zeisel, “Winning the Merger Endgame,” McGraw-Hill 2003; Graeme Deans, Fritz Kroeger, Stefan Zeisel, “The Consolication Curve,” Harvard Business Review, Dec. 2002; Jürgen Rothenbuecher, Joerg Schrottke, Sandra Niewiem, “The Merger Endgame Revisited,” ATKearney White Paper 2013.

24 I.e. because of antitrust or complexity.



Note: CR3 is the three-firm concentration ratio, the sum of market share of the top three players.

Sources: *Winning the Merger Endgame* by Graeme Deans, Fritz Kroeger, and Stefan Zeisel; A.T. Kearney analysis

The U.S. Census Bureau publishes concentration ratios every five years for the four, eight, 20 and 50 largest firms by NAICS codes. Exhibit 5 illustrates that some old industries are still very fragmented (like banks), and some younger industries are much more concentrated. Obviously, intensity and speed of consolidation follow different, industry-specific patterns. The major reason for this is cost structure, more specifically the fraction of fixed cost. The higher the share of fixed cost in an industry, the higher the advantage of being large, and the higher and faster consolidation. Hi-tech industries typically have a high share of fixed cost for R&D. Surprisingly, the beer industry is another example of high fixed cost;[25] its concentration rate CR4 in the US stands at around 90% for 15 years now and has reached its maximum, constant level.

From the existing concentration rate, the current number of remaining players, and from M&A and consolidation rate in the past years, the valuator can develop a projection of the likely average annual consolidation rate for the next period, until a mature and stable stage will be reached. Such consolidation at company, firm or business level is a strong indicator for the pressure on the consolidation of trademarks. However, even if companies or firms merge and consolidate, they can still continue to use more than one trademark in the same industry. Their decisions to consolidate their trademarks are the result of trademark-specific economies of scale which require some additional analysis.

5. **Trademark consolidation economies.** As discussed above, one major reason for trademarks to disappear is trademark consolidation. If a business owns and operates more than one trademark in the same category or segment (often as a result of industry consolidation and M&A), it has the option to merge one of the trademarks into another. This

25 Raw materials and labour are cheap; fully automated plants and high cost for marketing and sales is mostly fixed.

option should be considered and carefully analyzed by the valuator even if management expresses its intent to continuously use the subject trademark indefinitely in the future. The key question is if the cost savings from the trademark consolidation outweigh the additional costs and the eventual loss of business/customers from the rebranding.

Cost savings from a trademark consolidation can be estimated by comparing the variable cost of brand marketing of the larger brand with the total cost of brand marketing of the smaller brand (in % or revenues). Eventually, there would be an additional gain from reorganizing or combining two separate sales forces. The net present value of these savings projected into the future represents the total consolidation gain which needs to be larger than the one time cost of the rebranding. In most businesses, cost of brand marketing is more fixed than variable/marginal, thus supporting trademark consolidation.

The cost of rebranding is determined by the nature of the customer relation. In a direct and personal relation, customers can be informed directly about the rebranding, at low cost. In anonymous relations, it takes time and expensive media budget to make sure that all customers get the message. In addition, there is the — often negligible — cost of redesigning graphics, layouts, packaging, business stationery, and so on. The replacement of illuminated signs and advertisements can be expensive. The rebranding of a business-to-business brand or a subscription based-consumer goods brand will be relatively inexpensive while rebranding a stapled consumer goods brand sold through retail channels can be quite expensive.

Further, the cost of rebranding includes an estimation of the loss of business resulting from the confusion of customers, or from customers who are not willing to purchase the rebranded offering. Such loss may occur if a) the information of existing customers is incomplete and not fully comprehensive, b) the nature of the brand to be consolidated is rather image-based than feature or performance based, or c) the consolidated brand had a perceptibly different positioning, value proposition or customer group.

It is important to understand that the likelihood of trademark consolidation will increase over time after a merger. Immediately after the merger, the acquirer is often concerned about the stability of customer relations and about losing business and customers due to a rebranding. The more confident the acquirer becomes through the course of time about the loyalty of these customers (and the acquired sales force), the more likely becomes the option of rebranding in the future. The valuator may consider the likelihood of such trademark consolidation/rebranding sometime in the future in his estimation of trademark RUL if the difference between savings and additional cost is already small today.

Conclusion

The determination of trademark RUL somewhere beyond five years but before infinity can be a difficult challenge. The standard setters considered these difficulties, providing for the possibility of indefinite useful life on one side and for the admission of “best estimation” instead of “determination” on the other. The valuator should be aware that an indefinite RUL can be a delicate route. Under certain circumstances, indefiniteness may result in overstated value, or in an old trademark sitting unalterably on the balance sheet.

Still, best estimation of trademark RUL needs some sort of quantitative analysis and justification. A careful analysis of all relevant factors, including the current situation of the brand as well as past and future lifecycle and consolidation dynamics helps to develop such best estimate. The purpose of an RUL analysis is not to conclude with a precisely determined RUL of, say, 22.5 years.

Its first purpose is to develop a clear understanding of the likelihood that the subject trademark will live longer or shorter than 40 years. If shorter, the second purpose is to best estimate if the RUL will most likely be closer to 10 or 40 years, or somewhere in between.

The data analyzed suggest that the prevailing practice is to conclude (perhaps with a preconceived notion) that trademarks have *indefinite* lives. Further, the data suggest that once determined an *indefinite*-lived asset, it is rare that a finite life is subsequently assigned to the asset. The reasons for this, some of which are suggested in this article, are elusive. However, the accounting literature is very clear: *indefinite* does not mean *infinite*. As has been proven in the past, the accounting standard-setters and regulators may, if need be, establish policy regarding issues such as this if the profession (i.e., chartered public accounting and intangible asset valuation) does not do so on its own.