

The Implied Private Company Pricing Line/The Implied Private Company Pricing Model

A Business Valuation Update

SPECIAL FEATURE

Contributors:

Rod Burkert

Pete Butler

Bob Dohmeyer

The Implied Private Company
Pricing Line/

The Implied Private Company
Pricing Model



What It's Worth

1000 SW Broadway, Suite 1200, Portland, OR 97205

(503) 291-7963 • www.bvresources.com

BUSINESS VALUATION UPDATE

Executive Editor:	Andrew Dzamba	Customer Service:	Retta Dodge
Publisher:	Sarah Andersen	VP of Sales:	Lexie Gross
Legal Editor:	Sylvia Golden, Esq.	President:	Lucretia Lyons
Managing Editor:	Janice Prescott	CEO:	David Foster
Desktop Editor:	Monique Nijhout		

EDITORIAL ADVISORY BOARD

CHRISTINE BAKER
CPA/ABV/CFF
MEYERS, HARRISON & PIA
NEW YORK, NY

NEIL J. BEATON
CPA/ABV, CFA, ASA
ALVAREZ & MARSAL VALUATION SERVICES
SEATTLE, WA

JOHN A. BOGDANSKI, ESQ.
LEWIS & CLARK LAW SCHOOL
PORTLAND, OR

ROD BURKERT
CPA/ABV, CVA
BURKERT VALUATION ADVISORS, LLC
MADISON, SD

MICHAEL A. CRAIN
CPA/ABV, ASA, CFA, CFE
THE FINANCIAL VALUATION GROUP
FORT LAUDERDALE, FL

NANCY J. FANNON
ASA, CPA/ABV, MCBA
MEYERS, HARRISON & PIA
PORTLAND, ME

JAY E. FISHMAN
FASA, CBA
FINANCIAL RESEARCH ASSOCIATES
BALA CYNWYD, PA

LYNNE Z. GOLD-BIKIN, ESQ.
WEBER GALLAGHER
NORRISTOWN, PA

LANCE S. HALL, ASA
FMV OPINIONS
IRVINE, CA

THEODORE D. ISRAEL
CPA/ABV/CFF, CVA
ECKHOFF ACCOUNTANCY CORP.
SAN RAFAEL, CA

JARED KAPLAN, ESQ.
MCDERMOTT, WILL & EMERY
CHICAGO, IL

GILBERT E. MATTHEWS CFA
SUTTER SECURITIES INCORPORATED
SAN FRANCISCO, CA

Z. CHRISTOPHER MERCER
ASA, CFA
MERCER CAPITAL
MEMPHIS, TN

JOHN W. PORTER, ESQ.
BAKER & BOTTS
HOUSTON, TX

RONALD L. SEIGNEUR
MBA, ASA, CPA/ABV, CVA, CFF
SEIGNEUR GUSTAFSON
LAKEWOOD, CO

BRUCE SILVERSTEIN, ESQ.
YOUNG, CONAWAY, STARGATT & TAYLOR
WILMINGTON, DE

JEFFREY S. TARBELL
ASA, CFA
HOULIHAN LOKEY
SAN FRANCISCO, CA

GARY R. TRUGMAN
ASA, CPA/ABV, MCBA, MVS
TRUGMAN VALUATION ASSOCIATES
PLANTATION, FL

KEVIN R. YEANOPLOS
CPA/ABV/CFF, ASA
BRUEGGEMAN & JOHNSON YEANOPLOS, P.C.
TUCSON, AZ



What It's Worth

Copyright © 2014 by Business Valuation Resources, LLC (BVR). All rights reserved.

Printed in the United States of America.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher or authorization through payment of the appropriate per copy fee to the Publisher. Requests for permission should be addressed to the Permissions Department, Business Valuation Resources, LLC, 1000 SW Broadway St., Suite 1200, Portland, OR 97205, (503) 291-7963, fax (503) 291-7955.

Information contained in this book has been obtained by Business Valuation Resources from sources believed to be reliable. However, neither Business Valuation Resources nor its authors guarantee the accuracy or completeness of any information published herein and neither Business Valuation Resources nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that Business Valuation Resources and its authors are supplying information but are not attempting to render business valuation or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

Table of Contents

The Implied Private Company Pricing Line 2.0 $K_0 = (FCFF_1/P) + g$	5
Exhibit 1. Practical Example of the “Pitfalls” .....	.8
Exhibit 2. Aggregation of the IPCPL 500 (\$ in Millions–500 Private Company Transactions) .....	.9
Exhibit 3. Completed Transaction Data Reliability Analysis 95% Confidence Interval. ....	.10
Exhibit 4. Simulation of Data Errors .....	.10
Exhibit 5. Aggregate Revenue Growth (\$Millions) .....	.11
Exhibit 6. IPCPL Cost of Capital (\$150 million sales) .....	.12
Exhibit 7. IPCPL .....	.13
The Implied Private Company Pricing Model (IPCPM) $K_0 = (FCFF_1/P) + g$	14
Exhibit 1. Asset Classes (Risk-Descending Basis) .....	.15
Exhibit 2. Size Effect Adjustment Percentage .....	.16
Exhibit 3. The IPCPL Curve .....	.18
Exhibit 4. IPCPL 500 From <i>Pratt’s Stats</i> .....	.19
Exhibit 5. SPC Market Clearing Price (FMV) Dynamic .....	.23
BV Community Reacts to New Cost of Capital Tool	25
List of Resources for the Implied Private Company Pricing Line .....	.27
IPCPL Developers Field Queries on the New Model’s Underlying Data	29
 The Implied Private Company Pricing Line	33
Listener Questions .....	.61
Slides .....	.71
 Utilizing the Implied Private Company Pricing Model: The Cost of Capital Wizard	92
Listener Questions .....	.117
Slides .....	.121
Frequently Asked Questions	137

The Implied Private Company Pricing Line 2.0¹

$$K_0 = (\text{FCFF}_1 / P) + g$$

By Bob Dohmeyer, ASA; Pete Butler, CFA, ASA; and Rod Burkert, CPA/ABV, CVA

Editor's Note: A serious problem area in business valuation is estimating the cost of capital of a small privately held business by using data from publicly traded equity securities. Using this traditional approach, different appraisers analyzing the same firm using the same data sources can come up with vastly different estimates. A new approach has come along that is designed to eliminate the inherent problems in comparing public and private data and to be more reliable in estimating the cost of capital for a privately held business.

Introduction

Most business appraisal assignments are for private companies with revenue less than \$10 million. Current costs of capital (K_0) estimation methods rely almost entirely on public security returns. Small privately held companies are different from public equity securities in many fundamental ways. Consequently, there are issues that make these methods unreliable when extrapolated to small privately held businesses. We developed an implied private company pricing line (IPCPL) based on market transactions in small privately held businesses to eliminate highly problematic comparisons and use as a more accurate and defensible starting point to develop a cost of capital for any

privately held company with revenue less than \$150 million.

Pitfalls when extrapolating public equity securities returns to small privately held businesses

Two appraisers developing a cost of capital for the same small, privately held company can come up with widely divergent results using the same data sources. Here are five reasons why.

Unsystematic aka diversifiable aka company-specific risk. Unsystematic risk is also known as diversifiable risk.² Since this type of risk can be easily and inexpensively diversified away via

1 We say "2.0" as this article updates Dohmeyer and Butler's first exploration of this topic, which was published in *Business Valuation Review*, Spring 2012, Vol. 31, No. 1, pp. 35-47.

2 A business with only one highly specific product or one major customer is an example of high unsystematic/diversifiable risk. Jim Hitchner says, "The estimation of unsystematic risk is one of the more difficult aspects of calculating rates of return." (*Financial Valuation: Applications and Models*, 3rd Edition, p. 192.)

a single exchange traded fund or stock portfolio, it is not compensated for in the public stock returns that are extrapolated to private companies. Small private businesses have a total beta (total risk) of about 3.0 compared to the market portfolio total beta of 1.0.³ The vast majority of this 3x total risk difference represents company-specific risk, and it is not known how this differential is priced in the market for small private businesses.⁴ Aswath Damodaran tells us: “[Total beta] theoretically applies if you have an investor who is completely undiversified, but you never have that kind of buyer in the real world. At the other end of the spectrum, ‘beta’ applies for totally diversified investors. Investors in private companies are somewhere in between.”⁵

Liquidity differences. The relationship between return and liquidity is a very active area of research. Dr. Damodaran states this with respect to liquidity issues and private company valuation:

When you buy a stock, bond, real asset or a business, you sometimes face buyer’s remorse. You want to reverse your decision and sell what you just bought. The cost of illiquidity is the cost of this remorse. In the case of publicly traded stock in a heavily traded company, this cost should be small. It will be larger for stock in a small, over-the counter stock and will escalate for a private business, where there are relatively few potential buyers.

One way to capture the cost of illiquidity is through transactions costs, with less liquid assets bearing higher transactions costs (as a percent of asset value) than more liquid assets.

Trading costs associated with buying and selling a private business can range from substantial to prohibitive, depending upon the size of the business, the composition of its assets and its profitability. There are relatively few potential buyers and the search costs (associated with finding these buyers) will be high. In fact, if the investor buying it from you builds in a similar estimate of transactions cost she will face when she sells it, the value of the asset today should reflect the expected value of all future transactions cost to all future holders of the asset.

In conventional valuation, there is little scope to show the effect of illiquidity. Cash flows are expected cash flows, the discount rate is usually reflective of the risk in the cash flows and the present value we obtain is the value for a liquid business. With publicly traded firms, we then use this value, making the implicit assumption that illiquidity is not a large enough problem to factor into valuation. In private company valuations, analysts have been less willing (with good reason) to make this assumption. The standard practice in many private company valuations is to apply an illiquidity discount to this value. But how large should this discount be and how can we best estimate it? This is a very difficult question to answer empirically because the discount in private company valuations itself cannot be observed.⁶

Small stock premium. The small stock premium is both controversial and highly complex. If one adopts either a liquidity-driven phenomenon, where the lower liquidity of small company stocks drives the higher returns, or the intertemporal flaw of the capital asset pricing model, as demonstrated empirically by the Fama-French data, one needs to take extraordinary care when

3 Based on our calculations of the total beta of nearly all U.S. publicly traded stocks sorted by size.

4 Many appraisers believe that the small stock premium accounts for some of the 3x total risk issue. Although the cause and amount of the small stock premium are controversial, diversifiable risk, by definition, is not the cause.

5 Dr. Aswath Damodaran, 26th Annual Valuation Roundtable of San Francisco, April 20, 2012, Berkeley, Calif.

6 Dr. Aswath Damodaran, *Marketability and Value: Measuring the Illiquidity Discount*, Stern School of Business, July 2005.

extrapolating size percentiles to small privately held companies.⁷ For example:

While it would be foolhardy to attribute all of the well documented excess returns that have been associated with owning small market capitalization and low price to book stocks to illiquidity, smaller and more distressed companies (which tend to trade at low price to book ratios) are more illiquid than the rest of the market ... The key is to avoid double counting the cost of illiquidity since some of the small stock premium may be compensation for the illiquidity of small cap companies.⁸

Also: “[T]he size effect that [Rolf Banz] is picking up may be attributable to something else he’s not identifying; it’s just highly correlated to size.”⁹

Pass-through entity (PTE) taxes. Today, the “marginal buyer” or “price-setting investor” for small private businesses is likely a PTE.¹⁰ But should appraisers still use a C- corporation income tax rate scheme to remain consistent with the extrapolated, after-tax stock market return data? Or should appraisers use PTE models developed by Grabowski, Treharne, or Van Vleet, or others to tax affect income? Unfortunately, these models fail to incorporate the marginal buyer or price-setting investor inherent in the fair market

value framework. Also, these models fail to incorporate what researchers call “cliente effects.” For example, Keith Sellers and Nancy Fannon point out:

Where private market valuation today treats shareholder taxes as directly correlated to value, such treatment is a very far leap from that which is demonstrated by empirical research. At the very least, this should indicate to private market analysts the need to carefully consider offsets and other associated risks when different tax schemes than that which exists in the public market returns are assumed. Like all risks that affect value, this can be demonstrated perhaps most effectively through the cost of capital.¹¹

Cash add back/leverage. Traditional weighted average cost of capital methods require estimates of the percentage of debt to total capital, market borrowing rates, and relevered betas—all difficult to estimate and all subject to estimation errors. Further, many appraisers often make the mistake of either: (1) not adding the subject company’s cash balance to the present value of the discounted cash flow analysis; or (2) not relevering beta for the negative leverage implied by not adding the subject company’s cash balance to the present value calculation. Damodaran points out:

In our view, the debate over how much cash is needed for operations and how much is excess cash misses the point when it comes to valuation. Note that even cash needed for operations can be invested in near-cash investments such as treasury bills or commercial paper. These investments may make a low rate of return but they do make a fair rate of return. Put another way, an investment in treasury bills is a zero net present value investment, earning exactly what it needs to earn, and thus has no effect on

7 One way to minimize duress collinearity is to use the margin analysis provided in the *Duff & Phelps Risk Premium Report*. For an excellent analysis of the intertemporal flaw of CAPM, see John Y. Campbell and Tuomo Vuolteenaho, “Bad Beta, Good Beta,” Harvard University, August 2003, ssrn.com/abstract=343780.

8 Dr. Aswath Damodaran, *Marketability and Value: Measuring the Illiquidity Discount*, Stern School of Business, July 2005. This possibility is still being explored by researchers today.

9 James Harrington, *Conversations With the Masters* series, NACVA Annual Consultant’s Conference, Dallas, June 2012).

10 Based on IRS Statistics of Income (SOI) data showing significant increases in new S-corporation formations versus nearly no new C-corporation formations.

11 Keith F. Sellers and Nancy J. Fannon, “Valuation of Pass-Through Entities: Looking at the Bigger Picture,” 2012 American Taxation Association Midyear Meeting: JLTR Conference, December 2011. Available at ssrn.com/abstract=2003901 or [dx.doi.org/10.2139/ssrn.2003901](https://doi.org/10.2139/ssrn.2003901).

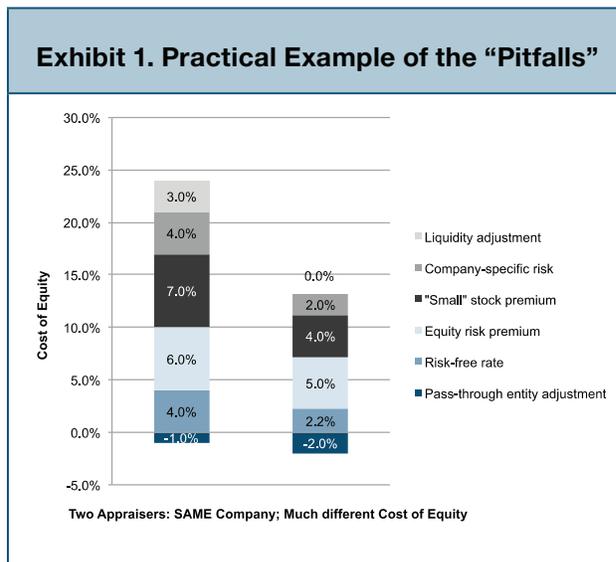
value. We should not consider that cash to be part of working capital when computing cash flows. The categorization that affects value is therefore the one that breaks the cash balance down into wasting and non-wasting cash. Only cash that is invested at below market rates, given the risk of the investment, should be considered wasting cash. Thus, cash left in a checking account, earning no interest, is wasting cash.¹²

Summary of pitfalls. We all know the pitfalls of using public equity returns; we just don't like to admit they exist or believe that nothing better than starting with public equity returns is available. As a result, the pitfalls noted above can lead two appraisers to wildly different cost of capital estimates. To illustrate the cumulative magnitude of these pitfalls, we hypothecate two independent appraisers assigned to value the same private business where both agree:

- To utilize management's forecast of cash flow with a stable growth rate of 2%; and
- The subject company has "typical" company-specific risk.

Then, both appraisers build up their equity discount rate as shown in Exhibit 1.

The two independent and objective appraisers could easily arrive at an unlevered cost of equity estimate for the same private company of either 24.0% or 11.2%, with both appraisers falling within a range of reasonableness for each specific metric. The consequence of this difference, when incorporating the 2% growth rate, results in the present value of one appraiser being well in excess of two times the other appraiser, even when both agree on the subject company's cash flow forecast and "typical" risk.



Appraisers can avoid these five pitfalls by applying the completed transaction method. With this method—and if the sample size of completed transactions is sufficiently large and comparable in terms of business, size, and margins—the appraiser can “simply” apply the observed multiple(s) to the subject company. This method completely eliminates the inherent adjustments for unsystematic risk, liquidity, small stock premium, PTE taxes, and cash/leverage by utilizing the real transaction market-clearing price dynamic in the competitive give and take between buyers and sellers of small private businesses.

Because of the completed transaction method's attractive built-in market clearing price dynamic, we developed the implied private company pricing line (IPCPL). And through IPCPL, we set aside the above-described pitfalls by converting transaction data to a cost of capital. Here's how we did it.

Overview of IPCPL 2.0

IPCPL is the private company cost of capital line (curve) created by connecting two estimated data points:

- Data Point 1 is based on transaction prices of 500 small private businesses from the *Pratt's Stats* transaction database,

¹² Dr. Aswath Damodaran, "Dealing With Cash, Cross Holdings and Other Non-Operating Assets: Approaches and Implications," Stern School of Business, September 2005.

published by Business Valuation Resources (the “IPCPL 500”); and

- Data Point 2 is based on the cost of capital, adjusted for the cost of going and staying public, of micro-cap publicly traded companies in the range of \$150 million revenues.¹³

As expected, our cost of capital calculations indicate a higher return for the smaller-sized companies of Data Point 1 and a lower return for the larger-sized companies of Data Point 2. Further, the two points are connected by a curve (skip to Exhibit 7 if you must!) that is shaped by a “no-arbitrage” rule to mitigate any possibility to arbitrage or profitably “roll up” the smaller companies into larger ones.

IPCPL Data Point 1

The IPCPL cost of capital derivation, while novel, is based on the well-known valuation axiom $K_0 = (FCFF_1/P) + g$.¹⁴ Since K_0 is axiomatic, Point 1 is the natural result if the inputs $FCFF_1$, P , and g , are sound. The IPCPL 500 data that populates Point 1 was obtained from the market-clearing prices of 500 privately held businesses, as described below. Exhibit 2 summarizes Point 1.

The IPCPL 500’s 18.1% internal rate of return (IRR) represents the cost of capital (pretax FCFF discount rate) most consistent with actual clearing prices for the asset class— small privately held businesses. Stated differently, the \$1.867 billion aggregate fair market value (or “ P ” in the K_0 equation) inherently reflects the market’s net adjustment for

unsystematic risk, liquidity, PTE taxes, etc. And because the formula is axiomatic, we eliminate the pitfalls of extrapolating public equities rate of return data to private companies.

IPCPL 500 population. The IPCPL 500 consists of *Pratt’s Stats* private company acquirer transactions from 1998 to 2013 with either: (1) total revenue between \$4.4 million and \$10.0 million; or (2) total assets (excluding cash) between \$1.3 million and \$4.5 million.¹⁵

IPCPL 500 transaction data reliability. The most common concern we encounter with the transaction data we employ is that it is inherently flawed by imperfections, such as incorrectly reported information. Indeed, based on obvious transaction duplicates between *Pratt’s Stats* and BIZCOMPS, we see that some data were occa-

Exhibit 2. Aggregation of the IPCPL 500 (\$ in Millions—500 Private Company Transactions)		
		% of Revenue
Revenue TTM	\$3,135.2	
Operating Income TTM	300.8	9.6%
Fair Market Value T_0	1,866.5	59.9%
Operating Book Capital TTM	590.7	18.9%
Aggregate Revenue Growth	2.36%	
Holding the above relationships constant:		
$FCFF_1 = \$300.8 * 1.0236 - (\$590.7 * 2.36\%) = \$294.0$		
$K_0 = FCFF_1 / P + g = \$294.0 / \$1,866.5 + 2.36\% = 18.1\% = IRR$		

sionally contradictory by significant amounts— making the data potentially unreliable on a data point-by-data point basis. However, because this noise is random, the aggregated data are, in fact, highly reliable with a large sample size of 500

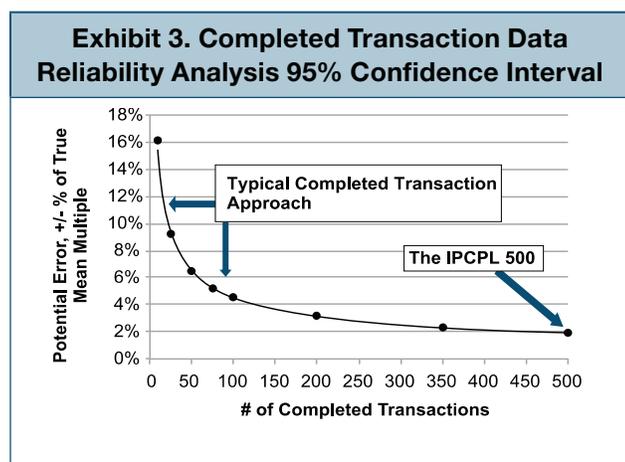
13 For the cost of going and staying public, see Stuart, Alix, “Little Change in Audit Fees,” June 16, 2011, CFO.com (http://www.cfo.com/article.cfm/14582443/c_14582548).

14 This ex-ante approach is essentially the same approach used by Damodaran when he publishes his monthly equity risk premium estimates. And note that IPCPL, like Damodaran’s monthly ERP model, requires appraiser judgment. That is, the K_0 model is axiomatic, but the inputs must be estimated.

15 Both size criteria span the 95th and 99th percentiles of *Pratt’s Stats* transactions in the past two years, and both resulted in approximately the same number of transactions. We adjusted these figures slightly to create a rounded number of 500 companies. Further, we only included transactions of U.S. companies that were acquired by a private company and which reported owner’s compensation. And we did not double count deals that fell into both the sales- and asset-size criteria.

data points. In the same way, a large portfolio of stocks nearly eliminates unsystematic risk; a portfolio of 500 transactions does the same to data errors. Exhibit 3 shows how the noise/errors are eliminated by the “law of large numbers.”

To demonstrate the ability of our large sample size to cure any bad data problem, we performed the statistical analysis described below.

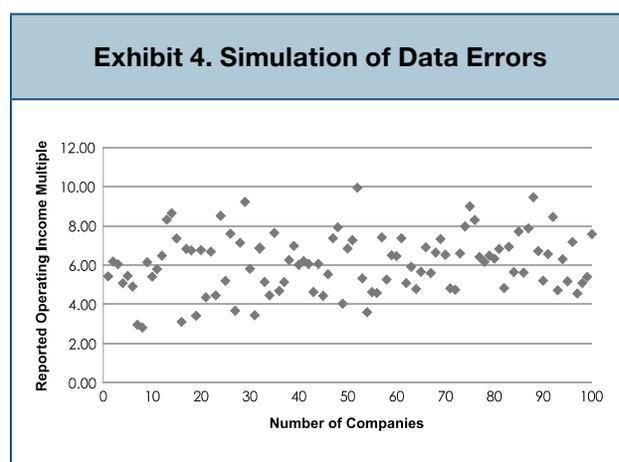


Assume that: (a) there were no “crazy” prices paid by buyers or sold by sellers; and (b) the reported transaction data relevant to determining a price-to-operating income multiple was a perfectly accurate 6.00. Next, assume a significantly large actual data problem using a sample of 100 transaction data points, with a true mean of 6.00 and a standard deviation of 1.35, as shown in Exhibit 4.¹⁶

As we see from the statistical analysis in Exhibit 3 (which uses the data problems illustrated in Exhibit 4), our aggregated data set for the IPCPL

500 transactions is nearly perfectly reliable.¹⁷ Specifically, with a sample size of 500, we are 95% confident that the reported data mean operating income multiple is between 5.88 and 6.12 if the true mean is 6.00.

IPCPL 500 aggregate growth assumption. Recall we employ the valuation axiom $K_0 = (FCFF_1/P) + g$ to solve for the IPCPL 500 K_0/IRR . One input



we must estimate is the aggregate growth rate (g) for our 500 companies to solve for the aggregate K_0/IRR . But importantly, we note that the growth rate assumption, within reason, is not critical. Since higher growth dampens $FCFF_1$ due to increased investments in fixed assets and working capital, we calculate that K_0/IRR changes only by about one-half of the assumed change in growth.

To estimate aggregate growth, we used real revenue growth and business age data from *Pratt’s Stats* as well as small business failure rate data from the Bureau of Labor Statistics (BLS). This was our process:

- First, we sorted 10,000 companies in *Pratt’s Stats* by business age—from one to 30 years—using a 10-year moving average.

¹⁷ Although we are not aware of any research that claims that these data providers’ transaction data are systematically biased (net net), we believe that we must qualify our confidence interval claims accordingly.

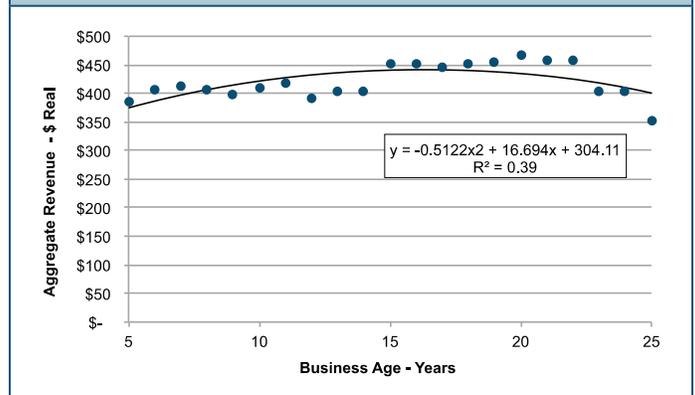
¹⁶ Exhibit 4 is an Excel model simulating individual, unreliable data points with a specified mean of 6.00 and a standard deviation (standard error here) of 1.35. For illustration purposes only, this error would imply that the data are inherently unreliable for its typical use, yet still highly reliable for a sample size of 500 transactions.

This yielded an unbiased estimate of revenue for companies aged five to 25.

- Second, we examined this sorted data by looking at the change in revenue as a function of age. While the average real growth rate was 4.8%, this sorted data only considers surviving companies—a statistical bias.
- Third, we took the *Pratt's Stats* business-age-sorted data and adjusted the surviving number of companies to reflect that the total number of companies is growing over time. Specifically, we “grossed-up” the number of older companies by the BLS’s “net birth rate” of 0.44%.¹⁸ For example, if there were 500 companies that were 10 years old, we adjusted the figure higher, to $500 \times (1 + .0044)^{10}$. Based on this analysis, the implied average failure rate of our 10,000 companies was approximately 5%. We compared this figure to data from the BLS that similarly indicated a long-run small business failure rate of approximately 5%.
- Fourth, from the sorted and adjusted data of 10,000 companies, we calculated aggregate revenue by company age. The result is set forth in Exhibit 5.¹⁹

Based upon the foregoing, we estimate the real aggregate growth rate of the IPCPL 500 to be 0%. Consequently, we expect aggregate *nominal* growth equal to long-term inflation. Therefore, as part of our “present day” adjustment (see next section), we update aggregate growth to include changes in inflation expectations. In Exhibit 2, our proxy for long-term inflation is the 20-year Treasury bond less

Exhibit 5. Aggregate Revenue Growth (\$Millions)



0.35% (a typical TIPS rate), or 2.36% at the time this article was prepared.²⁰

IPCPL 500 ‘present day’ adjustment. The IPCPL 500 is composed of transactions that occurred over the last 15 years. All else being equal, a current increase in the S&P 500 equity risk premium would decrease the value (P) of the IPCPL 500 and increase risk (K_0 /IRR). Therefore, we modestly reprice our 15-year sample of *Pratt's Stats* transactions to account for the risks of today’s market versus the average market conditions that existed over the 15-year sampling period. To do so, we applied this formula: $(ERP_0 - ERP_{15yravg})/2$. We divided by two, creating a simple average, because: (1) real interest rates correlate negatively with equity risk premiums; (2) the cost of capital is slightly less responsive to changing equity risk premiums than the cost of equity; and (3) to make a more modest adjustment, generally.

The current present day adjustment is only a 0.6% increase to our IPCPL 500 K_0 /IRR estimate, which would be added to the “raw” 18.1% K_0 /IRR calculated in Exhibit 2. Making no adjustment would be analogous to using a historical

18 Net birth data from the BLS indicate new business formations exceed old business deaths by 0.44% annually over the relevant time frame.

19 Had real growth been as low as 1%, for example, the aggregate revenue in Year 25 would have exceeded \$500 million.

20 We would normally estimate inflation by subtracting the 20-year Treasury Inflation Protected Securities (TIPS) rate from the 20-year Treasury bond. However, the TIPS rate is presently not a reliable indicator because of the current low interest rate environment and the fact that a TIPS inflation contract is bound at zero. Practitioners could also obtain an estimate of the long-term inflation rate from *The Livingston Survey*.

average ERP. Making the adjustment is analogous to using Damodaran’s current implied ERP using the estimated IRR on the S&P 500.²¹

IPCPL 500 owner/operator compensation adjustment. For the IPCPL 500, we sum all reported owner operator compensation and add this figure back to operating income. We then subtract market compensation determined from analyzing a leading market compensation database geographically adjusted for the IPCPL 500. That said, our relatively large minimum revenue/asset size criteria were selected to make the confidence interval of the compensation adjustment not material relative to the much larger aggregate operating income of the IPCPL 500.

IPCPL 500 cash add back/leverage. Our IPCPL 500 return data are an unlevered, cost of invested capital. Consistent with Damodaran’s above analysis on cash holdings, we adjust the purchase price of the IPCPL 500 to include only operating/wasting/non-interest-bearing cash holdings. We estimate this non-interest-bearing amount to be 1% of revenue.²² Therefore, users of the IPCPL need to add to the unlevered PV enterprise value all cash holdings that are capable of earning interest and, if valuing equity, subtract all interest-bearing debt.

IPCPL Data Point 2: IWC Micro-Cap

Point 2 on the IPCPL curve is for otherwise comparable companies with \$150 million revenue. Given that private companies of this size can go public, we employ standard K_0 estimation using the Fama-French three-factor model on the most broadly traded micro-cap exchange traded fund,

iShares Micro-Cap ETF (Ticker IWC).²³ We then adjust the result to convert to a private company equivalent of 11.6%, as shown in Exhibit 6.

Exhibit 6. IPCPL Cost of Capital (\$150 million sales)				
Size Adjustment:				
Micro Cap ETF - Ticker IWC(1): (Fama French Model)				
	Market F	SMB	HML	Implied ERP
	1.05	1.10	0.17	5.46%
	Cost		Weight	Subtotal
Cost Of Equity	10.94%	100.00%		10.94%
Cost of Debt - AFIT (2)	3.25%	0.00%		0.00%
Cost of Capital		100.00%		10.94%
Cost of Capital - Public Company	10.94%			
Private Company Indifference Discount	0.70%			
Private Company Cost of Capital Equivalence	<u>11.64%</u>			
Private Company Indifference Discount (\$000s)				
Revenue	\$150,000			
Operating Margin	8.11%			
Operating Income	<u>\$12,168</u>			
Annual Staying Public Company Costs (3)	500			
Annual Staying Public Company Costs %	4.1%			
Going Public Cost	<u>2.3%</u>			
Private Company Indifference Discount	6.41%	0.70% of 10.94%		
Notes:				
(1) IWC actual median size of revenue \$230Mil Approx. We adjusted SMB for \$150Mil according to smb relationship of SPY IWM and IWC				
(2) Sample of IWC companies had slight negative net debt position				
(3) Source: http://www.cfo.com/article.cfm/14582443/c_14582548				

The IPCPL interpolation curve—connecting the dots

As previously noted, we assumed a “no-arbitrage” approach/“law of one price” to develop the curve between Data Point 1 and Data Point 2.²⁴ Otherwise, investors could roll up

21 See pages.stern.nyu.edu/~adamodar/.

22 This percentage is based on our experience. We believe differentiating on the basis of interest-bearing versus non-interest-bearing cash is more objective than other methods of estimating “excess cash” and failing to relever beta for that excess.

23 The iShares Micro-Cap ETF seeks investment results that correspond generally to the price and yield performance of the Russell Microcap® Index. See us.ishares.com/content/stream.jsp?url=/content/en_us/repository/resource/fact_sheet/iwc.pdf for more information.

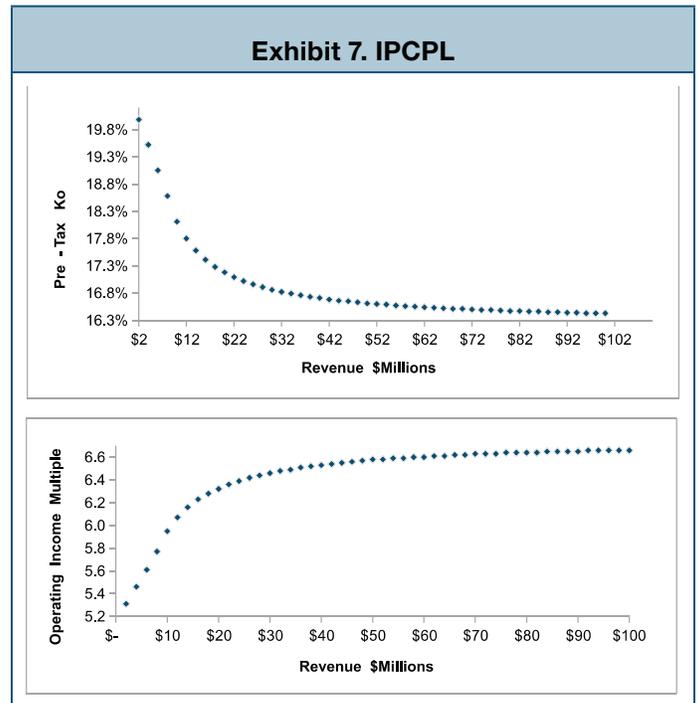
24 The economic law of one price, stated in any micro-economics textbook, is stated as: “In an efficient market, all identical goods must have only one price.” The intuition for this law is that all sellers will flock to the highest prevailing price, and all buyers to the lowest current market price. In an efficient market, the convergence on one price is instant.

companies, take them public, and earn outsized gains.²⁵ The resulting nonlinear curve is set forth in Exhibit 7, showing that the proxy for liquidity and unsystematic risk is nonlinear.

Conclusion

We demonstrated the volatile effect of the pitfalls when extrapolating public equity securities returns to small privately held businesses. The IPCPL completely eliminates the pitfalls for unsystematic risk, liquidity, small stock premium, PTE taxes, and cash/leverage by utilizing real transaction market-clearing prices between buyers and sellers of comparable small private businesses. Thus, the IPCPL is empirically tethered to economic reality. Without additional adjustment, the two appraisers in the example above would using the IPCPL arrive at the same conclusion—not something on the order of the potential magnitude we show.²⁶

IPCPL is not perfect—after all, it’s a model. But that is not the issue. The real question is whether IPCPL is significantly more reliable than extrapolating traditional stock market returns to private company cost of capital. We believe it is. For what it is worth, we are already finding this model very useful in our own practices—either as a stand-alone tool, where appropriate, or in conjunction with other methods.



Share your thoughts

If the business valuation profession is to advance, it needs to be open to new methods and approaches. Of course, traditional methods will always have their place, but new tools can—and should—be encouraged and considered as additions to the valuation toolbox. That means opening a dialogue and discussing new concepts, theories, and approaches.

What do you think about the IPCPL model’s new perspective on the problems of comparing public and private data? *Business Valuation Update* wants your feedback, so email the editor at andyd@bvresources.com.

Bob Dohmeyer, ASA, is a shareholder at Dohmeyer Valuation Corp., located just outside of Dallas.

Peter Butler, CFA, ASA, is a principal with Valtrend LLC in Eagle, Idaho. He is a co-developer of the Butler-Pinkerton Calculator.

Rod Burkert, CPA/ABV, CVA, is the owner of Burkert Valuation Advisors LLC. He travels full time in an RV.

25 In applying this approach, we used the Double Lehman formula; see en.wikipedia.org/wiki/Lehman_Formula.

26 As referenced in our webinar to the Experienced Business Appraiser Group on LinkedIn on Feb. 19, 2013, if appraisers determine that their subject company is more or less risky (systematic and/or total risk) relative to small private companies of similar size, we recommend a risk analysis, which is also available at www.Biz-App-Solutions.com. In this risk adjustment, where we move off the IPCPL (typically, only slightly), we account for differences in systematic as well as total risk of the subject company using a normalized risk assessment of various publicly traded guideline companies as a benchmark. We plan to write a follow-up article to address this generally nominal adjustment to the cost of capital.

The Implied Private Company Pricing Model (IPCPM)

$$K_0 = (FCFF_1/P) + g$$

By Bob Dohmeyer, ASA; Pete Butler, CFA, ASA; and Rod Burkert, CPA/ABV, CVA

Editor's Note: The authors have developed a model designed to be more reliable than the build-up method for estimating the cost of capital of a small privately held business. This model uses the authors' new Implied Private Company Pricing Line 2.0 (IPCPL) and is indexed directly to the IPCPL cost of capital. The model allows adjustments for differences in systematic risk (i.e., beta), diversifiable and total risk (i.e., total beta), liquidity, and debt capacity.

Introduction

In the September 2013 issue of *Business Valuation Update (BVU)*, we introduced the Implied Private Company Pricing Line 2.0 (IPCPL). IPCPL uses small private company transaction data to solve directly for the cost of capital for a typical risk private company with \$150 million or less in revenue. The feedback from the article and our webinar was excellent. *BVU* now publishes monthly the “BVR Private Company Cost of Capital Index” based on IPCPL. Please see *BVU* back page for more.

While there was overwhelming support for IPCPL, many appraisers requested that we also develop a model that adjusts the IPCPL for companies with outlier fundamental characteristics. In response, we developed the implied private company pricing model (IPCPM)—a derivation of the IPCPL that allows for a departure from the IPCPL line. After all, some companies have fundamentally important different characteristics

that justify a departure from the average of companies that make up the IPCPL line. We show below that IPCPM is worthy of consideration because it is inherently more reliable than the build-up method.¹

Before we proceed to the IPCPM, we will review:

- Build-up method unreliability—the fundamental underlying causes of why the build-up method is inherently unreliable, making IPCPM worthy of consideration; and
- The IPCPL—the core cost of capital breakthrough that IPCPM starts from and

¹ We have previously cited the many problematic issues with the build-up method. For example, please see our article, “The Implied Private Company Pricing Line 2.0,” which was published in the September 2013 edition of *Business Valuation Update* and is now available from BVR as a free download at www.bvresources.com/IPCPLArticle.

- accounts for the vast majority of the IPCPM cost of capital estimation.

The Build-Up Method: Peeling the Onion

Professor Damodaran:

The build-up approach is a recipe for disaster.²

Dr. Paglia:

In a galaxy far far away, where unicorns prance on the back of the Loch Ness monster and privately-held companies have access to public equity markets, appraisers estimate cost of capital ... [using returns of publicly traded equity securities].³

Pepperdine survey:

78% of respondents do not feel comfortable with the build-up methodology that uses returns on publicly traded equity securities.⁴

From the Court of Chancery of Delaware, New Castle County 902 A.2d 1130 (2006), we have this:

This court has also explained that we have been understandably suspicious of expert valuations offered at trial that incorporate subjective measures of company-specific risk premia, as subjective measures may easily be employed as a means to smuggle improper risk assumptions into the discount rate so as to affect dramatically the expert's ultimate opinion on value. (Gesoff v. IIC Industries)

The company-specific risk premium (CSRP) issue:

2 Presentation at the ASA Advanced Business Valuation Conference in October 2009 in Boston during a debate with Larry Kasper, Pete Butler, and Christopher Tofallis regarding total beta.

3 One of the authors of the Pepperdine Private Capital Markets Project in a LinkedIn discussion.

4 *Pepperdine Private Capital Markets Project, Survey Report III*, Summer 2010.

Gary Trugman, a noted expert in business valuation, provides the list in Exhibit 1 of asset classes on a risk-descending basis to illustrate company-specific risk.⁵

Exhibit 1. Asset Classes (Risk-Descending Basis)
Junk Bonds
Small Company Stocks
Large Company Stocks
Corporate Bonds (AAA)
Certificates of Deposit
Treasury Bonds
Treasury Bills

With each and every asset class listed above, we can observe historical investment rates of return. With small privately held businesses, we have no data on historical rates of return. This is a critical distinction. And Trugman points out:

Although much is written about analyzing companies, when the subject of quantifying the analysis into a number called the specific company risk premium, the textbooks do not have much to say.... There is no objective source of data to properly reflect or quantify the specific company risk premium. It is a matter of judgment and experience. There are no mystical tables that an appraiser can turn to, nor can the appraiser be totally comfortable with this portion of the assignment.⁶

Shannon Pratt, et al., states:

The estimation of the effect of investment-specific (unsystematic) risk is often a matter of the analyst's professional judgment.... There is no

5 trugmanvaluation.com/pdf/presentations/Company_Specific_Risk.pdf.

6 *Ibid.*

specific model or formula for quantifying the exact effect of all the investment-specific risk factors on the discount rate.... This is ultimately based on the analyst’s experience and judgment.⁷

And Jim Hitchner adds:

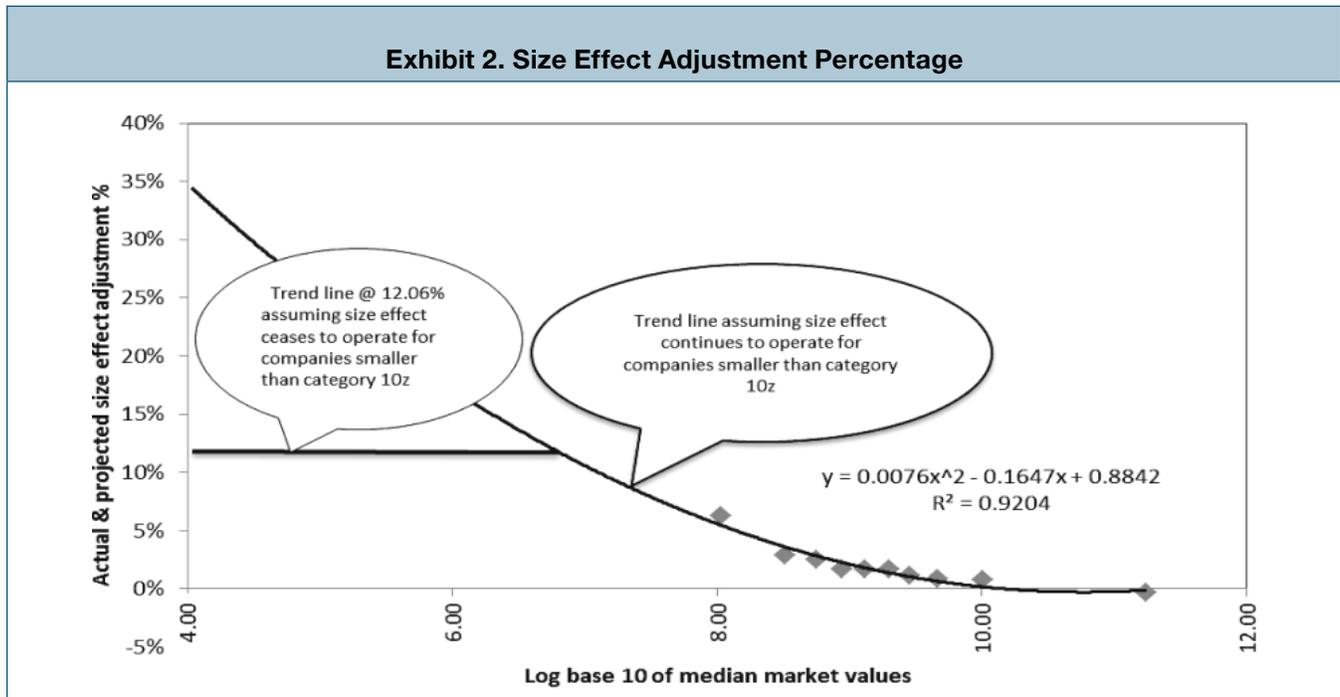
The final component of the discount rate is the risk specific to the company being valued and/or the industry in which it operates. This is one of the most subjective areas of business valuation.⁸

privately held companies (SPC), and, as a result, a CSR of 1% may be as supportable as 21%.⁹

The Small Stock Premium Issue

The build-up method has the same reliability problem when it comes to the question of which small stock premium should be applied. Exhibit 2 says it all. Why do many appraisers just stop at Decile 10—either a, b, y or z—and not extrapolate to smaller (private company) sizes?

Unfortunately, Duff & Phelps are no help here



Conclusion: Everyone admits there is no scientific basis to test for reasonableness. Thus, unlike the asset classes listed above, where we can observe investment rates of return, we cannot observe actual rates of return for typical small

either since they claim that their data are applicable for a "publicly traded minority basis."

Therefore, unlike the other asset classes listed above, where we can observe investment rates of return, we cannot observe actual rates of return for the SPC. So again, from the data in Exhibit 2,

7 Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweih, *Valuing a Business*, 4th Edition: 181.

8 James R. Hitchner, *Financial Valuation: Applications and Models*, 1st edition: 144.

9 For purposes of discussion, we will refer to the small privately held company as a "SPC"—a privately held company with approximately \$5 million in sales and predominantly bought and sold by owner-operators.

a small stock premium (SSP) of 6% may be as supportable as 35%.

With this in mind, we have challenged business appraisers on their use of the build-up method for a SPC. It goes like this:

Questions:

- According to our surveys, nearly four times as many choose decile 10,10b, or 10a, versus 10z. This makes no sense—if we believe that size correlates to the SPC, we should pick 10z—it’s a lot closer! So why not use 10z instead of 10a? Or why not extrapolate all the way to our SPC size, instead of stopping at 10, 10a, 10b, or 10z?
- Why not use a CSR of 21%? Or why not use a CSR of 1%?
- So how do you make adjustments for size and company-specific risk?

Answer: When pushed and peppered with the above, appraisers admit (paraphrasing the industry):

There is obviously nothing scientific with my CSR, and my small stock premium choice is admittedly arbitrary, but if I used something way different, the resulting value would be unrealistic.

But since we can’t observe SPC investment return evidence how do we know what’s unrealistic?

(Paraphrasing the industry) *The market approach, generally.* If I used a 21% CSR or a 35% SSP, for example, the present value would be too low compared to the indication of value I arrive at using the market approach.

So because we cannot observe the historical investment returns of SPCs, when you peel the onion all the way, the *only* “build-up method accuracy tethering device” is an idiosyncratic and anecdotal synchronization to observed

transaction prices.¹⁰ IPCPL was specifically designed with this understanding in mind. It maximizes reliability by optimizing transaction data synchronization in a thorough and reliable manner. Thus, we believe, IPCPL is inherently more reliable than the build-up method.

The IPCPL: A Way Forward

IPCPL aggregates 500 *Pratt’s Stats* private company transactions and directly estimates the aggregate IRR on free cash flows. This ex-ante approach of measuring the IRR is fundamentally the same as Professor Damodaran’s monthly calculation of the implied equity risk premium. By using fair market value prices paid for small privately held companies, all of the public security return extrapolation issues are rendered moot. Effects of liquidity, unsystematic and systematic risk, and taxes are already reflected in (i.e., “baked-in”) the SPC market clearing prices. Using lower discount rates would yield values in excess of this market evidence; using higher discount rates would yield values below this market evidence.

Thus, IPCPL solves these dilemmas:

- What tax rate should I use?
- How should I adjust for the lower liquidity of small privately held businesses, if at all?
- What equity risk premium and risk free rate should I use?
- Should I adjust for the higher-than-S&P-500 systematic risk of small privately held businesses? If yes, how?
- How much debt should I assume in my WACC? How do I unlever and relever beta?

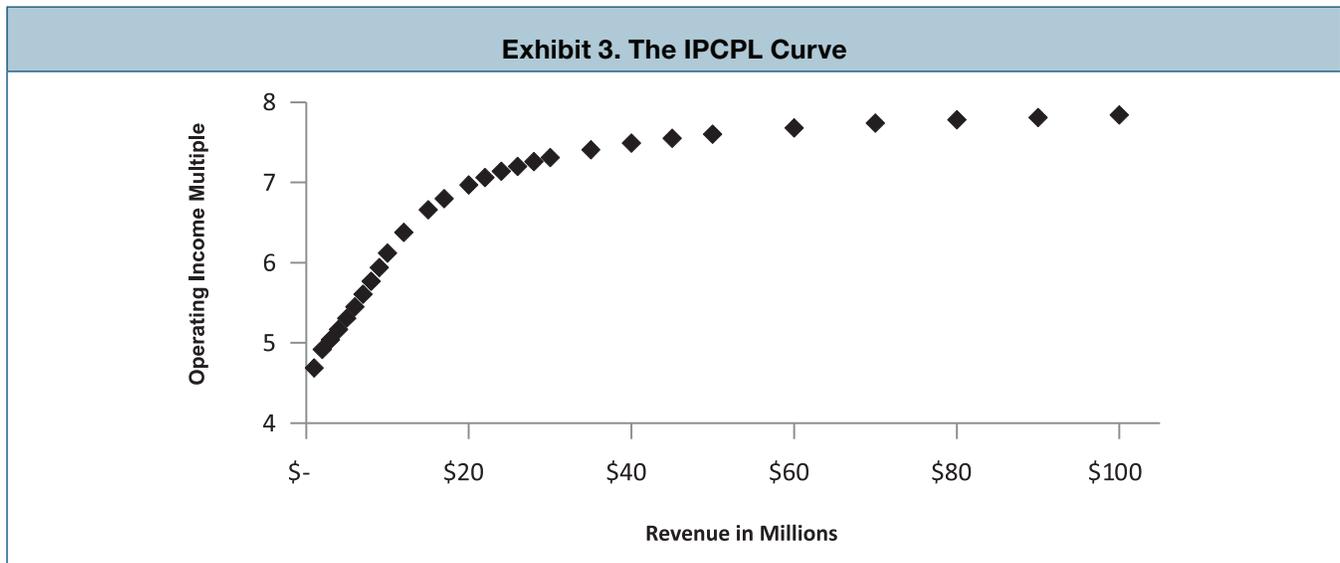
¹⁰ One may argue that they are tethered by common usage of other experts, but that is circular. Also, polls show experts are all over the map on these issues.

And how do I determine the amount of “excess” cash?¹¹

- Should I adjust for the much higher unsystematic risk of privately held companies? If yes, what level of diversification should I assume?
- Should I use a SSP? If yes, which SSP should I use? How do I extrapolate it to a small privately held business without double counting liquidity and higher systematic risk?

- Data Point 2 is based on the cost of capital, adjusted for the cost of going and staying public, of microcap publicly traded companies in the range of \$150 million revenues.

As expected, our K_0 calculations indicate a higher required return for the smaller-sized companies of Data Point 1 and a lower required return for the larger-sized companies of Data Point 2. Further, the two points are connected by a curve that is shaped by the “no-arbitrage” rule to mitigate any possibility to arbitrage or profitably roll up the smaller companies into larger ones.



IPCPL is the private company cost of capital line (curve) shown in Exhibit 3 and is created by connecting two data points:

- Data Point 1 is based on transaction prices of 500 SPCs from the *Pratt’s Stats* transaction database, published by Business Valuation Resources (the IPCPL 500).

IPCPL Data Point 1:

The IPCPL cost of capital is derived from the well-known valuation axiom $K_0 = (FCFF_1/P) + g$. Since K_0 is axiomatic, Point 1 is the natural result if the inputs $FCFF_1$, P , and g are sound. Exhibit 4 summarizes IPCPL Point 1.¹²

The IPCPL 500’s 19.69% IRR represents the cost of capital (pretax FCFF discount rate) most consistent with actual clearing prices for the asset

¹¹ *Pratt’s Stats* data are market value of invested capital (MVIC). Therefore, all K_0 optimal debt financing is included in the MVIC. Consequently, the IPCPL result is automatically adjusted for actual FMV transaction debt proportions and, therefore, is an optimal cost of capital.

¹² The actual IRR in our model after adjusting for mid-period receipt of cash flows is 22.12%.

class—SPC.¹³ Stated differently, the \$1.928 billion aggregate fair market value (or “P” in the K_0 equation) inherently reflects the market’s net adjustment for unsystematic risk/CSRP, illiquidity, debt capacity, size, and pass-through entity taxes, etc.

IPCPL Data Point 2:

Point 2 on the IPCPL curve is for otherwise comparable companies with \$150 million revenue. Given that private companies of this size can go public, we employ standard K_0 estimation using the Fama-French three-factor model on the most broadly traded microcap exchange traded fund, iShares Micro-Cap ETF (Ticker IWC). We then adjust the result for the costs of going and staying public to convert to a private company equivalent.

Connecting the dots:

As previously noted, we assumed a “no-arbitrage” approach to develop the curve between Data Point 1 and Data Point 2. Otherwise, investors could roll up companies, take them public, and earn excess returns. The resulting nonlinear curve is set forth in Exhibit 3, showing that the proxy for liquidity and unsystematic risk is nonlinear.¹⁴

IPCPM: The Solution

IPCPL, using the Gordon growth model axiom, solves for SPC K_0 and uses the no-arbitrage rule to adjust K_0 for size. However, all SPCs of the same size do not necessarily have the same K_0 . IPCPM starts with the IPCPL K_0 estimate and adjusts for *intra same size outlier SPC* differences. Therefore, it can be described as a “build-out” model that builds out from the IPCPL line. Consequently, the average build-out adjustment

13 Even though the marginal buyer of the SPC is a pass-through entity, a plurality of SPC appraisers assume a 35% tax rate. IPCPL/IPCPM converts the IRR to any assumed after-tax rate equivalence such that the observed *Pratt’s Stat’s* 500 index valuation remains constant.

14 Please see our IPCPL webinar archive, FAQs and IPCPL paper at www.bvresources.com/IPCPL.

Exhibit 4. IPCPL 500 From Pratt’s Stats	
IPCPL 500	
<i>From Pratt’s Stats</i>	
	\$ Millions
Revenue TTM	\$3,293
Operating Income TTM	\$335
Operating Income Margin (%)	10.17%
Market Value (P)	\$1,928
Operating Income Multiple	5.76
Estimated Growth (G)	3.27%
Operating Book Capital % of Revenue	27.3%
Operating Income Year+1	\$346
Operating Book Capital	\$899
Operating Book Capital Growth Year+1	\$29
Operating FCFF Year+1	\$317
Operating FCFF Year+1 / Market Value	16.42%
$K_0 = FCFF1/P + G$	19.69%
Present Day Adjustment	0.76%
$K_0 = FCFF1/P + G$ Present Day	20.45%
Holding the above relationships constant:	
$FCFF1 = \$335 * 1.0327 - \$899 * 3.27\% = \$317$	
$K_0 = \frac{FCFF_1}{P_0} + g$	
$= \$317/\$1,928 + 3.27\% = 19.69\% = IRR$	

to IPCPL K_0 is zero. If the SPC is typical, then the IPCPM result equals the IPCPL result. In other words, the IPCPL result is the best K_0 estimate. If the SPC is atypical, then the IPCPM result is the better K_0 estimate.

IPCPM has four adjustments and uses the colloquialism of “all other things equal.”¹⁵ Thus, for a given SPC:

1. All other things equal, higher *systematic risk*, as a share of total risk, impacts value negatively;
2. All other things equal, higher *unsystematic risk*, impacts value negatively;

15 These are the four SPC K_0 /non-numerator considerations recognized by Professor Damodaran.

3. All other things equal, higher *illiquidity* impacts value negatively; and
4. All other things equal, lower *debt borrowing capacity* impacts value negatively.

Based on our experience with SPC transactions, what we learned from the IPCPL data and IPCPL curve, and research of the relevant theory, we have developed the following IPCPM adjustments to IPCPL.

Systematic and Unsystematic Risk

Unfortunately, this is a subject of business valuation where continuing education is lacking. Indeed, based on our informal and anecdotal surveys, most appraisers believe that a beta of 1.5 means that the company's stock is 50% more volatile than the stock market.¹⁶ In fact, beta (systematic risk) represents the *contribution* of risk to a diversified portfolio. An asset can have extreme volatility, but, if its price is not correlated with the stock market, its beta is zero.

So if the marginal hypothetical willing buyer is completely diversified with a net worth of \$60 million, he or she can pay \$2 million for a SPC and only care about the SPC correlation/contribution of risk (beta) to his or her portfolio. At the other end of the diversification spectrum, if the marginal hypothetical willing buyer has only \$2 million to buy the SPC and his or her entire net worth is based on the single SPC volatility (total beta), then correlation is irrelevant to the marginal hypothetical willing buyer's total asset risk, at least initially.

Moreover, the Morningstar industry risk premium, the most common method for adjusting for systematic risk, is unreliable in many cases. For example, these data frequently suggest a zero to negative adjustment for restaurants. McDonald's has a beta of approximately 0.30 and Ruth's Chris Steakhouse, an expensive dinner house that is

far more sensitive to economic downturns, has a beta of nearly five times this amount—yet they both get the same Morningstar risk premium.

Unsystematic risk represents uncertainty of future cash flows that is uncorrelated with the economy and unique to the SPC. An example of unsystematic risk is where the existing SPC trucker restaurant is subject to two potential new highway routes that would either increase or decrease customer traffic flow by 50%. Unfortunately, many appraisers believe that the adjustment for unsystematic risk is for when we adjust the hypothetical highway to where the new route can only hurt customer traffic and the appraiser adjusts the unsystematic risk to account for both uncertainty and the cash flow numerator downside. But this is not how to account for risk.¹⁷

Market Clearing Price Beta

While some appraisers may have difficulty with some of these concepts, or what metrics may capture their impact, they know how to answer a well-crafted question that gets them to the same place. The IPCPM asks the pertinent questions and then adjusts the cost of capital (developed from the IPCPL) as appropriate—resulting in either a higher cost of capital (more risky company than average company of same revenue) or a lower cost of capital (less risky than average company of same revenue).

For example, for systematic risk, the IPCPM asks the appraiser to rank the risks facing the company, with the following simple questions/illustrations:

How correlated and sensitive is the business and future profits with the economy? For example, restaurants: expensive dinner house = high, McDonald's franchise = low. Aerospace: private jets = high, defense = low. If the average company is a 5 on our 0-to-10 scale, the expensive

¹⁶ In fact, a leading business appraisal resource describes beta this way. This actually represents total beta, not beta.

¹⁷ At the 2013 San Antonio ASA Advanced BV Conference, Pratt and Grabowski made a special effort to stress this point.

dinner house may receive a ranking of 8 and a very high implicit market clearing price beta. These selections naturally increase the discount rate and lower the value of the subject company, all else being equal.

For unsystematic risk, the IPCPM asks the appraiser to rank the risks facing the company, with the following simple questions/illustrations:

How uncertain is the cash flow forecast? If revenue and earnings history are highly variable and difficult to forecast, = high. If business has only one product with a highly uncertain future, = high. The opposite answers would result in low uncertainty.¹⁸

Liquidity and Debt Capacity

The liquidity of the SPC is a hotly debated topic. In our IPCPL webinar with BVR on Nov. 7, 2013, we polled the audience members on whether they discount a DCF control interest for illiquidity. The results: 59% applied an illiquidity discount to a 100% interest, and 41% did not. The pro-discount crowd has to divine the discount for a 100% interest in a small privately held business (unobservable) and divine and remove the illiquidity included in the SSP.

The no-discount crowd will begrudgingly admit that, all other things equal, more illiquidity equals less value and the SPC is not perfectly liquid. So apparently these people believe that the liquidity issue for a 100% control interest in the SPC is handled in the SSP and/or CSR. Many of the no-discount crowd believes that “since the seller has the cash flows while they wait for the sale, there is no discount.” However, clearly, 100% of cash immediately is better than yield for a seller who wants his or her cash now; if he or she were indifferent to the cash now versus the yield, she would be indifferent to selling the SPC. Also, what if the business is losing money? This illustrates the problem

18 We estimate an equal weighting of the importance of systematic and unsystematic risk at the smaller sizes, consistent with a no-arbitrage view of increased systematic weight as size increases.

with a rigid one-size-fits-all approach to the issue.

We know that it takes nearly a year on average to sell a SPC and, based on our IPCPL data and the above analysis of systematic and unsystematic risk pricing, there is strong evidence that the marginal investor in the SPC requires a substantial premium for illiquidity.¹⁹

Professor Damodaran has the following to say about the liquidity of the SPC:

When you buy a stock, bond, real asset or a business, you sometimes face buyer’s remorse, where you want to reverse your decision and sell what you just bought. The cost of illiquidity is the cost of this remorse. In the case of publicly traded stock in a heavily traded company, this cost should be small. It will be larger for stock in a small, over-the-counter stock and will *escalate for a private business, where there are relatively few potential buyers.*

One way of capturing the cost of illiquidity is through transactions costs, with less liquid assets bearing higher transactions costs (as a percent of asset value) than more liquid assets. The trading costs associated with buying and selling a private business can range from substantial to prohibitive, depending upon the size of the business, the composition of its assets and its profitability. There are relatively few potential buyers and the search costs (associated with finding these buyers) will be high. In fact, if the investor buying it from you builds in a similar estimate of transactions cost she will face when she sells it, the value of the asset today should reflect the expected value of all future transactions cost to all future holders of the asset.

19 For an analysis of the varying illiquidity of the SPC, see Daniel L. McConaughy, Vicentiu Covrig, and Donald Bleich (2010) “Location and the Liquidity of Private Businesses.” *Business Valuation Review*: Spring 2010, Vol. 29, No. 1, pp. 23-31.

In conventional valuation, there is little scope for showing the effect of illiquidity. The cash flows are expected cash flows, the discount rate is usually reflective of the risk in the cash flows and the present value we obtain is the value for a liquid business. With publicly traded firms, we then use this value, making the implicit assumption that illiquidity is not a large enough problem to factor into valuation. In private company valuations, analysts have been less willing (with good reason) to make this assumption. The standard practice in many private company valuations is to apply an illiquidity discount to this value. But how large should this discount be and how can we best estimate it? This is a very difficult question to answer empirically because the discount in private company valuations itself cannot be observed.²⁰

We emphasize this point Damodaran makes above: “(Illiquidity costs will) ... escalate for a private business, where there are relatively few potential buyers.”

The SPC, due to the tendency of an owner-operator, is marketed predominantly in a local market. This makes for the number of market participants for the SPC to be extremely low compared to common stock securities of even microcap companies that are traded on an exchange where anyone in the world can invest or speculate with just a few shares.

Every local market participant for the SPC has his or her unique (“nonhomogeneous”) risk and liquidity preferences. Therefore, the market clearing price of the SPC will be a positive function of the number of hypothetical willing buyers, all else equal.

Illiquidity, Intrinsic Value, and FMV: An Illustration of How ‘Thin’ Markets Work

In Exhibit 5, we show the SPC market clearing price (FMV) dynamic when the number of

hypothetical willing buyers falls. The model assumes that each hypothetical willing buyer has the same cash flow estimation but that each has a unique minimum acceptable hurdle rate of return as compensation for his or her personal feeling about the risk and liquidity of the SPC (varying intrinsic value estimates).²¹ In a competitive market to purchase the SPC that spans nearly one year, the seller accepts the *best* bid, not the average bid. Therefore, slightly oversimplifying, the market clearing price (FMV) from *competitive* bids is conceptually based on the hypothetical willing buyer with the lowest minimum hurdle rate (highest intrinsic value) bidding just over the hypothetical willing buyer with the second highest intrinsic value. This market microstructure illustrates a flaw in the standard theoretical framework that many appraisers employ when appraising the SPC.²²

Debt Capacity

Capital structure theory is very complex. Worse, the accepted models that relate to this subject (e.g., the Hamada model and other derivatives) center around the valuation of the tax benefit related to the large C corporation double tax eliminated by debt interest. Based on our research, however, buyers of the typical SPC are other PTEs. Modigliani and Miller make a powerful proof that with no double C corp. tax under a “no-arbitrage” framework (that ignores liquidity issues described above) that capital structure is irrelevant.

However, all other things equal, higher debt capacity lowers the amount of funds required from the marginal hypothetical willing buyer in the competitive market for the SPC described above. Since it adds to the number of market participants and adds a source of financing that intuitively has a lower price of liquidity, we

21 In both markets, the average minimum hurdle rate is 20.50%

22 Many appraisers do not consider how thin the market is for their subject SPC. They inherently assume that intrinsic value is homogeneous across all hypothetical willing buyers.

20 *Marketability and Value: Measuring the Illiquidity Discount*, Dr. Aswath Damodaran, Stern School of Business, July 2005.

estimate a significant advantage to higher debt financing capacity.

Lenders are also generally well diversified and, therefore, have relatively predictable cash flow from loans and as a consequence have relatively low liquidity preferences compared to the owner operator with limited net worth and limited ability to predict future needs for liquid capital.

IPCPM in Practice

We developed a build-up method DCF and cap model with IPCPL and IPCPM running in the background. You can download it at www.biz-app-solutions.com. Here is how it works:

On the IPCPM tab, rate how your subject company compares on the spectrum for each of the

four parameters described above, from 0 to 10. Then select whether you want to perform a DCF or a capitalization. Fill in the pertinent historical financial results and projection(s). Next, fill in the appropriate build-up inputs (see the purple cells).

The IPCPM will now compare your two calculations: the IPCPM conclusion and the build-up conclusion (or really any other method you may be using). If the two indications of value are within 10% of each other, then we believe this result has corroborated your conclusion using the (unreliable) build-up method, for example, and indicates your analysis is “OK.” If a discrepancy of more than 10% exists, it will alert the appraiser that the build-up method results in either too low or too high an indication of value. Appraisers may then want to look at their assumption in the build-up model to determine whether something looks amiss.

Exhibit 5. SPC Market Clearing Price (FMV) Dynamic					
Market Micro Structure:		“Liquid” Market HWBs Intrinsic Value		Illiquid Market HWBs Intrinsic Value	
		909,091	25.0%		
Cash Flow	\$ 200,000	952,381	24.0%	1,052,632	22.0%
CF Growth	3.00%	1,000,000	23.0%	1,111,111	21.0%
“Liquid” Market Clearing Price (1)	\$ 1,428,571	1,052,632	22.0%	1,176,471	20.0%
10 Bidders		1,111,111	21.0%	1,250,000	19.0%
Illiquid Market Clearing Price	\$ 1,176,471	1,176,471	20.0%	AVG K_0	20.50%
4 Bidders		1,250,000	19.0%		
Illiquidity Discount	-18%	1,333,333	18.0%		
(1) Less Illiquid		1,428,571	17.0%		
Clearing Price (FMV)		1,538,462	16.0%		
Winning Bidder		AVG K_0	20.50%		

The IPCPM will be updated monthly along with the IPCPL, essentially providing real-time cost of capital data.

Conclusion

We demonstrated above that, after peeling the onion, the build-up method uses critical arbitrary inputs and is inherently unreliable without reliable transaction data. We cannot stress too strongly that the issue is not whether IPCPL and IPCPM are perfect—they are not. Instead, the issue is whether they are a significant improvement over the build-up method. They are.

With our DCF build-up model with IPCPL/IPCPM running in the background, you get the benefit of this model as a reasonableness check with

almost zero extra work. In summary, it's like having a cost of capital expert with you during your valuation engagement to help you through the many pitfalls of the build-up method.

Bob Dohmeyer, ASA, is a shareholder at Dohmeyer Valuation Corp., located just outside of Dallas.

Peter Butler, CFA, ASA, is a principal with Valtrend LLC in Eagle, Idaho. He is a co-developer of the Butler-Pinkerton Calculator.

Rod Burkert, CPA/ABV, CVA, is the owner of Burkert Valuation Advisors LLC. He travels full time in an RV.

BV Community Reacts to New Cost of Capital Tool

Feedback was swift from the valuation community on the implied private company pricing line (IPCPL), a new method to estimate the cost of capital for private companies. An article explaining IPCPL was published in the September 2013 issue of *Business Valuation Update*.

IPCPL is designed to be more reliable in estimating the cost of capital for a privately held business with revenues less than \$10 million. It eliminates the inherent problems in the traditional approach that can result in vastly different estimates by different appraisers using the exact same data sources. The IPCPL model is based on the well-known valuation axiom $K_0 = (FCFF_1/P) + g$.

Most of the feedback on IPCPL from the valuation community has been positive and constructive. We present some of that feedback—both positive and negative—here to keep the dialogue open on this new method as a way of fostering new ideas and thinking that will help to advance the profession.

Brings order to chaos. “The way we now estimate the cost of equity (build-up, modified CAPM, etc.) is total anarchy and inherently unreliable since small private companies are not too comparable to large and liquid public companies,” says Mark Youden. “This new IPCPL looks promising since it’s comparing apples to apples.”

Another commenter pointed out the same issue, noting that “there are a wide variety of ad hoc (and fairly non-transparent) valuation practices used in valuing SMEs,” says Malcolm McLelland (Equilibrio Capital/Brasil), who is a trained micro-economist and business appraiser. “There seem to be two broad groups whose perspectives on SME valuation can be summarized like this: Valuation professionals who believe that SMEs can be accurately and reliably valued using data from public capital markets; and valuation professionals who think that there is little (if any) value-relevant information in public capital market data and, so, rely on heuristics, intuition and ‘judgment’ to form SME value estimates. [The] IPCPL model is essentially a ‘bridging theory’ that reconciles these two views in a very clear, transparent and innovative way that has clear theoretical underpinnings.”

Andrew Strickland (Scrutton Bland) built upon McClelland’s thoughts by saying that “the simple truth is that the ownership interest of a small private enterprise is very different from a tiny slice of a public company. One is then left with one’s own experience and knowledge of actual transactions as the basis for the valuation opinion. This can so readily be challenged and rebutted.”

“The IPCPL works from this unpromising starting point: it builds a structure which is strongly rooted in empirical evidence at the smaller end. Then, it takes as the second data point a very

well considered approach to the valuation of the largest private companies, using the public markets in an entirely credible way, and adjusting for various relevant factors. The result is a bridge which is intellectually very robust, and which offers a great way forward.”

Strickland, who began the primary IPCPL discussion thread on LinkedIn, points out that there will be more criticisms of the model. “There are various aspects of the model which can be challenged,” he says. “But it is such challenge and debate which leads to improvement in all that we try and do.”

No economic sense? Speaking of challenges, one commenter writes: “The very basis and foundation of the Implied Private Company Pricing Line is absent economic sense,” writes one commenter, who sees no reason to move away from the use of the classical CAPM/public company method to value private companies.

“The principal flaw in the argument, as I see it, is its failure to recognize the one and only concept of cost essential to economics, and, as such, essential to investment and investors—namely, opportunity cost. The same investor holding \$500,000 to invest in a private company has as a next-best alternative investment in a public company. Public company cost of capital has been made available in empirical format since the foundational studies of Fischer Black, and is currently being carried on admirably at the Stern School of Business at New York University under the guidance of Professor Aswath Damodaran.... I am sorry, the IPCPL [method] will not have the legs that Fischer Black has provided for us.”

The IPCPL developers respond: “Thought leaders in this area disagree with the argument that there is no need to stray from the classical CAPM/public company method to determine the cost of capital for a small private company. This includes even Dr. Hakala, who believes in the most classical, basic theory approach to the valuation of small private companies. He says that when dealing with small privately held businesses you have to adjust CAPM upward due to

market frictions. He goes on to say that IPCPL is a conceptually sound approach toward resolving this issue. Duff & Phelps, Shannon Pratt, James Hitchner, and so on, all admit that the approach the commenter advocates will result in valuations far in excess of observed actual transaction prices. They all recommend adjusting for this observed flaw by adding to the cost of capital. Most make this adjustment with a ‘company specific risk premium’ (CSRP). No one in small private company valuation that we know of argues to use simple public company finance theory. Professor Damodaran (recognized favorably by the commenter above) specifically *rejects* the commenter’s opinion and instead recommends total beta and a liquidity adjustment to correct for the flaws in the theory he or she advocates. He says our IPCPL approach (using a large aggregation of transactions) is conceptually sound.”

The commenter responds: “There is so much wrong with the answer back to my simple comment that I don’t know where to begin in rejoinder. I’ll run with two. First, I say nothing about Professor Damodaran and his opinion of the need for a different valuation metric for privately held companies. I only addressed the Stern School’s collection of statistical data as a carrying-on of the work begun by Fischer Black. Second, the authors never discuss the opportunity cost issue, and appear to refuse to recognize how the classical model delivers a viable option available to every investor—to take money out of the privately held arena into the public one.”

To continue with this exchange is beyond the scope of this article. The commenter was invited to join BVR’s LinkedIn group (see the sidebar of IPCPL Resources) that has several discussion threads about IPCPL in which the developers participate.

Adjusting for atypical companies. A number of commenters pointed out that IPCPL is fine for average companies, but what if the subject company is not average or typical? And what if it’s not in the same industry? They asked how to adjust for these factors.

The IPCPL developers respond: “Companies in different industries (for example, a \$1 million construction company and a \$1 million wholesaler) would have the exact same starting point with IPCPL. Users may adjust the IPCPL rate as they do now using the company specific risk premium. However, if your typical CSRP was 5% generally and you would use 7% for a specific subject company, then the adjustment to IPCPL would be plus 2%, all else being equal. Users may also adjust as they always have using industry risk adjustments.”

“We have developed the Implied Private Company Pricing Model (IPCPM) that will allow users to move off the IPCPL (line-size adjusted average). The model is the only specific private company cost of capital model that is indexed directly to the IPCPL cost of capital. It facilitates adjustments from the IPCPL size based indication for comparable differences in: (1) systematic risk (i.e., beta); (2) diversifiable and total risk (i.e., total beta); (3) liquidity; and (4) debt capacity.”

Monthly estimates urged. “I would like to recommend that the IPCPL estimates be published monthly in the *Business Valuation Update* publication,” recommends McClelland. “I think this would be a great service to business valuation professionals and would go a long way towards both improving consistency in valuation practice and stimulating professional discussion leading towards better theories of private SME valuation. Further, I think publishing monthly IPCPL estimates would actually highlight the importance and deep practical value of some of the private transaction databases in estimating the value of privately-held businesses.”

A similar comment comes from Gregory E. Scheig, CPA/ABV/CFF, CFA (ValueScope Inc.). “I would look forward to seeing this rate updated periodically so I could have another data point in my future analyses,” he says.

Editor’s note: The BVR Private Company Cost of Capital Index (based on IPCPL) is now being published monthly in *Business Valuation Update*.

List of Resources for the Implied Private Company Pricing Line

- ➔ Business Valuation Resources IPCPL Center, www.bvresources.com/IPCPL.
- ➔ *The Implied Private Company Pricing Line: Empirically Observing the Cost of Capital COC = FCFF/P + G*, article published in *Business Valuation Review*, Volume 31, Issue 1, Spring 2012.
- ➔ *The Implied Private Company Pricing Line 2.0*, Business Valuation Resources LLC, article published in the September 2013 *Business Valuation Update*; available free at www.bvresources.com/IPCPLArticle.
- ➔ The IPCPL developers’ website, biz-app-solutions.com. The IPCPL model is available for review, use, and comment.
- ➔ BVR Private Company Cost of Capital Index (based on IPCPL), published monthly in *Business Valuation Update*.
- ➔ *Implied Private Company Pricing Line*, webinar conducted by IPCPL developers, November 2013; archive available at www.bvresources.com/IPCPLWebinar.
- ➔ The Business Valuation Resources LinkedIn group has several discussion threads on IPCPL, the primary thread is at www.bvresources.com/IPCPLLinkedIn.

NACVA weighs in. IPCPL “is an exciting development and contribution to the cost of capital determination,” says an article in the Jan. 2, 2014, issue of *QuickRead*, a publication of the National Association of Certified Valuators and Analysts (NACVA).

“Based on the current work, results, and communication between the developers and the valuation community, the IPCPL model will gain credibility and acceptance by valuers and users of business valuation in the near future,” writes Jeff Harwell (Harwell & Co.), who currently serves on NACVA’s Standards Committee. “Any valuator that appreciates the market approach or has operational

or transactional experience will be drawn to the Implied Private Company Pricing Line like comfort food. While the cost of capital debate continues and one resource transitions, many of us can look forward to future developments, advancements, and another helping of IPCPL.”

More feedback wanted: New methods and approaches such as IPCPL need to be developed and encouraged. *BVU* wants to keep the dialogue going on this new model, so we welcome more comments and feedback, which should be emailed to the *BVU* editor at andyd@bvresources.com.

IPCPL Developers Field Queries on the New Model's Underlying Data

In the September 2013 issue of *Business Valuation Update*, we presented a new method designed to be more reliable in estimating the cost of capital for a privately held business with revenues less than \$10 million. The method, known as the implied private company pricing line (IPCPL), eliminates the inherent problems in the traditional approach that can result in vastly different estimates by different appraisers using the exact same data sources.

The IPCPL model, while novel, is based on the well-known valuation axiom $K_o = (FCFF_1/P) + g$. The model uses two sets of data: (1) transaction prices of 500 small private businesses from the *Pratt's Stats* transaction database (the IPCPL 500); and (2) the cost of capital, adjusted for the cost of going and staying public, of micro-cap publicly traded companies in the range of \$150 million revenues.

The IPCPL method has elicited many questions from the valuation community. We present here questions that deal with the method as a whole and the underlying transaction data it uses. The answers are provided by the IPCPL developers and authors of the *BVU* article, Bob Dohmeyer, ASA (Dohmeyer Valuation Corp.); Peter Butler, CFA, ASA (Valtrend LLC); and Rod Burkert, CPA/ABV, CVA (Burkert Valuation Advisors LLC).

Q. Why should I use IPCPL as opposed to the build-up method?

A. Professor Damodaran calls the build-up approach a “recipe for disaster.” According to a recent survey, 78% of respondents feel uncomfortable with standard BV cost of capital techniques because they extrapolate returns of public equity securities.

The IPCPL cost of capital model solves all of the following problems:

- What tax rate should I use?
- How should I adjust for the lower liquidity of small privately held businesses?
- What equity risk premium should I use?
- Should I adjust for the higher (higher than S&P 500) systematic risk of small privately held businesses? If yes, how?
- Should I adjust for the much higher unsystematic risk of privately held companies? If yes, what level of diversification should I assume?
- Should I use a “small” stock premium? If yes, which small stock premium should I use?

- How do I extrapolate it to a small privately held business without double counting liquidity and higher systematic risks?

The IPCPL model aggregates 500 *Pratt's Stats* private company transactions and directly estimates the aggregate IRR on free cash flows. This IRR approach (aka "ex-ante" approach) is fundamentally the same as Professor Damodaran's calculation of the implied equity risk premium approach. By using prices paid (FMV) for small privately held companies, all of the above public security return extrapolation issues are rendered moot. The effects of liquidity, unsystematic risk, taxes, and so on are "baked-in" to the (FMV) clearing prices paid for the businesses.

We note that when appraisers are challenged as to why, for example, they use decile 10 instead of 10z, which is closer in size, most admit that there is nothing scientifically sound about how they do it. The same response is given when asked why they start with a company-specific risk premium of 5% instead of 0%. The explanation is typically this: "If I use 10z instead of 10, I would get PV results that are probably too low compared to the comps. Also, if I were to use a 0% company-specific risk premium instead of 5%, I would get PV results that are probably too high compared to the comps."

With these data and this model, we developed cost of capital estimates that are most consistent with the observable FMV prices paid for small privately held businesses. Employing cost of capital figures generally lower than IPCPL would yield fair market values in excess of the empirical FMV evidence, and employing cost of capital figures generally higher than IPCPL would yield fair market values below the empirical FMV evidence.

Q. What are the selection criteria for your 500 private company transactions?

A. We selected all *Pratt's Stats* transactions that met these criteria:

- They occurred over the last 15 years;

- They occurred in the U.S., with a private acquirer;
- They include owner compensation data; and
- They exclude medical doctor and dentist offices.

A size range was specified to achieve a sample size of 500: sales of between \$4 million and \$15 million; total book assets of between \$1.111 million and \$8 million.

Q. You say you stopped at revenue of \$10 million. Why?

A. There were not enough transactions beyond \$10 million for the 500 data points we require. Therefore, we solve by using a "no-arbitrage" line. We first estimated K_0 for our sample of 500 companies with average revenue of \$6 million using the aggregate IRR. We then calculated the cost of capital using the Fama-French three-factor model for a relatively large (\$150 million in revenue) publicly traded companies using the ETF for micro-cap stocks (ticker IWC). We then estimated the cost of capital differential for those publicly traded companies versus the same companies as if hypothetically private by estimating the total costs of going public and staying public. We then interpolated between these two known points using a no-arbitrage curve shape that accounted for proportionately lower arbitrage costs as a percentage of revenue as size increases. We used the double Lehman formula as our estimate of the shape of arbitrage costs. Our IPCPL no-arbitrage line is consistent with Pepperdine data on much larger deals.

Q. You are using transactions that go back 15 years. How would those transactions be comparable? It was a much different economic landscape back then.

A. We are using all companies so that our sample is comparable to "average" risk. We adjust the sample for time using an IPCPL 500 "present-day" adjustment. The IPCPL 500 is composed

of transactions that occurred over the last 15 years. All else being equal, a current increase in the S&P 500 equity risk premium would decrease the value (P) of the IPCPL 500 and increase risk (K_0/IRR). Therefore, we modestly reprice our 15-year sample of *Pratt's Stats* transactions to account for the risks of today's market versus the average market conditions that existed over the 15-year sampling period. To do so, we applied this formula: $(ERP_0 - ERP_{15yravg})/2$. We divided by two, creating a simple average, because: (1) real interest rates correlate negatively with equity risk premiums; (2) the cost of capital is slightly less responsive to changing equity risk premiums than the cost of equity; and (3) to make a more modest adjustment, generally.

Also, a regression pricing analysis was recently run of super-high-frequency small business transactions. The data show a strong inverse relationship to the "VIX" (aka fear/uncertainty index) and also show that most recently the valuation data have diverged below the VIX (fear) relationship. The data are improving slowly but more slowly than the VIX/fear recovery. IPCPL incorporates this market reality in our present-day repricing section.

Q. How did you determine that 500 comparables was the right number? Do regression statistics show that a sample size of 500 is necessary to minimize the error?

A. We wanted to use a very large sample to be sure that data and or valuation anomalies would be canceled out. We performed a statistical test of an exaggerated variance assumption and found that 500 were robust. We describe this in more detail in our article in the September 2013 issue of *BVU*.

Q. Are the *Pratt's Stats* data you used private or public company data?

A. Private buyers only. There are millions of small private companies in the U.S. Less than 1% would be acquired by a public company if hypothetically offered for sale. Public company deals are disproportionately reported in the data.

Q. *Pratt's Stats* reports a transaction "as it happened," which means some transactions can be stock and some can be assets. If the transaction is assets, the data reflect large variations in the assets acquired from one transaction to the next. How do you account for or adjust for this?

A. We include both stock and asset transactions (27% are stock deals). MVIC/price generally reflects MVIC as MVIC as substantively defined (the required price to acquire the net operating assets), however, some of the data are reported as FF&E plus intangibles plus inventory (excludes other net working capital). Net working capital excluding cash and inventory, "in aggregate" (how we calculate IRR K_0), is zero. The data are not systematically biased toward too-low MVIC or -high MVIC and as a consequence with a 500-sample size we are confident with the results. Therefore, MVIC/price is, in aggregate (law of large number—see article), the total price required to acquire all operating net assets necessary to run the business (excluding cash).

Q. My understanding is that there can be a significant gap in time between the income and balance sheet data reported by *Pratt's Stats* and the actual date of sale. Any consideration of this issue?

A. Yes. In *Pratt's Stats*, the P&L date and the transaction date are provided. With this information, we gross up the aggregate revenue, operating income, etc. to the transaction date.

Q. Did you include any of the completed transactions where the buyer was a public company?

A. No. We believe this may introduce a potential "observation bias" in the figures. These companies may indeed be companies that have some high net present values of growth capital. By observation bias, we are referring to the fact that the proportion of firms in the databases acquired by a public company is many times the proportion of all comparably small private firms that could be acquired by a public company. In

other words, the uniqueness of the firm makes it more likely to be acquired by a public company and show up in the databases. This bias is not necessarily a problem in that, as long as we can estimate G, it, of course, is of no consequence if the buyer was a public company. We believe that our above generalization of greater G being offset by a lower ratio of P/FCFF is reliable as long as a substantial number of outliers that have a very special ability to earn very substantial excess profits are not disproportionately represented. We believe that small private companies that are acquired by a public company are disproportionately likely to be those special companies. Based on our own experience and interviews with brokers, the chance of a private company (if hypothetically put up for sale) being acquired by a public company is less than a 1% chance. Therefore, we exclude the public company buyer data.

Q. I understand that some noted experts have criticized the transaction data as unreliable at times. How does this play into IPCPL?

A. The most common concern we encounter with the transaction data we employ is that it is inherently flawed by imperfections, such as incorrectly reported information. Indeed, based on obvious transaction duplicates between *Pratt's Stats* and *BIZCOMPS*, we see that some data were occasionally contradictory by significant amounts—making the data potentially unreliable on a data point-by-data point basis. However, because this noise is random, the aggregated data are, in fact, highly reliable with a large sample size of 500 data points. In the same way, a large portfolio of stocks nearly eliminates unsystematic risk; a portfolio of 500 transactions does the same to data errors. Therefore, the noise/errors are eliminated by the “law of large numbers.” To demonstrate the ability of our large sample size to cure any bad data problem, we performed a statistical analysis that is described in the *BVU* article.

Furthermore, the purchase price in a transaction is relatively straightforward compared to the allocation of purchase price that has been criticized. We examined the broker-supplied

“consideration” notes to the 500 transactions and found that the explanation of the MVIC/price was coherent and consistent with the definition of MVIC in nearly every case.

Q. How do you account for S corp versus C corp pricing?

A. Based on the IRS data and anecdotal evidence, we believe the marginal (aka the price-setting) investor for control transactions is a pass-through entity (PTE). Any pricing impact on the advantage of S corporations/PTEs would be imbedded in the price paid. We backsolve IRR based on price paid so we have accounted for S corp versus C corp pricing.

Q. Is IPCPL ready for court?

A. No. This model was developed very recently and has not yet been widely distributed or exposed. Therefore, even though it's more reliable than traditional methods, it needs some time to be vetted and used in nonlitigation where *Daubert* is not an issue. We recommend IPCPL as a means to calibrate the traditional cost of capital methods to avoid the “recipe for disaster” and to accurately test opposing expert's cost of capital figures. Also, for nonlitigation and/or “calculation” engagements, we prefer IPCPL. We now offer a build-up DCF model (available for download at www.biz-app-solutions.com/IPCPL.asp) with IPCPM advice that allows one to benefit from IPCPL and IPCPM “working in the background” while still using the traditional BUM/MCAPM.

More questions? New methods and approaches such as IPCPL need to be developed and encouraged. *BVU* wants to keep the dialogue going on this new model, so we welcome more comments and feedback, which should be emailed to the *BVU* editor at andyd@bvresources.com.



The Implied Private Company Pricing Line

Business Valuation Resources November 7, 2013/10:00 a.m. PT

Blake Lyman:

Welcome to *The Implied Private Company Pricing Line*, a BVR webinar featuring Robert Dohmeyer and Rod Burkert. My name is Blake Lyman, Professional Program Manager at BVR.

In the September 2013 issue of *Business Valuation Update*, today's presenters, Robert Dohmeyer and Rod Burkert, along with Peter Butler, laid out a new approach to cost of capital estimation for private businesses whose revenues are less than ten million dollars. Their model, the Implied Private Company Pricing Line, seeks to eliminate pitfalls for unsystematic risk, liquidity, small stock premiums, PTE taxes, and cash leverage by utilizing real transaction market-clearing prices between buyers and sellers of comparable small private businesses. Today we welcome Bob and Rod to present their model.

Bob Dohmeyer is founder of Dohmeyer Valuation Corp., a business valuation and M&A consulting firm. Bob provides professional valuation advice and appraisals primarily for bankruptcy and family law matters. He also specializes in complex valuation issues and provides consulting work for other appraisers in this regard. Bob has lectured and published several papers on various valuation topics and is on the editorial review board of the *Journal of Business Valuation and Economic Loss Analysis*.

Rod Burkert is the founder of Burkert Valuation Advisors LLC, a business valuation and litigation support firm. Rod performs appraisals for companies operating in a wide variety of industries. His assignments focus primarily on valuations for income, gift and estate situations, divorce proceedings, partner and shareholder disputes, and commercial damages and economic loss matters. He also provides independent report review and project consulting services to assist attorneys and fellow practitioners with their engagements.

It is my pleasure to welcome Bob and Rod today and, as always, you can read their complete bios on our web page for today's webinar.

With that, I will turn it over to Rod Burkert and Bob Dohmeyer for *The Implied Private Company Pricing Line*.

Rod Burkert:

Good morning or good afternoon depending on where you are, and welcome to our presentation on the Implied Company Pricing Line, or as we are going to refer to it, IPCPL. We are taking a page out of Stephen Covey's book, and beginning with the end in mind, this will be just about the very last slide that we get to in our presentation today, so we are going to start off with it to give you an idea of simply where we are headed.

This is the end result of all the work, all the calculations that Bob Dohmeyer and Pete Butler have done. You see two graphs. One is basically expressing a cost of capital for a given revenue size company. That is obviously the upper graph. The lower graph is an operating income multiple, operating income being defined as earnings before interest and taxes. It looks like the inverse of the graph above because it is basically the inverse of the cost of capital.

We are trying to get away or present an alternative if you will to our current methodology for estimating private company cost of capital. Right now we rely on methodologies that extrapolate large public company stock returns and try and adjust for things like the equity risk premium, the small stock premium, unsystematic risk, pass-through entity taxes, liquidity, et cetera. There are a whole host of things that we try and adjust for. The graph is the representation of how to do it in an alternative format.

Our agenda for today is to talk about those flaws, what we think are flaws of either the buildup model or the capital asset pricing model. We are then going to go into a description of what IPCPL actually is and how we got to it. We are going to wrap up with an example of how to use IPCPL and take any questions that you have and hopefully be able to answer them during today's presentation.

The housekeeping items that we want to talk about today are simply that we think IPCPL is a substantial improvement over the current cost of capital models that we use to derive a cost of capital for a private company. BVR was kind enough to make our article, which appeared in the September 2013 issue of *Business Valuation Update*, a free download on the BVR website. I believe that a copy of the article was also sent to you as part of the materials for today's presentation.

The next housekeeping item is again sort of beginning with the end in mind. At the end of the day, can you start using IPCPL now? Our suggestion is that we think it is a valid tool. Clearly, we are looking for more peer review and more feedback and more questions on fleshing out issues that we have not thought of or issues that you have thought of and asking us how we have handled them. But we certainly think that IPCPL is a valid tool for calibration or a diagnostic tool. If you are looking for another way of triangulating in on a cost of capital that is being used in either litigation or non-litigation engagements, a sanity check, if you will, to what you have derived in your valuations or what an opposing expert has come up with in their valuations.

We certainly think that the model as it stands right now is ready for prime time in M&A assignments, especially those involving really small privately held businesses. We also think that IPCPL would be good to go for a calculation engagement in which there is an agreed upon procedure with the client on how you are going to derive—as to which approaches, methods, and procedures you apply in a specific valuation engagement.

That being said, like all other models, IPCPL is not perfect. We still think it is better than what is out there right now. Again, we are looking for feedback on how to make it even better.

Wrapping up our housekeeping items for today's discussion, we are generally going to be dealing with or talking about valuing a control interest for a small privately held company, \$5 million fair market value, not revenues, but \$5 million value and less. The model in general would be used or could be used for a control or minority discounted cash flow analysis for companies that are up to \$150 million revenue sized companies.

We are going to intersperse a healthy amount of quotes that Dr. Damodaran has provided us in an indirect way for support about how bad things are in the current status quo and why IPCPL might be a valid alternative or work around for some of the problems that Dr. Damodaran cites.

Last, but not least, at the end of the day, if you want more information and you want to actually download the model, you can go to the website that is indicated at the bottom of slide 7—*biz-app-solutions.com*. There is a working model there that you can use. We will show an example before we close out today's presentation.

Robert Dohmeyer: That model is the model of IPCPL but it does not have any of the 500 transactions that we use for it in the model. There is a separate model that you can get if you are a *Pratt's Stats* subscriber. When you download that model it won't have any of that information in it. It is just how that model works given the consolidation of that 500 transaction set.

Rod Burkert: There is a saying that, "If it isn't broke, don't fix it." I think many of us operate under the notion that the cost of capital approach as we develop it now is the best that we have available. We kind of know that it is broken, but we might not necessarily want to admit to it, again, thinking that it is the best thing that we have. As we even said with IPCPL, the current models are not perfect, but there are several things we think are going on that we would like to talk about today and get you to think about.

It is not necessarily to get you to agree on, but at least admit that some of the things we do now, I don't want to say are silly, but a stretch to extrapolate cost of capital from very large publicly traded companies down to the revenue size companies that we are going to be talking about and, quite frankly, where a large number of appraisers spend a large amount of their time valuing businesses, meaning that very small segment.

Again, starting off with a quote from Dr. Damodaran, he says that the build-up method (and again, he is talking about not CAPM but the straight build-up method) is a recipe for disaster.

Robert Dohmeyer: He really is describing the adjustments made for private company valuations in general when he says that. He is talking about adding a small stock premium and all that stuff. Of course, on the buildup there is just one additional factor that he objects to, but the comment pretty much applies to all current methodology.

Rod Burkert: Then we have a quote by Dr. Paglia, and of course, he is the person behind the Pepperdine Cost of Capital Surveys. My intention is not to read every quote to you,

but I think the next bullet point here is very telling. In a recent Pepperdine survey, 78 percent of the respondents did not feel comfortable with our industry's current cost of capital methods, meaning using returns on publicly traded equity securities to extrapolate down to a private company cost of capital.

Robert Dohmeyer: To be more specific, that was at that lower level below a \$5 million fair market value point. Once you get above those points, that number of 78 percent started dropping to a lower number.

Rod Burkert: In the tailwind of all of this, we had a court case, *Gesoff v. IIC Industries*, coming out of the Delaware Chancery Court where admittedly many of us may or may not practice. I don't know a lot of people who spend a lot of time in Delaware Chancery Court, but just because I don't know them doesn't mean that people who practice in that area don't exist. But back in 2006, I can remember when this decision came out.

In this case, the court said, "We have been understandably suspicious of expert valuations offered at trial that incorporate subjective measures of company specific risk, as these subjective measures may be easily employed as a means to smuggle improper risk assumptions into the discount rate so as to dramatically affect the expert's ultimate opinion of value."

The implication there is that choosing company specific risk is definitely more of the art of valuations and not the science. The court in that case was very skeptical of the one expert's method of deriving company specific risk thinking that you could put anything in there to get to the desired value for your client.

With that as a backdrop, we will talk about it more, but the private company pricing line that Bob and Pete and I have been working on tries to get around the following problems. They are the extrapolation of the small stock premium. We will go into these in more detail on different slides. This is just showing you where we are headed.

Do you tax affect a pass-through entity? If so, what rate do you use? Is it a corporate rate? Is it a personal rate? Is it the Delaware MRI model? Do we make a liquidity adjustment? How do we make a liquidity adjustment? Is it something we put into our discount rate? Is it something that we take as a second stage adjustment in our valuations by taking a specific discount for lack of marketability at the very end? Even remembering that a lot of our model today is dealing with a control value, so there is even disagreement in the profession as to whether a discount for lack of marketability would apply to a control interest, and if it does, how do you quantify it?

There is pricing unsystematic risk, also known as company specific risk. Unsystematic risk is something that is not priced in the market, so we don't know how it should be priced in private companies. There is higher systematic risk, and dealing with cash on the balance sheet. There is a school of thought that says we need to calculate changes in working capital with a required amount of operating cash. There is another school of thought that says we should just add all cash

back to the valuation and not worry about whether it is operating or non operating cash or excess cash; let's just add it all back to our valuation conclusion.

Then there are the difficulty and the inherent errors that result when we try to unlever and relever beta. Bob, do you have any comments on that or anything I missed?

Robert Dohmeyer: No, you hit it. You will get into the unlevering and relevering beta more later, so go ahead.

Rod Burkert: Bob, I know you love this joke, so I am going to let you take this next slide.

Robert Dohmeyer: One of the big problems with doing small company and private company appraisals is that we all use a small stock premium, or most of us do. You will notice a lot of times that people are always guessing at which one—10a, 10b, 10z? Those kinds of thing, which one do we do? We like to liken that process to this joke which goes like this:

One moonless night a policeman saw an economist looking for something by a light pole. The policeman asked him if he had lost something, and the economist said, "Yeah, I lost my keys over there in that dark alley." The policeman asked, "Then why are you looking way over here underneath the light pole?"

The economist responded, "The light is much better here."

The point we are making with that joke is that the whole small stock premium, applying it to a privately held company, by the nature of why there is a small stock premium is just not sound science to us. We will get in to the reasons later.

Rod Burkert: Coming up we have an initial poll question.

Blake Lyman: Some of you may have seen this on LinkedIn the past few days. The full question is, "If you are valuing a company that has a fair market value of one million dollars (estimated by a sound completed transaction method), what small stock premium should or do you use?"

The options are A) 10, B) 10b, C) 10z, D) 10z plus—extended premium to \$1 million, and E) I don't use the small stock premium.

This poll should show up on your screen and provide you with the options to answer those. Select one of the options and we will watch these come in on our screens and then we will publish them for the audience.

So far the results look like about 40 percent for A) 10; about 20 percent for option B) 10b; about 15 percent for option C) 10z; and about 3.5 percent for Option D; and the final option of not using small stock premium is about 20 percent.

We will go ahead and close the poll and show the results to our audience. Those should appear on your screen momentarily.

Rod Burkert: I think it is interesting that 20 percent of the people do not even use a small stock premium.

Robert Dohmeyer: I thought I was one of the only ones, so that just surprises me greatly, which is good. They must understand the economist joke.

Rod Burkert: We have some initial questions that I want to take before we go any further. The first one is about the recipe for disaster quote from Dr. Damodaran, and if we have a source for that quote. I believe that we do and unfortunately neglected to include it on the slide, so we will get back to you with that particular question.

Robert Dohmeyer: In case you need it right away, whoever the person is, if you just Google Damodaran and then Google that quote, it will pull you to his website and he has a bunch of papers he has written on private company valuation. There are probably a dozen that he has written and it will probably pull up the one that we pulled that quote from. I am not saying that we won't get it for you, but if you need it right away, that is probably what I would do.

Rod Burkert: The next question is, "In *Gesoff*, was the problem due to a catch all aggregate company specific risk premium, the credibility of specific company specific risk factors, or the problem the expert had in quantifying the specific factors?"

My recollection to that case is yes to all three of those questions. It was a catch all aggregate, the credibility of the different factors, and in quantifying those factors. I think it encompassed all three. Mainly, the third one was where most of the emphasis was. The expert didn't have trouble identifying the factors that the expert thought should apply, but it was estimating in the aggregate those specific factors what the company specific risk premium should be based on that analysis.

We listed several things that we wanted to say that IPCPL worked around. The first one we are going to address is the small stock premium. I will try to explain this chart. On the vertical axis we see just the size effect adjustment. The vertical axis would be the small stock premium.

Robert Dohmeyer: It is un-beta adjusted, by the way.

Rod Burkert: Un-beta adjusted small stock premium—non-beta adjusted. The horizontal axis is the logarithmic log base 10 of market value of the companies. We used this chart with permission. It was put together by Toby Tatum, who hopefully many of you recognize and know his name.

The point of the chart is that you see blue dots towards the left hand side of the curve. Those are the non-beta adjusted small stock premiums of the ten different deciles. You can see how very closely they track along that line. Then we have information that allows us to extrapolate a little bit further back to the left, on the left side of that curve. Then all of a sudden we truncated.

That horizontal line that bisects the curve is the 10z category. At the time this chart was put together, the Morningstar small stock premium was 12.06 percent at that

one million dollar revenue size. We sort of ignored anything to the left of that trend line. Toby Tatum extrapolated that trend line and basically showed that if you do in fact extrapolate the small stock premium all the way down past 10z to a one million dollar fair market value company, the size premium should be in the area of 35 percent.

For whatever reason, we kind of throw up our hands at 10z and say, “We are done. We are not going to extrapolate any further.” As this chart shows, if you did the small stock premium should be somewhere along the line of 35 percent. If you added a risk-free rate of 2 percent and an equity risk premium of somewhere in the area of 5 or 6 percent of that, and you make no other adjustments for company specific risk or liquidity, you are going to have a discount rate that is in excess of 40 percent based on the extrapolation of that small stock premium.

Yet, how many of us ever see a report that uses a 40 plus percent discount rate for a company that is roughly the size of a million dollar fair market value.

Robert Dohmeyer: The point we are making is it is completely arbitrary and capricious what we do. We stop at 10 when we take the poll. That is why we took the poll, by the way. We show that a whole bunch of people say you should stop at 10, some people say 10b, and some people say 10z. If you look at any one of those answers, they are all three not the same as the one million dollar company. They are all different by a large amount. Yet, we have data from 10z and 10b and 10 that clearly show the numbers should be much greater than that, at least greater than 10 anyway.

If it is a one million dollar company, why do we stop at 10? Why do we stop at 10z? The answer is because everybody understands that you can’t just get a 45 percent discount rate, so no one really believes in what we are doing. It is completely arbitrary what we do, and that is the point we are making here. We will get into why the small stock premium exists and what the factors are behind it later on in the discussion.

Rod Burkert: I think we have another poll question coming up.

Blake Lyman: Our second poll question is, “Ask an investor, just after she acquires a small business, which event is worse: A) The business declines in value by 20 percent because discount rates increase but the cash flow outlook remains the same; or, B) The business declines in value by 20 percent because the cash flow of the business falls by 20 percent due to a recessionary shock while discount rates remain the same?”

Looks like our results are coming in very strongly and favorably for the second option at about 95 percent. Any initial thoughts on that?

Robert Dohmeyer: Blake, you thought when we put this in the poll questions that it was a rhetorical question because it was so easy and, apparently, the audience agrees with you.

Blake Lyman: [laughter] A number of responses coming in, and we are seeing about 93 percent for the second option versus 7 percent for the first. With that, we will close the

poll in the interest of time and push those results to the audience. You should see those appear on your screen.

Rod Burkert: Bob, is that what you expected people would say?

Robert Dohmeyer: To me it is pretty straightforward. It is not hard for me to understand the difference. It is pretty clear. The reason we asked such an easy question is very briefly, we are not going to bore you with a bunch of real theoretical stuff, but this goes back to why we have a small stock premium. There are different theories as to why.

The most prominent theory, even though you have not heard of it the most, is probably the least likely one that you have heard of. It is essentially what the Fama French data shows. Eugene Fama just got the Nobel Prize. Under the Fama French Model, they factor in both size and book to price which is a proxy for duress of the company.

If a company has really low margins and it is under duress, it is much more susceptible to an economic shock and its earnings can get hit much more than a company with wide, large margins. So price to book, high price to book stocks tend to have wide margins and they are less susceptible to an economic shock. They would go down in value less given an economic recession than a company with really low or negative margins which would be hit really hard by a recession.

The problem is beta assumes that those two events that you just voted on are equal in nature. Stock markets go up and down for two different reasons—discount rates on the market change over time, daily, and by even small amounts will make the market go up and down by pretty large amounts. So even little tiny amounts in the discount rate changes the market values quite a bit. That compared to changes in earnings from a recession where it drives everybody's earnings down is less meaningful to investors who hold the portfolio for a long run.

The beta measures them the same because they both went down in value by the same amount. Since beta is just looking at systematic price changes, it gets confused by the noise of different discount rates versus a true shock to earnings. That is called the inner temporal law of CAPM and it is behind a big piece of what the small stock premium is all about.

In the small stock Decile 10, you have a bunch of companies that are naturally under duress because they have fallen down into that decile due to any number of bad things that might have happened to it. That is one of the key things you have to understand. We will get into that a little bit more on the next couple of slides. There are a lot of theories on the small stock premium.

Scott Haggla talks about this a lot, and he is right, which is the very nature of the way we measure those monthly average rates of return, ignore transaction costs, and all kinds of things. There are arithmetic means instead of geometric means. The measurement itself probably biases the number higher, but then on top of that there are liquidity affects which has obviously been studied by a lot of people lately. Then there is the inner temporal effect.

You have a lot of different things going on. Even Ibbotson Morningstar admits in their stuff that the size effect may not be due to size. Almost everybody now admits that size is probably not due to size; it is due to other things correlated to size. For extrapolating size effects to small privately held companies because they are smaller and it does not have anything to do with size, then you can see right away that this would be a dangerous practice.

Rod Burkert:

Bob's comments are bolstered by some of the information that we have on the next slide. When you look at the tenth decile, it has been stratified a couple of different ways by Morningstar to 10a, 10b, and then 10w, 10x, 10y, and 10z. Approximately half the companies in the 10z decile lose money.

Maybe you didn't know that, but if you are valuing a company that is small and profitable and you are using the 10z decile, you are benchmarking it against a decile in which half of the companies are not profitable.

That leads to the next bullet point which is that small companies tend to be small or smaller because they are distressed. I think there have been a lot of conversations about the companies that are in the tenth decile really are not truly what we would consider a small company. They are considered a small company by market cap because their stock price has fallen due to a number of internal or external shocks that have caused the market to look at that business less favorably. So they are very large companies, but they are in the tenth decile or any segment of the tenth decile because their market cap has dropped so significantly.

Dr. Damodaran says that the stock premium may be compensation for the illiquidity of small cap companies. This means that these companies are distressed and their illiquidity, because they are distressed, is already reflected or could be already reflected in the small stock premium in their size.

Robert Dohmeyer:

Notice that it says may be compensation. Really, really smart people who have already studied this a lot disagree as to which factors are more prevalent to the small stock premium. Dr. Damodaran sees all those things going on as potential issues why.

Rod Burkert:

He ends up by saying that while it would certainly be foolhardy to attribute all of the well documented, excess returns that have been associated with owning small market capitalization and low price to book stocks to illiquidity, smaller and more distressed companies which tend to trade at low price to book ratios are more illiquid than the rest of the market.

Robert Dohmeyer:

That brings us to the next chart. We are going to blow everybody's mind here. I have been through a bunch of webinars on the small stock premium and it has always been on one axis which is size. Fama French breaks stuff down by ten deciles by size, just like everyone else does. But then within each tenth decile, they break that down ten ways by what they call a duress proxy which is book to price.

I am going to say price to book from now on. They use the term book to price. It confuses me, so I use price to book. I apologize if I am confusing anyone else.

With the Fama French data, we pulled out the tenth decile over the last 50 years and calculated the alpha for each of those ten sectors within the tenth decile. Remember, you are used to seeing those ten sectors broken out by size within ten; this is by price to book which is a proxy for duress. We see a clear relationship of duress, if you believe the price to book proxy, and alpha.

This shows the one on the top left hand corner is the company with the super high margins that is the opposite of the duress group that is in the tenth decile. These are companies that may have started out recently, been IPO'd recently, earning huge margins, huge price to book; they could go through a recession and nothing would hurt it. Those stocks that are super, super safe, going back to the old question of whether you would like your earnings to be hit hard or would you like the discount rate to affect the value—these companies are bulletproof to an earnings recession.

Because they are so much safer in an inner temporal aspect, they have over time earned less than the market rate of return, far less. Look at their alpha. It is right around 8 percent alpha, annual average per year. These are all geometric returns, by the way.

As you move down toward more duressed companies, the alpha starts going from negative to zero to positive to really positive. The two on the far right are both below price to book of one. They are losing money and they are trading below book and they are super susceptible to recessions. Therefore their true risk, compared to CAPM now, is much higher than what CAPM says. That is that inner temporal problem.

If you pulled out—I am just saying if—I am not trying to say that is the way to do it—but if you simply pulled out the last two on the bottom right corner, the rest of it is not statistically significant in terms of small stock premium. There is a lot of evidence here that there is a liquidity thing going on which this shows a little bit of, but there is also the duress premium that goes into the problems with beta and so forth that you guys answered definitively in the poll.

Rod Burkert: We had a bunch of slides that talked about the small stock premium. Bob, can you sum up the problems that we are having?

Robert Dohmeyer: Here are the problems in a nutshell. If you get any of these people who really, really have studied these issues deeply and understand the issues of risk and so forth, and liquidity and the potential problems with how the capital asset pricing model measures risk, they will agree that size by itself is probably not what is driving the small stock premium. It is any number of liquidity, the size, the estimates being biased themselves, just the way we measure the numbers, and the inner temporal flaw.

The one thing it is not, that most people will agree on, is that it is not an unsystematic risk extrapolation. Things like it only has one customer and those kinds of things we all identify with in the kind of work we do, that kind of risk, even in a framework like this, can easily be diversified away in a stock portfolio. There is the IWC, IWM, and all kind of index portfolios that you can buy where they can buy a number of companies that all suffer from this unsystematic risk. It is the first lesson

in finances: Unsystematic risk is not compensated for because it is so easily diversified away.

So most people will agree it is not unsystematic risk and it is not size, so it is either the measurement problem, the liquidity, or the inner temporal problem, or a combination of all those things, which is what I think. But we are not here to say what we think it is; we are just here to say that extrapolating for size is just a really, really dangerous thing to do. That is why the number of people who picked “I don’t use the size premium” was pretty encouraging.

Rod Burkert:

Continuing on with our discussion, going to the next slide, a question arises, “If you are valuing a company today, assuming the fair market value standard, what tax rate do we need to face?”

We mentioned in our article that the marginal investor today is an asset sale to a pass-through entity. That is based on our reading of the IRS Statistics of Income or the SOI data that shows significant increases in the number of new S Corporation formations, versus nearly no new C Corporations being formed. The issue today, if you are looking at fair market value, our discussion today is based on a control valuation, a control interest. Who is that marginal or price setting investor for the purpose of our analysis?

Is it a C Corporation or is it some kind of pass-through entity? I am not judging, but I know that a lot of people believe that if you are valuing a control interest that you have to include the universe of C Corporations out there as potential hypothetical buyers. We tax effect the earnings of an entity at C Corporation rates if we are valuing a control interest. How we treat it if it is a minority interest is subject to different models that we can look at.

Bob, Pete and I are saying that if you look at the evidence, the evidence suggests that the marginal investor is probably not a C Corporation. It is some type of pass-through entity, and it is going to be an owner operator of that business versus being acquired by a public C Corporation. Typically the question is, “Do we tax affect?”

I have listened to Keith Sellers and Nancy Fannon’s presentation twice now, once online and once at a conference. It is my understanding that Nancy Fannon has actually withdrawn her S Corporation valuation book from print. We had some early models from Treharne, Van Vleet, Grabowski, and Mercer. Then Nancy entered the debate and she published her own book that talked about how to tax affect and the model for doing that. She has now done some additional research in conjunction with Keith Sellers, and she has withdrawn her book from print. She is now an advocate of saying that many of us really don’t understand the tax rates that are built in to the rates of return that we extrapolate down to a small company cost of capital.

Her preferred method now would be to say let’s tax affect it at C Corporation rates, but let’s make a negative adjustment to the discount rate to reflect the fact of what she and Keith Sellers call the clientele affect, to reflect the fact that many investors don’t pay income taxes. They are private equity funds. They are institutional

investors. They are pension funds that don't pay taxes. If we want to match up apples to apples, we should not use the current methodology that we are using now.

Bob, I know you were a fan of this paper, so I want to give you a chance.

Robert Dohmeyer: Basically she is saying what is true which is that we just don't know the price setting investors personal rates at the corporate level. Whenever we work from CAPM we are using the equity risk premium, the base rate, and so forth which is based on empirical analysis of historical rates of return on publicly traded stocks. To know what those normalized rates are, we would need to know what the marginal rate is of the individual investor in those stocks, and those are really low.

We compare those directly to a pass-through entity and we just don't know that right comparison exactly, and that is what she is pointing out here, and she is exactly right with what she is saying here. She says, "Look, we really don't know how to do this because of that, and that is a problem."

So in our model we have a work around of this problem.

Rod Burkert: I think we need to go back to Blake because we have a poll question coming up.

Blake Lyman: The third poll question is, "Do you discount a control DCF value for liquidity?" The options here are very simple: Yes or No.

Once again, we will push this poll out to our audience. The responses are coming in and it looks fairly evenly split between the two. There are about 54 percent in favor of Yes. This was also a question we asked on our LinkedIn group and it was about evenly split there as well. I am now seeing about 60/40 in favor of yes.

Robert Dohmeyer: There is always a debate going on with this question. Well, not always, but quite frequently on LinkedIn. My guess, based on the debate, was that it would be around 50/50, so it is pretty close to that.

The beauty of the IPCPL is that you don't have to take an opinion on almost any of these prior questions because the answer falls out of the IPCPL. It is answering all the questions all at once so that you can't be wrong about any of your views on any of these things because you can't solve for either one of them independently.

But the question for the people who would say yes here is, "How would you go about doing that discount using empirical data?" There is no empirical data on control interests and what their liquidity discount would be because we can't observe that discount. We can look to what liquidity discounts are for minority interests and publicly traded stocks and so forth, but that is a pretty tough extrapolation to a control interest.

Rod Burkert: We have a question that came in. Somebody asked, "What about the mom and pop company that is as big as they want to be rather than because they are distressed? Sometimes bigger is not better and it brings a whole host of problems."

I assume this goes back to our size premium issue. To the person who asked that question, we are not saying about how big the company can be or how big it should be, at the valuation date the company is as big as it is whether it is in duress or not. If you are going to call it a mom and pop company, I am assuming it is a fairly small business. How do you calculate a size premium for a company that is a mom and pop based on the evidence or the empirical data that we have today?

We are not judging nor are we saying that a company needs to be bigger or that bigger doesn't bring a whole host of problems; it is what it is as of the valuation date. How would you calculate a cost of capital for that small of a company?

Robert Dohmeyer: Our point is that you can't extrapolate stock returns to answer your question. That is the only point we are making at this point; we will get to the answer later.

Rod Burkert: The next place that we think is broken is looking at liquidity. Again, I don't want to read these next three slides to you, but this was from a presentation that Dr. Damodaran made at the School of Business back in July 2005. It is quoted in our article "Marketability and Value Measuring the Illiquidity Discount."

Some people incorporate a discount for lack of liquidity into their discount rate. They might bump up the discount rate for some type of lack of liquidity factor. Other people might take it at the end of the valuation as a distinct discount for lack of marketability. But before you even do that, the question that is being begged more and more today is, "How much illiquidity is already baked into the numbers we are working with?" Would you agree Bob?

Robert Dohmeyer: Right, that is the double accounting that he mentioned before. We don't want to double count. Not only do you have a problem with trying to quantify this, but you already have something already going on with the small stock premium that you don't know how much of it already is. You have problems on top of problems going on.

Damodaran is saying here that with the cost of remorse look at illiquidity, a small privately held business is illiquid in that sense. We are not saying that you have to agree with him, but his position is that a small privately held business, a control interest, is very illiquid compared to publicly traded stock. I know that drives a lot of people nuts, because I have seen the conversations about it, but again, we don't have to answer that question directly they way we are going here.

He gets into the trading costs and all that.

Rod Burkert: I think we can go to our last poll question on slide 23.

Blake Lyman: Once again we will push that question out to our audience. The question is, "What company specific risk adjustment would you add to the discount rate if the subject company was approximately one million dollars in fair market value size and typical in risk characteristics for similar small private companies?"

The options here are very simple—1.0 percent, 2.0 percent, 3.0 percent, 4.0 percent, or 5.0 percent and greater.

The results seem to be favoring the top end of the scale at 5.0 percent plus, although, now we are seeing 3.0 percent take a 40 percent lead here in our poll. We will push the final results out to our audience.

They show that the top end of the scale, 3.0 percent at about 35 percent; and 5.0 percent was chosen by 27 percent of respondents; followed by 4.0 percent, 2.0 percent and 1.0 percent.

Robert Dohmeyer: Based on that last poll question, we are now talking about how people make a typical unsystematic risk or some people call it a company specific risk adjustment. We are not talking about a beta adjustment that comes from the beta industry adjustments. This is the adjustment for a small company that has one product, one location, and that kind of thing. In finance, that is called unsystematic risk.

The problem is, from small stock premiums and so forth, that kind of risk is not at all compensated for. This is one of the most confused things that you see in business valuation, this notion that the small stock premium somehow captures part of this difference, and it does not. That premium that we saw in the small stock premium, the experts all agree it is probably one of those things, but none of them would say it is based on unsystematic risk.

There may be some very small amount of unsystematic risk in there, but it is easily diversified away. Again, everyone is familiar with this. This is the number of products, the number of regions, and the depth of management. These are all those things we make adjustments for.

The problem is, as Damodaran would say, is you are making an adjustment, and you saw that people said that a typical risk company could be anywhere from 1 percent adjustment all the way to 5 percent. We are pointing out that because we really don't know what the right answer is, when people guess at the right answer, there is no empirical data to support what the right answer is. Like I said, the stock returns don't have any in it anyway, so we can't measure it.

People quite understandably are guessing at different numbers because we just don't know what the number is. That is why you get such a wide range in the polling answers to that question.

In a recent seminar, Dr. Damodaran said that with this total beta thing, he said, "Total beta will give you the right answer to that question if your marginal investor is completely undiversified." And if the marginal investor of a privately held business is completely diversified, then that would give you the beta answer. You should just use beta and go with the theory in the finance textbooks. But we don't know where that marginal investor is. We don't know how diversified they are. People can argue about where the marginal investor is, but my experience from doing a lot of divorce work where you can see the net worth of the holder of a privately held company, that company usually represents a half or more than their net worth. So they are not fully diversified; we just don't know how diversified the marginal investor is.

Rod Burkert: As Damodaran says, at one end of the spectrum when you are valuing the business, you can assume that the investor is totally diversified, and you would be saying

zero company specific risk because it can be diversified away. It is not priced in the market.

Robert Dohmeyer: Those people who answered near the 1.0 percent at the very low end, they may have been explicitly thinking, these guys that buy these companies either are diversified or act like they are diversified. But we really don't know the answer.

Rod Burkert: At the other end of the spectrum, if you were voting for something at the higher end, that you said 5 percent company specific risk, whether you realize it or not, you are saying that you believe that the investor is not diversified. This company represents the majority, if not 90 plus percent, of the wealth that that individual has, so they are not diversified. In that context, total beta would apply.

We are not positioning ourselves to vote for no company specific risk or go with total beta. We are just highlighting what some of the problems are because as Bob said, for a given company we don't know where we are in that spectrum of totally diversified to not at all diversified.

Do you agree with that, Bob?

Robert Dohmeyer: That is exactly right.

Rod Burkert: Then the last issue we want to talk about where we think it is broken is in the area of excess cash and beta. I think Bob and I will split this up. We are essentially going to tell you that IPCPL is an unlevered cost of capital. Unlevered means no interest. We are trying to get around two issues here. The first is how you handle excess cash if you believe it exists. The other part is how you go about unlevering and relevering betas.

The excess cash position—for years I took the position that I would try and discern if a company had a million dollars of cash on its balance sheet as of the valuation date, I would do all sorts of things, including asking management—it all came down to the question of, “How much of that cash is excess cash and how much of it do you need for normal working operations?”

Then I would include the normal working operations piece in my net working capital calculation and I would add back the excess, sort of like a non operating asset or an excess asset at the end of my valuation. Of course, two different people can come up with different conclusions about how much of that million dollars is excess. Is it \$100,000 or \$900,000 or \$700,000 or \$300,000?

As a result of researching the IPCPL article, maybe it is best to assume that it doesn't matter. It just doesn't matter to do the working capital calculation without worrying about how much is needed for normal operations and adding the total amount of cash back to the value when we are done; or netting all of that cash against debt when we do our unlevering and relevering machinations. I will let Bob talk about that.

Robert Dohmeyer: Basically, Damodaran says, and I think he is right, and the finance professors will all agree with this, is just like when we subtract in an unlevered model, we do a DCF using no debt in the model. We pull out the debt interest in the debt and subtract it at the end. Damodaran's point is you do the same thing with cash. You are not really saying the company is going to operate without debt, yet we subtract it. Why do we do that?

Well, to keep the discount rate with the numerator. It is the same thing with cash. If you want to keep the numerator and the denominator being the discount rate consistent, you have to operate consistently. If you add a bunch of excess cash that can earn interest, you essentially have negative leverage, and if you have negative leverage, you have to relevel beta with a negative leverage ratio. You can add cash to your required working capital, but then theoretically, if you are going to subtract all the debt, you have negative leverage. You would have to plug the negative leverage into a formula to get a different discount rate for that less cash add back model.

Theoretically, you would get the same answer if you did it either way. The point is you can do it either way, just make sure it is consistent. Damodaran says that the easiest way to do it is to always assume zero leverage, not negative leverage; therefore, add back all cash. He points out that some cash is required for operations that literally cannot earn interest. It goes in cash registers or whatever. That cash is working capital and it should not be added back. It should be a part of the cash.

Rod Burkert: When you talk about unlevering and relevering betas, Bob and I were prepping for the webinar yesterday and we were talking about, if you are going to unlever and relever, which formula you use. For years, the Hamada formula was in vogue and then several years ago people started switching to the Harris Pringle formula. Open and honest, I don't understand the nuances of all of that. I just know that it seems like we have gone from one generally accepted formula for unlevering and relevering to another.

Again, our point is not to judge the merits of doing that; it is just to highlight the five or six issues that we all have to deal with when we rely on publicly traded returns to estimate a cost of capital for a private company.

Robert Dohmeyer: When I see appraisal reports where they are employing a target capital structure, they start saying this company has 40 percent debt, so I am going to assume 40 percent debt. The vast majority of the ones I see out there are not relevering beta when they employ the different capital structures. It gets complicated but you have to do it right. You have to relever beta a lot of people don't do it because it is quite complicated.

Rod Burkert: The next slide is the summary of the broken pieces. It just shows you the parallels of what can happen. If you start at the bottom, you have Appraiser A on the left and Appraiser B on the right. Without doing anything intending to be biased towards a high value or a low value, right now the way things work—we show a range here that two different appraisers could value the same company with what we say are typical risks, the same \$500,000 of free cash flow to the company. One

could come up with a discount rate of 21 percent and another one could come up with a discount rate of 11 percent.

Again, control value as we said in our housekeeping items—every step they took along the way is defensible. The risk-free rate of 4 percent could be an appraiser that is embracing the Duff & Phelps school of thought and believes that we need to pick a normalized risk-free rate of 4 percent. The risk-free rate on the right is the spot rate of 2.2 percent. The equity risk premium could be an Ibbotson supply side or historical. They are fairly close now.

Whereas, the equity risk premium could be something that is the conditional equity risk premium on the right hand side, and so on and so forth. Then you can end up with a discount rate of somewhere in the neighborhood of 21 percent or 11 percent for the same entity.

Robert Dohmeyer: Both appraisers are tasked with appraising the same company and let's just assume that they both agree to use management's forecast of cash flow. They could literally within each tolerable range, of the range that you guys and gals have given us on ranges of those poll questions, and it could easily be within these differences. So the same company is worth \$2.1 million with one set of assumptions and \$4.5 million with the other set of assumptions.

In our book, that is the sum total of the problems and the broken pieces added up to what it could imply. This kind of gets back to the quote from the judge where he says that you guys can move all these different levers around to get an answer you want, and you don't have to move them very far to get big differences in value. It kind of hurts the profession in that sense.

Rod Burkert: Let's move on to what IPCPL is about now. We have an intermediate slide.

Robert Dohmeyer: Given all those problems we just went through, we always have a question that Rod and I laugh about: What would Professor Damodaran do? When you look at his papers on valuing privately held companies, he has an example of valuing Kristen Candies. In that presentation, it is a \$3 million company in revenue. He does not use a small stock premium extrapolation because he is one of those people who we mentioned who really understands that is part of the recipe of disaster be one doesn't really have to do with the other.

He uses total beta. He understands that is the extreme one end, so he starts with that number. Then he adjusts for liquidity using a regression analysis that he found on bid ask spreads on stocks and correlated with excess returns and then extrapolated that bid-ask spread to a privately held company, which is a tough extrapolation he would acknowledge. Using that method he comes up with the value of Kristen Candy. That is one way to do it.

Rod Burkert: The next slide is us getting into IPCPL, not judging those issues that exist, but just acknowledging that they do, is there a better way or is there an alternative? That is what this private company pricing line is all about.

We looked at *Pratt's Stats* and BizComps and we consider that if you employ a market approach, just in general, your routine market approach, we don't worry about extrapolating for a size premium. We can handle the pass-through entity tax rate adjustment.

Robert Dohmeyer: The multiples are all pre taxed so there is not an issue there.

Rod Burkert: The liquidity adjustment is generally considered to be baked into the pricing multiple because the pricing multiple is based on a consummated selling pricing, not a hypothetical selling price. If there is unsystematic risk in a company, one would presume that if you add enough transactions that the buyer and seller would recognize the plusses and minuses of what we might call company specific risk; that is baked into the multiple.

With the transaction information you have available, you can deal with the cash add back and levering and unlevering and relevering problem. *Pratt's Stats*, BizComps and the market approach in general is no problem because the transaction results are comparable with respect to all the hurdles we feel like we need to jump.

Robert Dohmeyer: The beauty is that sometimes you can't find enough comps which is a problem when doing a market approach, but you never have these problems. Inherently, these problems don't exist because of the very nature of the data we are using. The data we are using are comparable businesses in terms of size and private and so forth, those kinds of things are not automatically extrapolated because there is no need to extrapolate those issues.

That is the inherent beauty of them, and, of course, everyone understands the limitations sometimes of not having enough comps or whatever.

Rod Burkert: Take note that this IPCPL is just rearranging the terms of the Gordon Growth Model. The Gordon Growth Model would say that the price or the value, if you will, equals the free cash flow to the firm divided by K minus G . I actually had to sit down with a sheet of paper and make sure that Bob was telling the truth and I rearranged all the terms to isolate the cost of capital. Sure enough the formula for our private company pricing line is that the cost of capital or the inverse, the operating income multiple, would be the free cash flow to the firm divided by price plus the growth rate.

We looked at 500 small private company transactions that directly estimates the aggregate internal rate of return. I may not say this as eloquently as Bob, but if you look at the model, it is axiomatic that if you have valid inputs for free cash flow and price and growth, the cost of capital has to follow from that. It is an internal rate of return. This approach is fundamentally the same as what Damodaran uses now when he comes out and publishes his monthly equity risk premium estimates for the S&P 500.

Thus, by using the prices that are paid, which we are going to say are fair market value, if you have any disbelief about whether the market approach or transactions individually represent fair market value or not, suspend that disbelief for just a second and we will come back and revisit that.

We are saying that using these prices, all of the issues that we have with using public security returns to estimate the private company cost of capital become a moot point because the effects of liquidity, systematic risk, taxes, et cetera, are already reflected in the clearing prices that are paid for the business.

Robert Dohmeyer: That's right.

Rod Burkert: The next slide is to discuss what we think are problems with the database, if you believe that there are.

Robert Dohmeyer: So far, the most common response to our model are comments along the line of, "Well, some transactions might have been flawed in terms of the buyer was heavily motivated, or the seller was heavily motivated." Both Hitchner and Fannon have written about the transaction databases require the broker to fill in the value for the inventory plus the FF&E in goodwill, and exclude this, that and the other thing. Sometimes they don't do that precisely right all the time and there are plenty of anecdotes to that effect.

I have gone through in detail, but that has been a very common question. I have gone through in detail the 500 comps we use. I will get to how we got those 500 comps later, but I have gone through each of them and looked at the consideration paid notes under *Pratt's Stats*. We use all *Pratt's Stats*.

Under the consideration paid, I would say that about a third of the time, they very much detail out exactly how they came up with the purchase price. Each time I have looked at it, the way they do that is precisely the right way. Then they take that purchase price, and about 20 percent or so they allocate to the different assets. Sometimes when they do the allocation, they make mistakes because these guys are brokers, not accountants.

If they were you guys they would get it right, but the point is I don't care if they allocated it right, as long as the price they reported is the right price and we know what that price represents purchasing. The bottom line there is they are purchasing what the buyer needs to run the business typically, whether it be a stock purchase or an asset purchase.

I have looked at this a lot. I have looked at the allocations. I have looked at the purchase prices and all the detail. There are just not that many mistakes. Some people say there are mistakes in it, and there are some, but there are just not that many. There might be a few, but when you use a 500 transaction sample size, those get pretty much washed out. They cancel each other out. We will get to that later.

Rod Burkert: Actually, we are going to get to it now. To our audience, if you believe there are inherent data problems with the transactions that are being reported in *Pratt's Stats*, or any other market transaction databases, we have a statistical analysis that we would like to present to show that by using 500 data points as we have, it does not completely eliminate it, but there is a high level of confidence in the aggregate results.

Bob, can you talk about slide 31 and slide 32?

Robert Dohmeyer: Here we have simulated these errors. The errors could be that the broker theoretically misrepresented the data. Like I said, I think there are a few cases where they do the allocation maybe not exactly right, but the price they report is pretty much right all the time if you go in there and look at it. I suggest people do that obviously because you want to check this thing.

But let's assume that there are some problems and let's also assume that people have these different motivations. The buyer is heavily motivated. The seller was heavily motivated. The true value is six in our example and then this random noise of buyer and seller motivation, perhaps some data errors, the way the broker reported the data, and that kind of thing. So we simulate a huge error just to say, let's assume there is a really big problem with the data. We don't think it is nearly this big, but if we assume this really big error, then we get these huge dispersions around the true mean of six.

But when you put it all together with the 500, you can see, just like unsystematic risk, it is diversified away in a large portfolio of stocks, it is the same principle here. That noise around the mean gets cancelled out by a large sample size. As you move down the line here, you can see the error around the true mean. This is not rates of return, by the way; it is 14 percent of let's say 6, which would be 7.2 or something like that. It goes all the way down to 2 percent, and that means there is a 95 percent confidence interval that the true mean of 6 is 6.07 to 5.94 or something like that, something incredibly tight to what the real value was if you had done the value completely right and all the motivations of buyers and sellers were perfect and so forth.

That is why we use such a large sample. It was to make sure that all that noise, so to speak, cancels out in our aggregate sample. By the way, we don't do this on a per company basis. We aggregate it all.

Rod Burkert: The next slide talks about how we got to 500 companies in our data. Again, all the transactions came from *Pratt's Stats* which is published by Business Valuation Resources. The companies had to be large enough so that owner compensation data was provided. We did not include any medical or dental practices. Interestingly, just like Duff & Phelps says you can't use their data if you are valuing a finance or banking company, or any company that begins with SIC code 6 because of the inherent way that they report their data, you cannot use IPCPL if you are valuing a medical or dental practice because we have excluded the transactions that relate to those.

Robert Dohmeyer: If you make an assumption that medical and dental practices have roughly the same risk, it is okay. You can adjustment for that later.

Rod Burkert: All of these companies were U.S. based entities. They were acquired by a private buyer, not a public company. They occurred within the last 15 years, and there were a handful of companies that we needed to add to get to 500. I don't know if Bob wants to go into more detail than that for now about how we got to our 500 or not.

Robert Dohmeyer: If we don't get to those questions about how we selected those, some people ask, "Why did you do this? Why did you do that?" We could go through each one of those and we would be going over our time, which we are already doing, so just send us emails and we will answer all the questions about that.

The primary reason we had to go back 15 years is because we had to use a large size. The reason to use a large size is to make sure our owner compensation adjustment was a small piece of the operating income so that we knew we were measuring IRR on true business profitability and cash flow, not owner compensation issues.

Rod Burkert: One of the two money slides that we have here is slide 34. We actually already did the first money slide at the beginning where we showed the curves of IPCPL and we will come back to that one again. This one is the second money slide which really shows what the end results of the aggregation of those 500 companies were.

You are talking about aggregate trailing 12 months revenue of \$2.9 billion, operating income trailing 12 months of \$239 million, the fair market value being the prices that were paid of \$1.4 billion, and so on and so forth. But the important thing is how we then derived a cost of capital. The first thing we needed to do was calculate free cash flow to the firm for the ensuing year.

So we took operating income. We grew it at the rate of inflation—2.44 percent. We will pick up on that in a second. We deducted out expenditures for net working capital and capital expenditures. So our free cash flow firm we estimate at \$30 million. If you substitute that back into the formula, we get a cost of capital / IRR of 18.4 percent for this data set.

That is pre-tax. It is unlevered so it is pre-debt. That is the first data point in estimating the implied private company pricing line. Using the model, the cost of capital would be the most accurate cost of capital given what we know about the observable prices that were agreed upon by buyers and sellers of small privately held businesses which is exactly the asset class that we are looking to value in most of our assignments, again, small privately held businesses.

Robert Dohmeyer: This is if we went out and surveyed these people as to what rates of return they require on average.

Getting into how we do it, if you are going to do a growth rate on one single company, it is of course very hard. But if you have to do a growth rate on 500 companies combined and estimate the aggregate growth, it is actually quite easy. It is going to grow at the rate of the economy, less the number of companies that drop out each year.

We know what the rate of the economy is expected to grow at. No one knows exactly what it will be, but if you are doing fair market value, all you have to do is get the right expectation and you have won the game. The rate of growth of the economy is the rate of growth for all privately held businesses, but the problem with privately held businesses is that they have a high rate of failure.

So we looked up some data from the Bureau of Labor Statistics and they reported information on rates of private business failure rates. They are right around 5 percent or so. We did that and compared that to the real growth rate. Of course, that is roughly what the rate of growth is for the economy. It is a little bit higher; 4 to 5 is the failure rate.

So we also looked at the *Pratt's Stats* data and we took tens of thousands of transactions of companies and we did a cross-sectional analysis of the revenue by company by age of company. We set forth the revenue of each company by age, five years old, six years old, and so forth, and saw what the implied growth rate was with the cross sectional analysis. When you do that and adjust for the fact that there has been a growth in private businesses over the number of years we are looking at, and we did all that adjustment, it came up with roughly the same answer.

The bottom line is that we had empirical data both from *Pratt's Stats* and corroborated by the BLS data that suggests that the real growth rate expected after rates of failure for privately held businesses is zero percent real. In other words, it is just a nominal growth rate.

If your expected long run inflation is 3 percent, then your terminal (g) should be around 3 percent. I kind of went fast because we are a little bit behind, but that is how we did it. We do have empirical data on that.

Briefly, one more thing, whenever you do a change to the growth rate in the DCF, you will notice if you are doing your working capital and your FF&E properly, that more revenue growth, all things being equal, is going to require more FF&E and more working capital obviously. So when you change the assumption of the growth rate, it does not affect the IRR by a corresponding amount because the numerator in the cash flow starts to go down from the working capital investment.

The bottom line is given the level of FF&E and book capital that is employed in these businesses, when you change the growth rate, it only changes the IRR by about half the growth rate. If we are off by 1 percent on the growth rate, it is only .5 percent to the IRR estimation.

The other adjustment we made is in the *Pratt's Stats* data they give you the date that the P&L was created and then the date of the transaction. Then you can obviously calculate the number of days in between. So we gross up the income that is reported on each transaction by that lag.

Another thing we do is adjust for seller financing. When you look at these transactions you will see the seller will take notes quite frequently, about 20 to 30 percent of the time. Those notes are typically at rates that are slightly below fair market value and we did a regression analysis with a dummy variable of seller finance deals and non seller finance deals. We saw that the price paid for the seller financed deals were slightly higher than the non seller financed all cash deals. So we adjusted the purchase price to an all cash basis using that analysis.

Then we do a present day adjustment. That basically is the fact that we used a large sample size for the size of the company to get the compensation figure right, we have

to go back 15 years. So 15 years of historical data compared to 50 years obviously with the data that we use now on historical rates of return on the market, but with 15 years of data, those transactions occurred over past years that were not quite as risky as present day rates of return or present day systematic risks in the market.

So we went back and looked at pricing for privately held companies on a high frequency basis and found that indeed when the equity risk premium goes up that Damodaran calculates over the years, when it goes up generally the prices of privately held businesses start falling as a multiple of revenue and vice versa. So we adjust the IRR for present day adjustment by almost 1 percent presently for the fact that today's market conditions are a little more risky than the average over the last 15 years.

There is some art to that adjustment but from the data we can see, it looks pretty reasonable and it is actually less than 1 percent out of roughly a 19 percent bottom line number.

Also, on the present day adjustment, we are constantly updating it for the 20-year Treasury. We use the 20-year Treasury minus .5 percent and that is our expectation of (g). Remember, it is no real growth in (g) so essentially that is analogous to the risk-free rate in CAPM that you are always adjusting for. It goes into the (g) every month when we update it.

On the pre-tax thing, it is really not pre-tax even though we call it pre-tax because the marginal investor from the data we see is going to be the best fit, the highest and best use for a company when its control transaction is going to obviously be put into an entity that is the best, most value creating entity. We think that is a pass-through entity based on both the logic of the double taxation of C Corporations as well as the data showing that C Corporations are actually declining.

Rod said they were slightly growing, but I just saw another paper that showed they are slightly declining.

Rod Burkert: I thought I said that there were hardly any new formations.

Robert Dohmeyer: Yes, you said no new net formation, and actually there is a slight net decline in formations, so there is just nothing going on there. But it doesn't matter. I don't think anybody would disagree. Nobody has disagreed at this point. When people form new corporations to buy entities, they are forming pass-through entities to buy new businesses. For the most part, they are not forming C Corporations to buy these kinds of small businesses.

Rod Burkert: But it does have an impact because I think a lot of people do make an assumption that the hypothetical buyer is a C Corporation.

Robert Dohmeyer: A lot of people do that, but they will admit that is only because CAPM assumes that. They are keeping their format straight; they are not mixing apples and oranges. They are seeing the problem that Nancy has come up with and they are saying

they can stay away from that mixing just by assuming a corporate buyer and trying to make adjustments from there.

Anyway, the pre-tax and after-tax at the entity level, when we talk about this, it is the same thing. We think it is a pass-through entity, so when you are doing a DCF, you should use after entity taxes and it would be zero anyway, so there is really no difference anyway. We are solving it on a pre-tax basis to get to the right answer anyway, so as long as you do it the same way we are doing it, it yields the same answer, the right implied number.

Here is the data on that growth rate using *Pratt's Stats* where we segregated it out by age of company and then we laid it out over time. It really shows an interesting and what you would expect answer. The newer companies tend to start growing over time and then kind of trail off over time. But the net number here is zero percent real and that is what we use in our model.

The growth rate in our IRR calculation for a typical standard mature company earning a 9 percent margin, back at the aggregate level that we showed you, is that the real growth rate for that company after it pays out lots of cash flow is going to be zero real. It will be more than that for each company that survives, but when you net out the probability of failure, it comes out to about zero. So the expected actual IRR is going to be that 18.4 percent.

Rod Burkert: All this is the work that we did to get to just our first data point. Very quickly, Bob is going to talk about how we got to our second data point on the IPCPL curve and how we interpolated for all the points in between. Then we have an example of how to use IPCPL and we can wrap this up and take questions.

Robert Dohmeyer: Very briefly, Point 1 is all about the IRR that we just went through. We go through the 500 companies, calculating an IRR, and that is a standard accepted way of calculating what the implied cost of capital is. That is what Damodaran does and that is what the textbooks show you. As long as the inputs are sound, then the number by definition is the right number.

Point 2 is where we are saying we have it for the size that we estimated it for, for the 500, which, by the way, is around the five million or so average revenue size, so now we want to extrapolate it upwards for larger sizes. We use Point 2 and there we just use the standard.

I am going to blow through this because we are behind. We use the standard Fama French formula for calculating cost of capital and then we adjust that cost of capital using the traditional betas and so forth that you are accustomed to seeing in cost of capital. We adjust that for being a private company because this is a private company pricing line.

By adjusting there, we are saying what discount rate do you adjust the public company cost of capital to a private company such that the private company is indifferent towards going public or not. We make those adjustments based on the cost of going public and the cost of staying public. Once you impute those things

in, you can get the cost of capital for a company that is much larger and a much larger company that can go public using that method.

Now we need to connect Point 1 and Point 2 to get our curve. We adjust for that curve using what is called an arbitrage approach. The points along this curve, because these companies are theoretically the same systematic risk, the same types of companies, they are both un-duressed. We are not trying to impute duress here. We are trying to keep that out of the equation.

Therefore, on a theoretical basis, since they are both un-duressed, same kinds of companies, same kinds of margins, why shouldn't they trade at exactly the same price according to theoretical values in finance textbooks? The answer is because of all those unsystematic risk factors, the costs of transactions, doing rollups, illiquidity, trying to manage a guy who is running his own business where he wants to do something and you want to do something else—there are all these imperfections that explain the difference between those two rates of return.

To arbitrage those imperfections costs money. We are saying here let's draw the shape of the curve based on the Double Lehman Formula which gives you an idea of how much it would cost to arbitrage these differences. Essentially, it is a liquidity and unsystematic risk proxy for the difference going up the curve. We do that and it draws this curve and it goes up to Point 2.

Here is the Fama French formula for getting to the Point 2; and then here is back to the curve after you do all that stuff.

Rod Burkert:

Our next slide, if you could call it, would be the third money slide. Coming up we have an example of how you would actually use this. Here we are sort of looking at these 500 companies in data point one as very similar to an equity risk premium. They are all subject to the same kinds of risks that affect very small businesses. Based on the adjustments that we are making, we assume that in this particular restaurant example that it is a six million dollar revenue company.

The Ibbotson industry risk premium that we see for restaurants is generally negative. If you assume the typical liquidity for that size business and you assume typical risk for the same size as those companies that are in the 500 *Pratt's Stats* companies that we pulled, you can go to the website, BizAppSolutions.com and click on the cost of capital tab. This is on slide 42 which is essentially the end of our presentation.

You would enter in, in thousands, your revenue size, so \$6,000 is for six million dollar revenue. The result is giving you a cost of capital unlevered, pretax, of 19.05 percent based on the transactions that we had loaded into the model if you actually did it right as of this second. The model has been updated since we prepared these slides for the presentation. You will get sort of the same results, but not the exact same results because the data has been updated.

It shows a 19 percent cost of capital pre-tax that eliminates you having to figure out how to lever or unlever or whether or not you need to take a discount for lack

of marketability or whether or not you need a size premium adjustment. All those issues that we talked about early on in the presentation have gone away.

Robert Dohmeyer: It is fair market value right out of the box. If you are near the Point 1 like we did here for the six million, it is using that IRR calculation that we showed on the other slide. It is pre-tax, but on an entity level, since the marginal buyer is a pass through, it is the same as the after-tax rate.

Rod Burkert: There are a bunch of questions. One is on how we arrived at our revenue growth of 2.44 percent. I am going to read the questions and scan through them. Bob can handle the answers.

Robert Dohmeyer: Once again, this all updates all the time every month. The current number is higher than that, but at the time of 2.44 percent, that was the 20-year Treasury less .5 percent. We are using the 20-year Treasury less .5 percent which is our estimate of real interest rate. So the 20-year Treasury less .5 percent is the inflation forecast by the market. We have to update that every month. That 2.44 percent was the inflation forecast at the time.

The reason that is the correct (g) is that we have done all the work to show that the real rate of (g) for these kinds of businesses on average in aggregate is around zero real.

Rod Burkert: Asset pricing—we are kind of on our last slide now where we are taking questions and answers. Bob, asset pricing theory tells us that price is a function of expected cash flows and a discount rate that is a function of cash flow risks. Could we explain briefly what the IPCPL model says about the risks driving private company values?

Robert Dohmeyer: When we talk about both systematic and unsystematic risk, and we talked about Damodaran admitting that we don't know how much unsystematic risk gets priced, we have theories on how to price systematic risk, but we have no data on how to price unsystematic risk. We can impute estimates of what the diversification levels are for the marginal investor, but really don't know what the answer is; we can guess, but we don't know.

The answer here is that we don't know the answer to that question, so we are letting the market decide the answer to that question because on average they are already discounting the kind of unsystematic risk that does apply on average for an average typical company. When you use this example we just gave you that came up with 19.05 percent, that is the cost of capital for a typical risk company. It is from the IRR of the 500, so it is going to be a weighted average of the investor's pricing of risk.

It is imputed into the answer, but we don't know how to do it. That is the whole point; since we don't know how to do it, we have to kind of go about solving the problem in a different way by backdoor-ing it through this implied IRR calculation. I hope that answers the question.

Rod Burkert: I have another good question which is right in your backyard. Remember how we said a large group of people did not use a small stock premium in their buildups. This question says, “Wouldn’t not using the size premium in current cost of capital models grossly overvalue the businesses? Since the small stock premium is not being used, there are a lot of overvalued companies out there assuming that the IPCPL model was not being used as a replacement.”

I think the question is that someone is imagining that if we don’t use small stock premiums that somehow our cost of capital is understated and our business values are overstated.

Robert Dohmeyer: Here is a perfect answer to that. Dr. Damodaran was probably not using IPCPL when he did his example and he was not using the small stock premium either. We will get him going on it soon though. He used total beta. He adjusts for that difference using total beta, so that is one way of handling it. Then he added the liquidity discount based on that regression analysis that he did.

He understands that private companies require higher rates of return. He just doesn’t think you should go about it by using an extrapolation of small stock premium which I agree wholeheartedly with.

Another question I see here is, “How much bias could there be due to time forward from 15 years ago in the *Pratt’s Stats* data? Is there any significance to how recent or how old the data point is?” That is a great question.

Because we had to use larger sample sizes, we had to go back 15 years. We went through that pretty fast, so I apologize. Over 15 years, we know what the equity risk premium was that Damodaran calculated over that 15 years. Let’s say that average was 5 percent. If today’s is 6 percent, the current equity risk premium, today’s valuations of these private companies would be lower than what they were over a 15 year sample size.

So we take that 5 versus that 6 percent, and I am simplifying what we do, but we essentially take that difference and add it to the IRR calculation. I just did a regression last night of looking at the Vicks Index compared to a pricing of small privately held companies on a high frequency basis and it really correlates well with the Vicks Index. The Vicks Index does correlate to the implied equity risk premium.

Remember, the implied equity risk premium is in our view much better than the historical averages because the implied number, when things get dicey, the implied equity risk premium goes up. When things get dicey and markets fall, the actual historical premium actually falls. So the historical numbers are not very good and Dr. Damodaran has written a really good article explaining why he has switched from a historical average perspective to the implied equity risk premium, for that reason.

Rod Burkert: Another question is, “Per Dr. Damodaran, cash is excluded when calculating working capital for discounted cash flow. What are your assumptions of including it in the calculation of working capital?”

Robert Dohmeyer: Great question; we forgot to answer that. Our fair market value that we are calculating an IRR on is excluding any interest bearing cash. That is how the data is reported on total market value in the *Pratt's Stats* data. They are supposed to exclude cash, and I have gone through it and they do. Occasionally on a stock deal, they include a little bit. It is just a tiny amount. The numbers that we are reporting exclude cash.

To be consistent, you would have to do your IRR and do your DCF with these numbers and then add back all interest bearing cash, which of course is not all cash. On a \$200,000 cash balance on a one million dollar company, let's say \$50,000 of it is just going to stay in a bank account and you are not going to mess with transferring it back and forth to a money market account, so you can assume some small chunk of that is going to remain as non interest bearing, but it is usually very small. That is how we have done it.

Rod Burkert: It is 11:55 a.m. I know that there are a large number of questions that we did not get to. I am going to suggest that we answer questions afterwards offline.

Blake Lyman: Rod and Bob, as you both know, we are a little over our time today. Before we conclude, do you have any final thoughts?

Robert Dohmeyer: Like we have said from the very beginning, this model is not perfect. It is pretty tight though. But there are going to be slight issues with it, but when you compare it to all the problems we have with our current system, if you keep that in mind, it is significantly better. I think that is the question that needs to be answered.

Rod Burkert: Especially when valuing very small privately held businesses.

Robert Dohmeyer: Yes.

Rod Burkert: Not to drag this out, but somebody raised a really good point here about what beta has to do with small privately held companies. My answer to that is, "Exactly."

Robert Dohmeyer: It probably has some affect, so there would be huge debate there. The people who answered zero or one percent company specific risk premium to the unsystematic risk component probably think it is all beta; that is why you don't put much of one on there. The people who answered 5 or 7 probably think beta has nothing to do with this. But nobody really knows what the answer is.

I slightly disagree with Rod there a little bit because I know a lot of people feel strongly either way.

Blake Lyman: Well, that is a great way to end today's presentation. It is certainly not the definitive conclusion that BV appraisers are always looking for but the discussion continues.

On behalf of BVR, I would like to thank Bob Dohmeyer and Rod Burkert for their expertise today and all of our listeners for attending.

Thank you. You may now disconnect.

The Implied Private Company Pricing Line

Listener Questions

Question *Is a \$1 million construction firm treated the same as a \$1 million wholesaler?*

Response Both the \$1 million construction company and the \$1 million wholesaler would have the exact same starting point with IPCPL (both $K_0 = 20.97\%$ as of Nov. 8, 2013).

We are in the development phase of the implied private company pricing model (IPCPM) that will allow users to move off the IPCPL (line – size adjusted average). The model will be the only specific private company cost of capital model that is indexed directly to the IPCPL cost of capital.

The model will facilitate adjustments from the IPCPL size-based indication for *comparable relative* differences in:

1. Systematic risk (i.e. beta);
2. Diversifiable risk (i.e. total beta);
3. Liquidity; and
4. Debt capacity.

The model will make recommendations on how to make these adjustments based on the empirical data but also allow user-specified modifications.

Q *If smaller stocks are more illiquid, then the higher the small stock risk premium, the greater the risk of overlap between K_0 and DLDM, correct?*

R Yes. Precisely correct.

“While it would be foolhardy to attribute all of the well documented excess returns that have been associated with owning small market capitalization and low price to book stocks to illiquidity, smaller and more distressed companies (which tend to trade at low price to book ratios) are more illiquid than the rest of the market.... The key is to avoid double counting the cost of illiquidity since some of the small stock premium may be compensation for the illiquidity of small cap companies.” (Professor Damodaran)

Q *What is “alpha”?*

R The alpha used in our chart is the actual return for that grouping of companies less the CAPM predicted return. So negative alphas indicate that CAPM overpredicts the risk of that group and vice versa.

Q *Asset pricing theory tells us that price is a function of expected cash flows and a discount rate that's a function of cash flow risks. Could you explain briefly what the IPCPL model says about the "risks" driving private company values?*

R It strongly indicates that due to many logical imperfections (agency costs, minority costs, etc.) diversifiable risks are priced at increasing rates as size decreases for small private companies.

Q *What is meant in slide 17 of (10 size x 10 B/P)? What does "B/P" mean?*

R B/P = book to price. In the graph, we used P/B (price to book) and the extremely low P/B stock groups are a proxy for companies under duress. This relates to the intertemporal flaw of CAPM.

Q *Can you please define "intertemporal flaw of CAPM" again?*

R The intertemporal flaw of CAPM is illustrated in the poll question:

Ask an investor, just after she acquires a small business, which event is worse:

A. The business declines in value by 20% because discount rates increase but the cash flow outlook remains the same.

B. The business declines in value by 20% because the cash flow of the business falls by 20% due to a recessionary shock while discount rates remain the same.

CAPM assumes *indifference* to events A and B, i.e., the same percentage systematic price change results in an identical beta calculation.

This is CAPM's "intertemporal" problem.

This flaw with CAPM is another potential cause of the small stock premium (illustrated in slide 17) and provides another reason why extrapolation of the "small" stock premium to small private companies is not recommended.

For an excellent discussion on this and the related problems of SSP extrapolation, please see John Y. Campbell and Tuomo Vuolteenaho, "Bad Beta, Good Beta," Harvard University, August 2003, ssrn.com/abstract=343780.

Q *Isn't 85% of these PTE ... why worry about C corp tax?*

R Yes. We agree. Your 85% is probably a reference to the seller percentages. We believe the marginal (aka "price setting" buyer) is a PTE based on the logical advantage of the PTE and the data showing that new C corps are not being formed in any significant numbers. Please see page 3 of article "Pass-Through Entity (PTE) Taxes."

Q *Wouldn't not using the SSP in the current cost of capital models available grossly over-value the subject companies being valued? I would say that, since SSP is not being used, there are a lot of overvalued companies out there (again, assuming the IPCOL model is not the model being utilized as a replacement).*

- R** Professor Damodaran does not use the SSP to value small privately held businesses. He uses total beta (to account for unsystematic risk) and a liquidity adjustment (to account for lower liquidity). This way he can account for your overvaluation concern without using SSP to accomplish this. As we pointed out, SSP is not logically related to these premiums and is why most of those who understand the potential causes of SSP do not use SSP to value small privately held businesses.
- Q** *Do you tax effect at statutory C corp rates or at a rate that you assume to be the effective rate inherent in your ERP data, e.g., Ibbotson or Duff & Phelps?*
- R** Our IPCPL K_0 /IRR is before entity tax, so the user would have to use before entity tax cash flows to be consistent. Also we believe the marginal buyer is a PTE so pre- and post-entity tax would both be zero. Please see page 3 of article “Pass-Through Entity (PTE) Taxes.” We also provide K_0 assuming the user wants to assume a 20% or 35% tax rate on cash flows.
- Q** *Under extant theory, discount rates are a function only of risks. Is there a theoretical basis for adjusted discount rates based on the marginal investor’s tax rates?*
- R** I don’t know. I think, perhaps, it is an informal adjustment that is being recommended by Ms. Fannon.
- Q** *When we value a PTE, the standard of value is critical, correct? If pretransaction from the owner’s perspective could be different from hypothetical or actual buyer.*
- R** Our discussion was control FMV basis. Assuming asset transaction—the transaction price is logically unrelated to the tax status of the seller. Assume two otherwise identical businesses, one C corp and one S corp, sold in an asset sale. The two cannot have two different values in the marketplace—the buyers do not care about the former form of holding given two identical assets.
- Q** *What about matched paired sample studies as a basis for a DLOM in a controlling interest?*
- R** From Professor Damodaran:
- The standard practice in many private company valuations is to apply an illiquidity discount to this value. But how large should this discount be and how can we best estimate it? This is a very difficult question to answer empirically because the discount in private company valuations itself cannot be observed.
- Q** *Unsystematic risk, or company-specific risk, is a measure of believability in my opinion. Do you agree? Have you heard it called this before?*
- R** I think I understand your point. However, the future cash flows should already be discounted to “expected value” (probability weighted). So, from there, we discount the believable cash flows at a higher discount rate to reflect the higher uncertainty/variability (risk) of outcomes.
- Q** *The IPCPL has the form $K_0 = FCFF_t/P_0 + g$. In which factor/term in the model does the excess cash, leveraging, etc. adjustments show up?*
- R** The model solves for the optimal cost of capital (the transactions are mostly levered, but the price is MVIC, so we don’t have to worry about WACC). The IRR is already control/optimal

WACC by definition. Cash is excluded from “Price/MVIC” so the IRR is before any interest-bearing cash. So all interest-bearing cash needs to be added to the result.

By assumption, SME companies operate and sell at an optimal capital structure. So, on average, the IPCPL implementation results in pricing an optimal capital structure, etc. by assumption, and this is impounded in both P_0 and $FFCF_1$.

Q *Still not clear what a beta has to do with a private company where there is no evidence of private company price fluctuation similar to that of a public market.*

R Private company FCFF generally correlates somewhat with the market’s FCFF so all other things equal a partially or totally diversified investor would rather have FCFF from a private business that did not correlate with his or her other holdings.

Q *Per Dr. Damodaran, cash is excluded when calculating working capital for DCF. What are your assumptions of including it in the calculation of WC?*

R We agree with professor Damodaran on this. We don’t recommend including cash in WC except for “wasting” aka “non-interest-earning” cash such as cash required in cash registers. You could theoretically include interest-earning cash in WC, but you would have to relever for the negative leverage that results from the significant interest-earning asset.

Q *“Multiples are pretax?” What multiples? The IPCPL multiples?*

R When looking at the market approach, we always calculate multiples on a pretax basis.

Q *What do you mean in the statement that the multiples are pretax?*

R When looking at the market approach, we always calculate multiples on a pretax basis.

Q *It seems that using the Gordon growth model derivative equation to solve for K_0 would assume capitalization as opposed to DCF, i.e., constant growth into perpetuity. Correct?*

R Not sure I understand. If you look at our IRR below, it is FCFF not capitalization of income. It is a “single stage” IRR.

		% Revenue
Revenue TTM	\$2,943	
Operating Income TTM	239	8%
Fair Market Value T_0	\$1,439	49%
Operating Book Capital TT	586	20%
Aggregate Revenue Growth		2.44%

Holding above relationships constant:

$$FCFFT_1 = \$239 * 1.0244 - (\$586 * 2.44\%) = \$230$$

$$K_0 = FCFF_1/P + g = \$230/\$1,439 + 2.44\% = 18.4\% = IRR$$

Q *Will you separate stock transactions vs. asset transactions? If not, why? I thought that the transactions should be separated based on transaction types.*

R To avoid observation biases, you should avoid culling samples. There is no meaningful useful difference in our opinion. Please email me if you believe there is a logical reason to do something different.

Q *How is the issue of timeliness and location dealt with in deriving the cost of capital?*

R I'm not sure I understand. If this deals with liquidity and your subject is clearly less or more liquid than that of the average liquidity of comparable companies that are part of the 500 sample, then an adjustment is perhaps warranted.

Q *I rarely find 500 comparables. Would kind of yearly range are you using? Stuff back from the 1990s? If so, how would those transactions be comparable? It was a much different economic landscape back then.*

Q *How much bias could there be due to time forward from 15 years ago in the Pratt's Stats data? Is there any significance to how recent or how old a data point is?*

R We are using *all* companies so that our sample is comparable to "average" risk. We adjust the sample for time:

IPCPL 500 'present day' adjustment. The IPCPL 500 is composed of transactions that occurred over the last 15 years. All else being equal, a current increase in the S&P 500 equity risk premium would decrease the value (P) of the IPCPL 500 and increase risk (K_0 /IRR). Therefore, we modestly reprice our 15-year sample of *Pratt's Stats* transactions to account for the risks of today's market versus the average market conditions that existed over the 15-year sampling period. To do so, we applied this formula: $(ERP_0 - ERP_{15yravg})/2$. We divided by two, creating a simple average, because: (1) real interest rates correlate negatively with equity risk premiums; (2) the cost of capital is slightly less responsive to changing equity risk premiums than the cost of equity; and (3) to make a more modest adjustment, generally.

Also, I very recently ran a regression pricing analysis of super-high-frequency small business transactions. The data show a strong inverse relationship to the "VIX" (aka fear/uncertainty index).

Just as you point out above, from your experience, the data also show that most recently the valuation data have diverged below the VIX (fear) relationship. The data are improving slowly like you say but more slowly than the VIX/fear recovery. IPCPL incorporates this market reality in our present-day repricing section.

Q *Are the Pratt's Stats data you used private or public company database?*

R Private buyer only. Slide 33. There are millions of small private companies in the U.S. Less than 1% would be acquired by a public company if hypothetically offered for sale. Public company deals are disproportionately reported in the data.

Q *How to determine which transactions should be included in the analysis for a specific target company?*

R We are using *all* companies so that our sample is comparable to “average” risk average liquidity. When we use stock market data, we also use all companies. If your target company is not average, you need to adjust just like you adjust. Please see Pete’s answer (insert number) explaining how to adjust for different target beta and or total beta.

Q *On slide 34, how did you arrive at the 2.44% revenue growth?*

R *IPCPL 500 aggregate growth assumption.* Recall we employ the valuation axiom $K_0 = (FCFF_1/P) + g$ to solve for the IPCPL 500 K_0/IRR . One input we must estimate is the aggregate growth rate (g) for our 500 companies to solve for the aggregate K_0/IRR . But importantly, we note that the growth rate assumption, within reason, is not critical. *Since higher growth dampens $FCFF_1$ due to increased investments in fixed assets and working capital, we calculate that K_0/IRR changes only by about one-half of the assumed change in growth.* (emphasis added)

To estimate aggregate growth, we used real revenue growth and business age data from *Pratt’s Stats* as well as small business failure rate data from the Bureau of Labor Statistics (BLS). This was our process:

- First, we sorted 10,000 companies in *Pratt’s Stats* by business age—from one to 30 years—using a 10-year moving average. This yielded an unbiased estimate of revenue for companies aged five to 25.
- Second, we examined these sorted data by looking at the change in revenue as a function of age. While the average real growth rate was 4.8%, these sorted data only consider surviving companies—a statistical bias.
- Third, we took the *Pratt’s Stats* business-age-sorted data and adjusted the surviving number of companies to reflect that the total number of companies is growing over time. Specifically, we “grossed-up” the number of older companies by the BLS’s “net birth rate” of 0.44%.¹ For example, if there were 500 companies that were 10 years old, we adjusted the figure higher, to $500 \times (1 + 0.0044)^{10}$. Based on this analysis, the implied average failure rate of our 10,000 companies was approximately 5%. We compared this figure to data from the BLS that similarly indicated a long-run small business failure rate of approximately 5%.
- Fourth, from the sorted and adjusted data of 10,000 companies, we calculated aggregate revenue by company age. The result is set forth in Exhibit 5.²

Based upon the foregoing, we estimate the *real* aggregate growth rate of the IPCPL 500 to be 0%. Consequently, we expect aggregate *nominal* growth equal to long-term inflation. Therefore, as part of our “present day” adjustment (see next section), we update aggregate

1 Net birth data from the BLS indicate new business formations exceed old business deaths by 0.44% annually over the relevant time frame.

2 Had real growth been as low as 1%, for example, the aggregate revenue in Year 25 would have exceeded \$500 million.

growth to include changes in inflation expectations. In Exhibit 2, our proxy for long-term inflation is the 20-year Treasury bond less 0.35% (a typical TIPS rate), or 2.36% at the time this article was prepared.³

Q *How do IPCPL results compare with Pepperdine Study results?*

R Our implied EBIDA multiples (approximately 0.88 times operating income multiples in our curve) are very close. The shape of our curve and their size-based EBITDA multiples as a function of size are very similar. Their hurdle rates are highly levered K_e figures that need to be unlevered to compare to our K_e figures.

Q *Was the \$2 billion-plus in revenue the average or aggregate of the 500?*

R Aggregate. The average was about \$6 million.

Q *I see how private company data are used in the model, but what is the role of public company return data in the IPCPL model? That is, why is it important to the model?*

R Point 2 is tied directly to public company returns. So we start at Point 1—IPCPL 500 IRR calculation— explicitly private only return—at about \$6 million. So we logically assume there can be no jump going from Point 1 to the larger Point 2 due to the no-arbitrage rule.

Q *Would an Op. Inc. view of slide 36 have a similar shape and contour?*

R We assume that the large 500 sample size of mature companies is an equilibrium average margin. So, yes.

Q *If you start at Point 1 and connect to Point 2 using 200% Lehman formula, how large is the error (if any) between the expected Point 2 value and actual value?*

R The no arbitrage rule suggests zero.

Q *What are the potential Daubert challenges to IPCPL?*

R We recommended in the housekeeping items that since the model is new it should be used to calibrate other models only. Since IPCPL is more reliable, it should be used in nonlitigation settings where *Daubert* is not an issue. If and when it is used and accepted in nonlitigation settings, then it would be OK to use in court since that is one of the relevant *Daubert* tests.

Q *In slide 42, if “pretax” and the target is a PTE, then is it also “after-tax” and therefore comparable to Ibbotson or Duff & Phelps?*

R Our IPCPL K_e /IRR is before entity tax, so the user would have to use before entity tax cash flows to be consistent. Also we believe the marginal buyer is a PTE, so pre- and post-entity

³ We would normally estimate inflation by subtracting the 20-year Treasury Inflation Protected Securities (TIPS) rate from the 20-year Treasury bond. However, the TIPS rate is presently not a reliable indicator because of the current low interest rate environment and the fact that a TIPS inflation contract is bound at zero. Practitioners could also obtain an estimate of the long-term inflation rate from The Livingston Survey.

tax would both be zero. Please see page 3 of the article “Pass-Through Entity (PTE) Taxes.” We also provide K_0 assuming the user wants to assume a 20% or 35% tax rate on cash flows.

Q *In the IPCPL model, do you use historical or forecasted revenue?*

R You should use the IPCPL K_0 on forecasted FCFF. We calculate the IPCPL K_0 /IRR historical aggregate and a one-year forward:

		% Revenue
Revenue TTM	\$2,943	
Operating Income TTM	239	8%
Fair Market Value T_0	\$1,439	49%
Operating Book Capital TT	586	20%
Aggregate Revenue Growth		2.44%

Holding above relationships constant:

$$FCFFT1 = \$239 * 1.0244 - (\$586 * 2.44\%) = \$230$$

$$K_0 = FCFF_1/P + g = \$230/\$1,439 + 2.44\% = 18.4\% = IRR$$

Q *I like the idea, hate using public data to reconcile to small companies. How long has IPCPL been in practice? Do you use it regularly? Has it been challenged?*

R We developed the model about three years ago. It has not been used in court as far we know. We use it all the time as we recommend. We recommended in the housekeeping items that since the model is new it should be used to calibrate other models only. Since IPCPL is more reliable, it should be used in nonlitigation settings where *Daubert* is not an issue. If and when it is used and accepted in nonlitigation settings, then it would be theoretically OK to use in court since that is one of the relevant *Daubert* tests.

Q *What happens in the IPCPL model when a subject company has a different sensitivity to systematic risks than other companies in the databases?*

R We are in the development phase of the implied private company pricing model (IPCPM) that will allow users to move off the IPCPL (line – size adjusted average). The model will be the only specific private company cost of capital model that is indexed directly to the IPCPL cost of capital.

The model will facilitate adjustments from the IPCPL size-based indication for *comparable relative* differences in:

1. Systematic risk (i.e., beta);
2. Diversifiable risk (i.e., total beta);
3. Liquidity; and
4. Debt capacity.

The model will not only make recommendations on how to make these adjustments based on the empirical data, but also allow user-specified modifications.

Q *How do I get a K from the IPCPL as of a historical date? (I thought you said it's updated every month, so if I go to it today I get the K for today, not as of my historical valuation date.)*

R We are now just starting to keep the data.

Q *How did you determine that 500 comps was the right number? Do regression stats show that the 500 sample size is necessary to minimize the error?*

R We wanted to use a very large sample to be sure that data and/or valuation anomalies would be canceled out. We performed a statistical test of an exaggerated variance assumption and found that 500 was robust. We describe this in more detail in our *BVU* paper.

Q *In the Excel model, where are industry-specific stats input, or aren't they?*

R So many people do that in such different ways that we just provide an average number that can be adjusted as explained.

Q *How is pricing where a noncompete for seller was paid for in purchase price?*

R The broker is instructed to include noncompetes in MVIC.

Q *I'm assuming purchaser is a pretax PTE. Agree with no C corp adjustment but what about a tax adjust for ultimate payer of the PTE tax?*

R Whatever the personal hit is for personal taxes, it is "baked in" to the purchase price. We also provide the implied K_0 's for assuming a tax rate of 20% and 35%.

Q *How often is model info updated?*

R Monthly.

Q *Do you have a source or footnote for the Damodaran quote?*

R <http://pages.stern.nyu.edu/~adamodar/pdfiles/country/dangerAICPA.pdf>, page 15

Q *Would the poll question results have been different if the method used was discounted cash flow not the transaction method?*

R The poll question was for a DCF. The transaction method was used to fix the value to avoid circularity argument/confusion.

Q *Isn't the issue also if you add 3% company-specific risk to a real estate company, that will be a different overall percentage increase to the cost of equity than if you add 3% company-specific risk premium to an IT company?*

R Yes.

Q ***The rate of business failures is 5% per year? What is it for public companies dropping out of the Ibbotson database? Please repeat the source of the business failure rate.***

R It's data from an article that references the BLS.

Q ***5% per year? So, the implication would be one-third of all businesses will be out of business in three to four years.***

R Not exactly. After Year 1, it is 95×0.95 and after year two 0.9025×0.95 , etc.

Q ***In valuing a non-U.S. (foreign) entity and not having access to Pratt's Stats, could I use IPCPL?***

R You would have to assume that private markets are priced the same in the subject country.

Q ***Forgive me if this is simplistic as I'm hearing this information for the first time, but what if the subject interest is growing rapidly? Is there a way to substitute that growth into the model?***

R You don't need to worry. The IPCPL K_0 can be used just like any other traditional derived K_0 . It is independent of the subject company g assumptions, executive compensation assumptions, etc.

Implied Private Company Pricing Line

$$K_0 = FCFF / P+g$$

Developed by: Bob Dohmeyer, Pete Butler, and Rod Burkert

Presented by: Bob Dohmeyer and Rod Burkert

November 7, 2013



Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

1

Brief Bio

I am the founder of Dohmeyer Valuation Corp, a business valuation and M&A consulting firm. I specialize in complex valuation issues and provide consulting work for other appraisers in this regard.

I have lectured and published several papers on various valuation topics, and I am on the editorial review board of the Journal of Business Valuation & Economic Loss Analysis.

Prior to forming Dohmeyer Valuation Corp, I was employed by a Fortune 100 conglomerate where I evaluated merger and acquisition candidates. I am the co-developer of the Implied Private Company Pricing Line (IPCPL).



Email: bdohmeyer@fairvaluecorp.com

Work: 214-494-2677

Cell: 214-499-5954



Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

2

Brief Bio

I am the founder of Burkert Valuation Advisors, LLC. My assignments focus on income/gift/estate matters, specializing in private companies and investment partnerships.

I also provide report review and project consulting services to assist attorneys and other practitioners with their engagements.

I am leveraging social media to build a mobile consulting practice, which allows me to travel full time in an RV throughout the United States and Canada with my wife and two dogs.



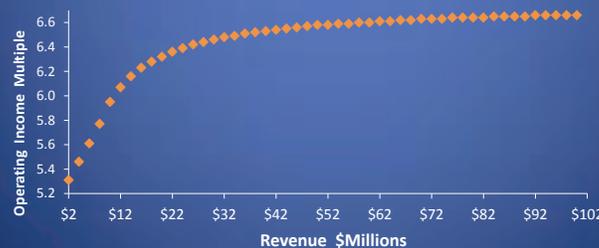
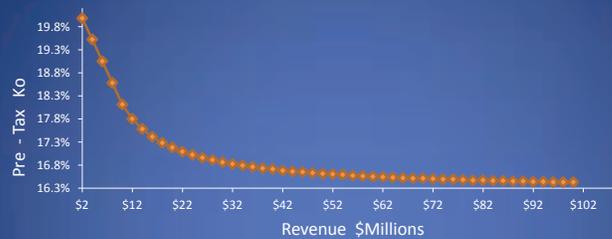
Email: rod.burkert@burkertvaluation.com
 Cell: 215-360-6100
 Skype: rodburkert



Questions@BVResources.com
 © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

3

IPCPL – THE END RESULT – ANY QUESTIONS?



Questions@BVResources.com
 © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

4

IPCPL

$$Ko = FCFF/P+g$$

"In the land of the blind the one eyed man is king"

Erasmus of Rotterdam, circa 1510

Agenda for Today

- Review Flaws of BUM/CAPM
- Description of IPCPL
- How to Use IPCPL
- Questions and Answers



Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

5

Housekeeping Items

- *IPCPL is substantial improvement over current Ko models*
- See September 2013 *Business Valuation Update*
- How to start using IPCPL now
 - Calibration / diagnostic tool to test other Ko models in litigation and non-litigation engagements
 - "Ready for prime time" in M&A assignments involving small privately held businesses
 - "Good to go" for calculation engagements
- Like all other models, IPCPL is not perfect



Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

6

Housekeeping Items

- Today's discussion
 - Control interest
 - Small privately held company (\$5 million FMV and less)
- Model, in general
 - Control or minority DCF
 - Up to \$150 million revenue
- Dr. Damodaran quotes
 - We believe his views are invaluable
- For more information and model download
 - Biz-app-solutions.com



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

7

It's Broken

- Current method of deriving K_0 : We think it's broken
 - Or at least in badly need of infrastructure repair that's unlikely to happen any time soon
- Let's see where it's broken



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

8

It's Broken

- Dr. Damodaran: The build-up method is “a recipe for disaster”
- Dr. Paglia: “In a galaxy far far away, where unicorns prance on the back of the Loch Ness monster and privately-held companies have access to public equity markets, appraisers estimate cost of capital ... [using returns of publicly traded equity securities]”
- Pepperdine survey: 78% of respondents did not feel comfortable with our industry’s current cost of capital methods, using returns on publicly traded equity securities ⁽¹⁾

(1) Pepperdine Private Capital Markets Project, Survey Report III, Summer 2010.



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

9

It's Broken

Gesoff v. IIC Industries:

“This court has also explained that we have been understandably suspicious of expert valuations offered at trial that incorporate subjective measures of company-specific risk premia, as subjective measures may easily be employed as a means to smuggle improper risk assumptions into the discount rate so as to affect dramatically the expert’s ultimate opinion on value.”

Court of Chancery of Delaware, New Castle County 902 A.2d 1130 (2006).



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

10

It's Broken

- IPCPL works around the following problems:
 - Extrapolation of SSP
 - What tax rate for a PTE
 - Liquidity adjustment
 - Pricing unsystematic risk
 - Higher systematic risk
 - Cash add-back
 - Unlevering / relevering beta



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

11

It's Broken: Small Stock Premium

Applying the small stock premium to much smaller private companies ...

Economist joke:

One moonless night a policeman saw an economist looking for something by a light pole. The policeman asked him if he had lost something. The economist said, "I lost my keys over there in that dark alley." The policeman asked, "Then why are you looking way over here by the light pole?" The economist responded ...

"The light is much better here."



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

12

It's Broken: Small Stock Premium

Poll Question

If you are valuing a company that has a FMV of \$1 million (estimated by a sound completed transaction method), what small stock premium should / do you use?

- A) 10
- B) 10b
- C) 10z
- D) 10z plus - Extend premium to \$1 million
- E) I don't use the small stock premium

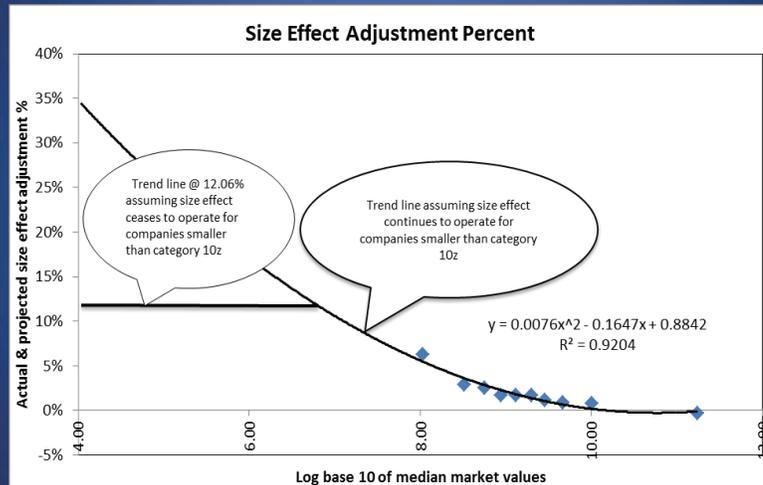


Questions@BVResources.com
 © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

13

It's Broken: Small Stock Premium

“Small” Stock Premium



Questions@BVResources.com
 © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

14

It's Broken: Small Stock Premium

Poll Question

Ask an investor, just after she acquires a small business, which event is worse:

- A) The business declines in value by 20% because discount rates increase but the cash flow outlook remains the same.
- B) The business declines in value by 20% because the cash flow of the business falls by 20% due to a recessionary shock while discount rates remain the same.

CAPM assumes *indifference* to events A and B, i.e., the same percentage systematic price change results in an identical beta calculation.

This is CAPM's "intertemporal" problem ... and yes, we hate that word too.



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

15

It's Broken: Small Stock Premium

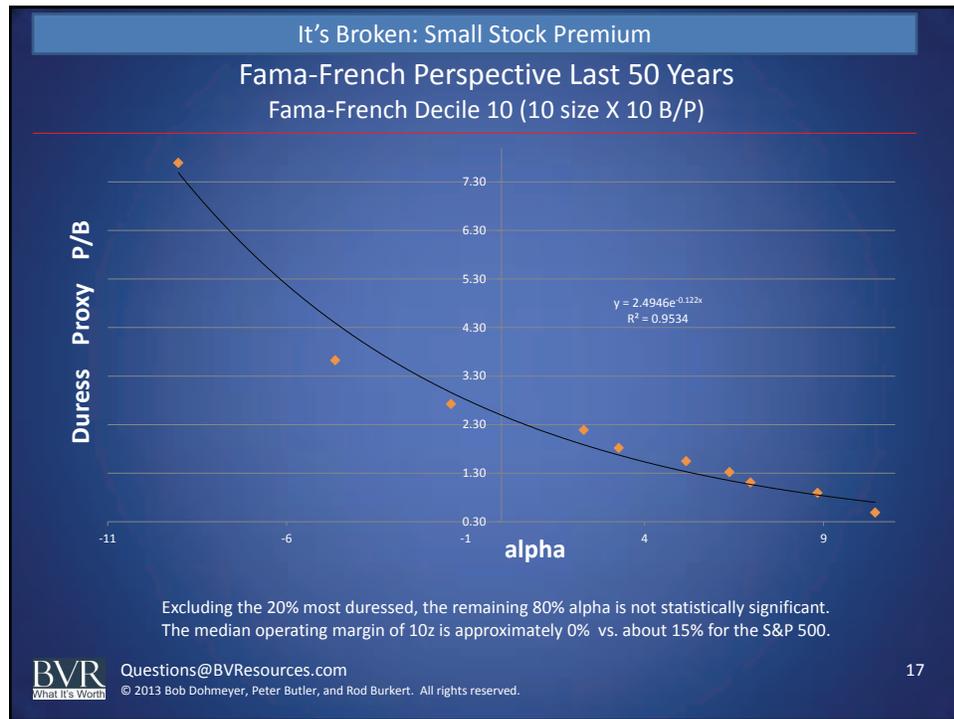
"Small" Stock Premium

- Approximately ½ of companies in 10z lose money
- "Small" companies tend to be small(er) because they are distressed
- "The key is to avoid double counting the cost of illiquidity since some of the small stock premium may be compensation for the illiquidity of small cap companies." Dr. Damodaran
- "While it would be foolhardy to attribute all of the well documented excess returns that have been associated with owning small market capitalization and low price to book stocks to illiquidity, smaller and more distressed companies (which tend to trade at low price to book ratios) are more illiquid than the rest of the market." Dr. Damodaran



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

16



It's Broken: What tax rate?

What Tax Rate?

- Marginal Investor
 - Asset Sale to PTE
 - Owner Operator vs. Public C-Corp
- “Valuation of Pass-Through Entities: Looking at the Bigger Picture”
Keith F. Sellers and Nancy J. Fannon

"Where private market valuation today treats shareholder taxes as directly correlated to value, such treatment is a very far leap from that which is demonstrated by empirical research. At the very least, this should indicate to private market analysts the need to carefully consider offsets and other associated risks when different tax schemes than that which exists in the public market return are assumed. Like all risks that affect value, this can be demonstrated perhaps most effectively through the cost of capital."

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

18

It's Broken: Liquidity

Poll Question

Do you discount a control DCF value for liquidity? (1)

- A) Yes
- B) No

(1) Assume small private \$5 million revenue company. Liquidity discount achieved either by discounting PV result or increasing the discount rate.



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

19

It's Broken: Liquidity

Liquidity Adjustment

Dr. Damodaran defines liquidity as:

“When you buy a stock, bond, real asset or a business, you sometimes face buyer’s remorse, where you want to reverse your decision and sell what you just bought. The cost of illiquidity is the cost of this remorse. In the case of publicly traded stock in a heavily traded company, this cost should be small. It will be larger for stock in a small, over-the counter stock and will escalate for a private business, where there are relatively few potential buyers.”



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

20

It's Broken: Liquidity

Liquidity Adjustment

Dr. Damodaran continued:

“One way of capturing the cost of illiquidity is through transactions costs, with less liquid assets bearing higher transactions costs (as a percent of asset value) than more liquid assets.”

“The trading costs associated with buying and selling a private business can range from substantial to prohibitive, depending upon the size of the business, the composition of its assets and its profitability. There are relatively few potential buyers and the search costs (associated with finding these buyers) will be high. In fact, if the investor buying it from you builds in a similar estimate of transactions cost she will face when she sells it, the value of the asset today should reflect the expected value of all future transactions cost to all future holders of the asset.”



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

21

It's Broken: Liquidity

Liquidity Adjustment

Dr. Damodaran continued:

“In conventional valuation, there is little scope for showing the effect of illiquidity. The cash flows are expected cash flows, the discount rate is usually reflective of the risk in the cash flows and the present value we obtain is the value for a liquid business. With publicly traded firms, we then use this value, making the implicit assumption that illiquidity is not a large enough problem to factor into valuation. In private company valuations, analysts have been less willing (with good reason) to make this assumption. The standard practice in many private company valuations is to apply an illiquidity discount to this value. But how large should this discount be and how can we best estimate it? This is a very difficult question to answer empirically because the discount in private company valuations itself cannot be observed.”



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

22

It's Broken: Pricing Unsystematic Risk

Poll Question

What company specific risk adjustment would you add to the discount rate if the subject company was approximately \$1 million FMV size and typical in risk characteristics for similar small private companies?

- A) 1.00 %
- B) 2.00 %
- C) 3.00 %
- D) 4.00 %
- E) 5.00 % plus



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

23

It's Broken: Pricing Unsystematic Risk

Higher & Priced Unsystematic Risk

- Publicly Traded vs. Small Privately Held Business
 - Diversification
 - No. of products
 - No. of regions
 - Depth of management
- Current Practice = SCRP = Educated Guess
 - “[Total Beta] theoretically applies if you have an investor who is completely undiversified, but you never have that kind of buyer in the real world. At the other end of the spectrum, beta applies for totally diversified investors. Investors in private companies are somewhere in between.” Dr. Damodaran
 - Typical small privately held business TB = 3.0 vs. ERP S&P 500 = 1.0



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

24

It's Broken: Excess Cash & Beta

Excess Cash & Levering / Unlevering betas

In our view, the debate over how much cash is needed for operations and how much is excess cash misses the point when it comes to valuation. Note that even cash needed for operations can be invested in near-cash investments such as treasury bills or commercial paper. These investments may make a low rate of return but they do make a fair rate of return. Put another way, an investment in treasury bills is a zero net present value investment, earning exactly what it needs to earn, and thus has no effect on value. We should not consider that cash to be part of working capital when computing cash flows. The categorization that affects value is therefore the one that breaks the cash balance down into wasting and non-wasting cash. Only cash that is invested at below market rates, given the risk of the investment, should be considered wasting cash. Thus, cash left in a checking account, earning no interest, is wasting cash. Dr. Damodaran

- Unlevering relevering beta
- IPCPL = K_0 automatically

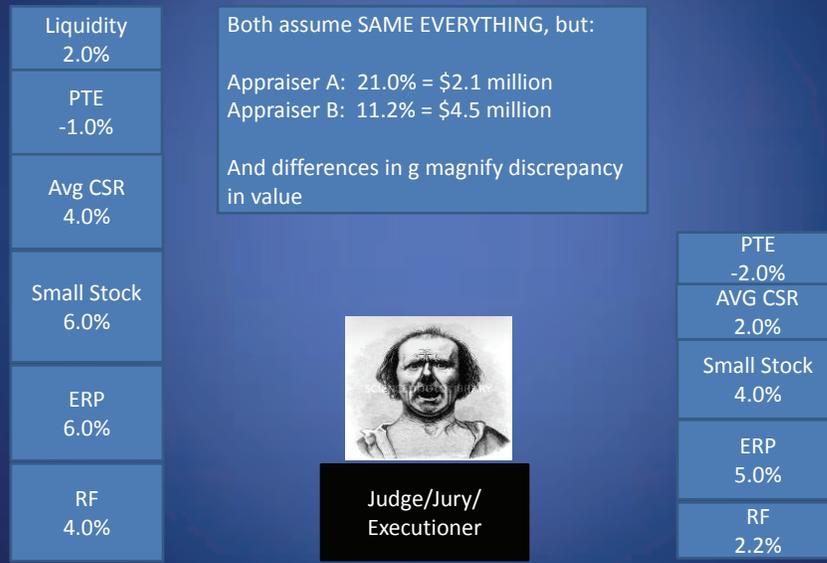


Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

25

Summary of Broken Pieces

Valuation of Same Company With Typical Risks - Same \$500K FCFF company, Two Appraisers



What Would Professor Damodaran Do?

- 100% of Kristin Kandy: \$3 million in revenue
- Dr. Damodaran does not use a SSP or CSRP
- Uses implied ERP, TB and liquidity adjustment



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

27

Market Approach Completed Transactions

- Pratt Stats/BizComps – market approach no problem for:
 - Extrapolation of SSP
 - Tax rate for a PTE
 - Liquidity adjustment
 - Pricing unsystematic risk
 - Higher systematic risk
 - Cash add-back
 - Unlevering / relevering beta
- No problem because they are comparable – size, etc.



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

28

$$\text{IPCPL} = K_0 = \text{FCFF} / P_0 + g$$



- The IPCPL aggregates 500 small private company transactions and directly estimates the aggregate IRR. This IRR (ex-ante) approach is fundamentally the same as Dr. Damodaran's equity risk premium approach.
- By using prices paid (FMV) for small privately held companies, all of the above public security return extrapolation issues are rendered moot. Effects of Liquidity, unsystematic risk, taxes etc. are reflected in the (FMV) clearing prices paid for the businesses



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

29

Problems with Databases

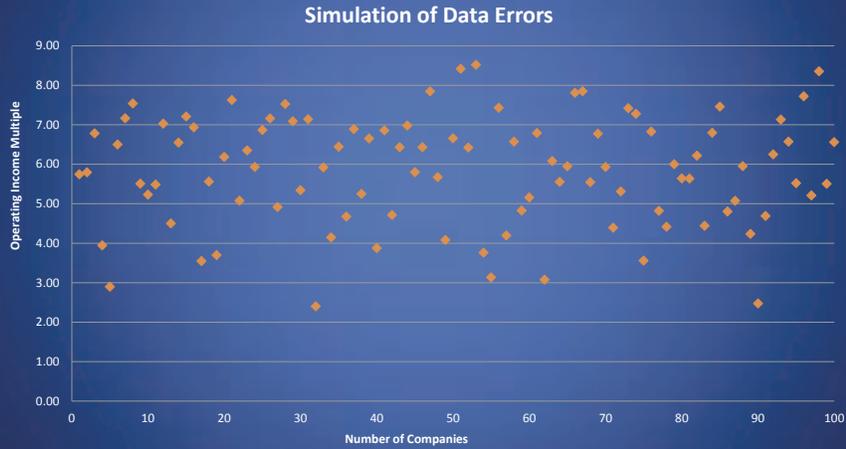
- Hitchner
- Fannon
- Not Biased – we reviewed PPAs



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

30

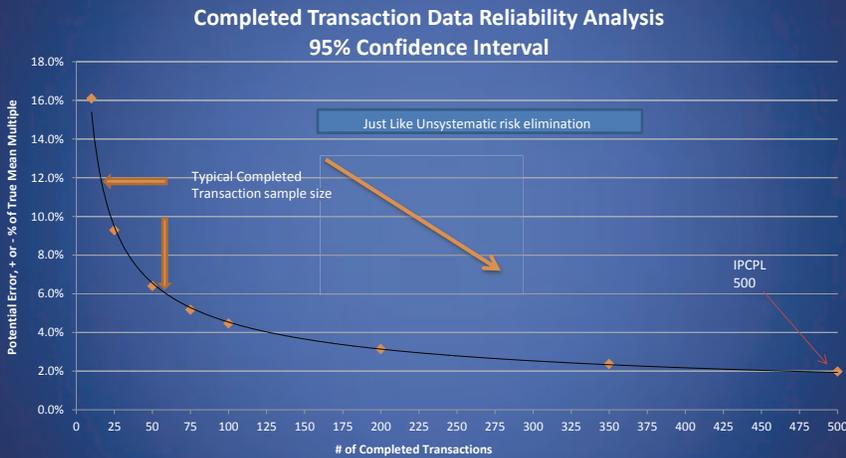
Statistical Analysis Of Reliability



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

31

Reliability of IPCPL 500



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

32

IPCPL 500 Selection Criteria

- Pratt's Stats
- Owner compensation data provided
- No medical/dental practices
- US entity
- Private acquirer
- Last 15 years
- Size (large minimum) to get to 500



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

33

IRR Aggregation of the IPCPL 500

(\$ Millions - 500 Private Company Transactions Combined)

Revenue _{TTM}	\$2,943	%Revenue
Operating Income _{TTM}	239	8%
Fair Market Value _{To}	\$1,439	49%
Operating Book Capital _{TTM}	586	20%
Aggregate Revenue Growth	2.44%	

Holding above relationships constant:

$$\circ \text{FCFF}_{T_1} = \$239 * 1.0244 - (\$586 * 2.44\%) = \$230$$

$$\circ \text{Ko} = \text{FCFF}_1 / P + g = \$230 / \$1,439 + 2.44\% = 18.4\% = \text{IRR}$$

Professor Damodaran does it this way with his implied ERP



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

34

$Ko = FCFF / Po + g$ How we do it

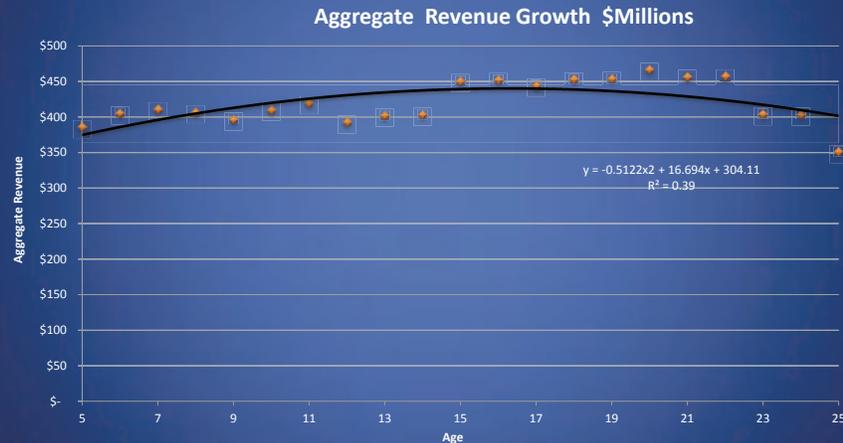
- Growth (g) estimation:
 - Estimating growth for 1 company is difficult
 - Estimating expected aggregate growth for 500 companies is easy
 - BLS data, Pratt's Stats data = zero real growth
 - A 1% change in growth = 0.5% change to Ko
- Income lag adjustment
- Seller finance adjustment
- Present day adjustment
- Use pre-tax net cash flows / cost of capital
 - Marginal buyer is a PTE so pre-tax and post-tax net cash flow / Ko is the same



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

35

$Ko = FCFF / Po + g$ Estimating Gordon's g



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

36

IRR Aggregation of the IPCPL 500

(\$ Millions - 500 Private Company Transactions Combined)

Revenue _{TTM}	\$2,943	%Revenue
Operating Income _{TTM}	239	8%
Fair Market Value _{T0}	\$1,439	49%
Operating Book Capital _{TTM}	586	20%
Aggregate Revenue Growth	2.44%	

Holding above relationships constant:

- $FCFF_{T1} = \$239 * 1.0244 - (\$586 * 2.44\%) = \$230$
- $Ko = FCFF1 / P + g = \$230 / \$1,439 + 2.44\% = 18.4\% = IRR$

Professor Damodaran does it this way with his implied ERP



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

37

IPCPL - The Line (Curve)

- Point 1 – \$6 million using private company aggregate IRR
- Point 2 – \$100 million ETF IWC Comp (Using Fama French/CAPM)
 - Adjusted for cost of going and staying a public company
- Point 1 & Point 2 Connected Using “No-Arbitrage” Rule
 - Based on Double Lehman Formula Curve – Proxy for liquidity and unsystematic effect ... consistent with Dr. Damodaran’s liquidity discussions



Questions@BVResources.com
© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

38

Restaurant Example

- The Starlight Grill
- Medium to high priced restaurant/bar
- \$6 million revenue
 - Ibbotson industry risk premium is negative
 - Assume typical liquidity for similar size
 - If typical risk for same size, stop at IPCPL

IPCPL Point

Biz App Solutions

Home > Cost of Capital > IPCPL

Revenue (\$Thousands)

Submit

Cost of Capital (K_o) used on FCF

Assuming you tax FCF at:

	0% Tax Rate	15% Tax Rate	35% Tax Rate
K _o	19.05%	16.56%	13.24%
Liquidity: (1)			
Liquidity @ 10%	17.39%	15.14%	12.16%
Liquidity @ 15%	16.56%	14.44%	11.62%
Operating Income Multiple (2)	5.11		

(1): For users that prefer applying estimated liquidity effect to PV result
 (2) TTM Stable and Normal - APPROX

>IPCPL Excel Model Download
 >Market Comp Excel Model Download
 >About IPCPL

Last updated 2/1/2013

IPCPL Point 2

IPCPL Cost of Capital (\$150 million Sales)				
Size Adjustment:				
Micro Cap ETF - Ticker IWC(1): (Fama French Model)				
	Market B	SMB	HML	Implied Cost
	1.05	1.10	0.17	5.46%
	Cost	Weight	Subtotal	
Cost Of Equity	10.94%	100.00%	10.94%	
Cost of Debt - AFIT (2)	3.25%	0.00%	0.00%	
Cost of Capital		100.00%	10.94%	
Cost of Capital - Public Company	10.94%			
Private Company Indifference Discount	0.70%			
Private Company Cost of Capital Equivalence	11.64%			
Private Company Indifference Discount (\$000s)				
Revenue	\$150,000			
Operating Margin	8.11%			
Operating Income	\$12,168			
Annual Staying Public Company Costs (3)	500			
Annual Staying Public Company Costs %	4.1%			
Going Public Cost	2.3%			
Private Company Indifference Discount	6.41%	0.70% of 10.94%		

Notes:
 (1) IWC actual median size of revenue \$230Mil Approx.
 We adjusted SMB for \$150Mil according to smb relationship of SPY IWM and IWC
 (2) Sample of IWC companies had slight negative net debt position
 (3) Source: http://www.cfo.com/article.cfm/14582443/e_14582548

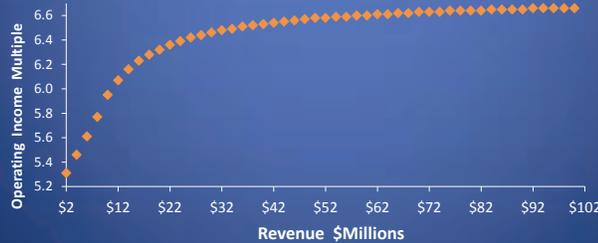
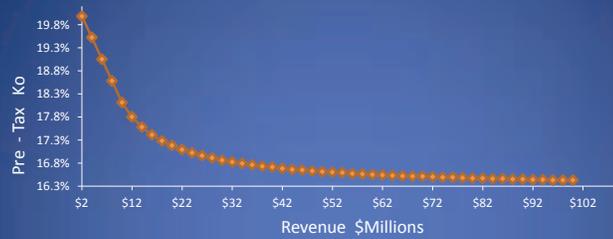


Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

39

IPCPL – BACK WHERE WE STARTED – ANY QUESTIONS?



Questions@BVResources.com

© 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

40

Utilizing the Implied Private Company Pricing Model: The Cost of Capital Wizard

Business Valuation Resources
March 5, 2014/10:00 a.m. PT

Blake Lyman:

Welcome to *Utilizing the Implied Private Company Pricing Model: The Cost of Capital Wizard*, a BVR webinar featuring Robert Dohmeyer, Peter Butler and Rod Burkert. My name is Blake Lyman, Professional Program Manager at BVR.

In November 2013, today's presenters showed us a new approach to cost of capital estimation for private businesses whose revenues are less than \$150 million. That approach, the Implied Private Company Pricing Line (IPCPL) uses small private company transaction data to solve directly for the cost of capital for a typical risk premium of a company that is \$150 million or less in revenue. Today they rejoin us to unveil the Implied Private Company Pricing Model (IPCPM).

Bob Dohmeyer is founder of Dohmeyer Valuation Corp., a business valuation and M&A consulting firm. Bob provides professional valuation advice and appraisals primarily for bankruptcy and family law matters. He also specializes in complex valuation issues and provides consulting work for other appraisers in this regard. Bob has lectured and published several papers on various valuation topics and is on the editorial review board of the *Journal of Business Valuation & Economic Loss Analysis*.

Peter Butler has more than 12 years of diverse financial and valuation consulting experience, including venture capital investment and analysis of publicly traded stock involved in securities class action litigation. Peter also has valued privately held companies for mergers and acquisitions, estate and gift tax, financial reporting, and litigation support.

Rod Burkert is the founder of Burkert Valuation Advisors, LLC, a business valuation and litigation support firm. Rod performs appraisals for companies operating in a wide variety of industries. His assignments focus on valuations for income gift estate situations, divorce proceedings, partner shareholder disputes, and commercial damage economic loss matters. He also provides independent report review and project consulting services to assist attorneys and fellow practitioners with their engagements.

It is my pleasure to welcome Bob, Pete and Rod today and, as always, you can read their complete bios on our web page for today's webinar.

With that, I will turn it over to Robert Dohmeyer, Peter Butler and Rod Burkert for *Utilizing the Implied Private Company Pricing Model: The Cost of Capital Wizard*.

Rod Burkert:

Thank you, Blake, for that introduction. Good morning or good afternoon everyone, depending on where you are calling in from. Today we are going to be talking

about using the Implied Private Company Pricing Model (IPCPM) as a derivation of our Implied Private Company Pricing Line (IPCPL).

You see the model at the top of slide 2 where our starting point is basically that the cost of capital equals the free cash flow to the firm divided by the fair market value price plus growth. Essentially, this is nothing more than rearranging the terms of an axiom that we all, I hope, believe in, which is the Gordon Growth Model for finding the value of a firm where we take the free cash flow and divide by one plus the growth rate.

Today's agenda is going to be a brief retouching on the flaws of the buildup model. Then we are going to move into a brief description of the Implied Private Company Pricing Line. In response to requests that that Bob, Pete and I received in response to our September article and our follow-up webinar on that, we are going to adjust the Implied Private Company Pricing Line to the Implied Private Company Pricing Model. Sort of as a spoiler alert, the adjustments that we go through to get from the Line to the Model will consider differences in systematic risk, unsystematic risk, liquidity and debt capacity. We will talk about that model and we will take some questions and answers at the end. That is where we are headed for today.

On our next slide, we are basically asking if you would use the buildup model if it were new. Perhaps another way of asking that same question is, "Would you use the buildup model if you were just starting to do business valuations today?"

I am not going to read to you what these three quotes are. You can certainly see them for yourself, but while you are scanning those quotes, I think it is much more interesting to address a question that we received on the quotes from slide 3. I imagine that the materials were sent out in advance and somebody already had a question in the firing chamber for us.

The question is maybe even more of a comment. It says, "I certainly hope lawyers for cases in which I have testified do not quote in future cases these melodramatic comments on slide 3 in an attempt to discredit my work for all the years I have been using a buildup method. These comments sound like a total indictment against the majority of business valuation professionals. I wish we could exclude these comments from CPE."

To quickly address that, when you say they are melodramatic, you may consider them melodramatic from your point of view, but quite frankly, we did not come up with these comments and it is not like if Bob, Pete and I hadn't found them that nobody else would have either. To me, any good appraiser on the other side might bring these up to attack anybody using the buildup model not just because there is now a presentation on the Implied Private Company Pricing Line.

The other response I have to this question is saying forewarned is forearmed. At least you know about these comments and if you feel like you want to continue to defend the buildup model, it is better to know that these attacks might be coming as opposed to being blindsided by them. That is our introduction for where we are headed today. We will continue on.

Peter Butler:

Thanks very much, Rod. Related to that very good comment on the buildup method and perceived flaws, I think it is important to stress here that this will hopefully be another tool in your toolbox. Nothing in the world of valuation is perfect, of course, certainly when we are talking about the cost of capital when we can even argue about the appropriate risk-free rate to use apparently. I agree with your comment that the more information the better. As you will see when we conclude this presentation, we actually conclude with the IPCPM running in the background in the Model to help support the buildup method, flaws and all. We are not necessarily asking you to forget about the buildup method, but just that maybe you should look at some other reference points now. The IPCPL and the IPCPM are certainly two that we think should be considered.

With that, I will move on to slide 4. Of course, the next few slides are related to potential issues with the buildup method. One of the huge issues with the buildup method, of course, is the alleged small stock premium. We have a graph that covers 50 years worth of data. It shows that maybe when we look at “size” we are really looking at actually something different. Is it correlated with size? Yes, but maybe those stock price returns from the public markets are being driven by duress.

As you can see there, we have a proxy for duress: P/B—Price to Book ratio. In the upper left hand corner we have obviously high price to book ratios. Unfortunately, if you buy high price to book ratios, as you might guess, your alpha or outsized returns have not been terribly good. In fact, as you can see on the left-hand side of the vertical axis, they are negative.

As we go down into the right, you can see, however, that when the price to book ratio drops and drops substantially to sometimes numbers less than 1, we get an outsize return or a positive alpha there. Just because a company is small per se does not necessarily mean that it deserves outsize returns. However, risk is correlated with the return and we think that risk may be better captured with this duress proxy, the price to book ratio.

In other words, when we all put the alleged small stock premium on our buildup method, we might not really be capturing what we should be capturing or what we think we are capturing. We will go on to the next slide now. This is a poll question. I think Blake will take over here.

Blake Lyman:

The first poll question is, “If you are valuing a company that has a fair market value of one million dollars using the market approach, what small stock premium do you use in corroborating the income approach?” The answer options are: 10, 10a or 10b, 10z, 10z plus extrapolating to one million dollars in fair market value, or you don’t use the small stock premium.

Our audience should see that window appear on their screen now and go ahead and select your option and choose to vote. It looks as though our first option of 10 has jumped out to an early lead of about 55 percent. The second option of 10a or 10b is at about 25 to 30 percent, followed by about 9 percent for 10z, nearly 3 percent for 10z plus, and the final option “I don’t use the small stock premium” is at about 12 percent.

As I go through this, I should note that the first two options of 10 and 10a or 10b are getting closer to each other with about 43 percent and 30 percent respectively. Everything else is staying similar.

With that, in the interest of time, I will close the attendee poll. Thank you to those of you who responded. We will push the results and you should see those on your screen now.

Peter Butler:

Those results are what I pretty much expected. I did not expect one answer, of course, to have 100 percent and everything else zero percent. You can see the volatility of the answers here amongst qualified appraisers. Obviously, we are going to have different selections of our cost of capital prior to the selection of the highly subjective company specific risk premium. This obviously lends itself to problems with the buildup method where two appraisers can look at the exact same results and conclude for various reasons why they are going to pick decile 10 or 10a or 10b. You can come up with somewhat of a drastically different result which is not terribly beneficial for our industry in my opinion.

Obviously, this next slide is somewhat similar. We have been bashing on the alleged size premium now for a couple of slides. I hope you get our point here. I think this slide is a beautiful slide. It was created by Toby Tatum in an article that he wrote on the size premium. Long story short, even if you somehow nail the size premium or whatever it is exactly right using publicly traded stock returns, now what? Most of us value very small companies, at least relative to publicly traded companies.

The question at the top is, “Why do we just stop?” We stop there because that is where we got the data from and it feels good. Then we can add a subjective company specific risk premium to kind of come into an answer that we think is appropriate.

Would it make sense to kind of extend the line, past the 10z line and past maybe the 12 percent alleged small company premium at the 10z level, and do we go all the way up to 35 percent?

In any event, you can see there are a whole lot of different options between 35 percent and 12 percent or lower, of course.

Again, this is very good evidence why we may have gotten some volatile results in the poll question. We just don’t have any pure guidance on how to select the alleged—and I use that term “alleged” quite purposefully—small stock premium. Do we just stop about 10 or 10a or 10b or 10z, or do we kind of extend it on beyond that? It really makes no sense to me why we stop other than I know Ibbotson and/or Duff & Phelps say we don’t want to extend it too far beyond the data. Well, why do they say that?

Well, because they recognize we have some serious issues if you did, but it really makes no sense to just kind of stop or interpolate or extrapolate just a little bit beyond their data, at least in my opinion.

We will move on to the next slide now. We will get off the buildup up method in a little bit, but as we have pointed out, the small stock premium as we have observed today can be almost anything. It is somewhat arbitrary. We have not even talked about the company specific risk premium yet. That is a topic that is near and dear to my heart. I think that is completely arbitrary certainly if you are not using total beta. Let me talk just a second or two about total beta.

I don't mean to claim that if you use total beta that subjectivity is still not present; it certainly is, but at least you have some empirical data now to kind of interpolate, extrapolate, whatever the word might be to come in with a selection for total cost of equity or a company specific risk premium. What is interesting about all the other asset classes that we can observe, small, publicly traded stock, large publicly traded stock, junk bonds, treasury bonds, et cetera, is we have return evidence. We know how they have performed historically. The problem with what we do is not really a problem is we don't have any return evidence on rates of return for privately held companies, so we do, of course, the best we can with what we have.

Maybe a few years ago the best of what we had was the buildup method. But now, as any industry evolves and changes, we get better instruments and better data, and we think certainly that the IPCPL and the IPCPM and in my opinion total beta is certainly much better than just using the buildup method. But in any event, when we ask appraisers who use the buildup method and feel strongly about it, what do they keep coming back to? They keep coming back to the small stock premium and the company specific risk premium.

They know that they can't throw in crazy answers in there; they are going to get some really crazy answers back that don't converge necessarily with what they get in the income approach, the income approach capitalization, or discounted cash flow approach. They fall back on that transaction data. Essentially, the big picture is that is what we have done here with the IPCPM and IPCPL. We have fallen back on transaction data although we think we have done it a little bit more empirically than just an intuitive feel.

Once again, with the buildup method, we don't believe there are any good solid instructions on how you really select any portions of the parameters in the buildup method.

With that, I am going to turn it over to Bob and he is going to take the next few slides. In summary, I think he is going to show finally what this all means with the buildup method. Go ahead Bob, and I will turn it over to you.

Robert Dohmeyer: Thanks, Pete. On this next slide we have all of the differences that the buildup method has problems with. We have been talking about mostly the small stock premium and the company specific risk premium but in addition to those two problems we have what equity risk premium should you use, and Pete briefly mentioned what risk-free rate to use. What liquidity adjustment to use, and what pass through entity adjustment to use for taxes? All of those issues, because there is no return evidence for small privately held companies, all of those adjustments that people

have to make to do a DCF of a controlling interest in a small privately held company, there is no how to.

If you look in the books they talk about these problems, but there is no one who says this is what I do, and here is what should be done. In fact, when we look at the polls, the answers to liquidity are roughly split 50/50. The pass-through entity tax adjustment—most people use the 35 percent tax rate for a small privately held company 100 percent, but other people use 20 percent and some people use zero percent.

The company specific risk premium—there is no answer to that because there is no data to support it. It falls back to unsystematic risk and sure you have total beta to try to make some sense of it, but other than that it could be any number from 1 to 20 percent or 30 percent. Who knows what the right answer is since there is no evidence to support any of it? We will get to a poll question on that later.

With the IPCPL though, since we are backing into the rate of return that is implied by the price paid for small privately held companies, all of these problems disappear. Of course, we create a new problem which is the estimation of the IRR that you get by buying a large index or a large aggregate of small privately held companies. It creates its own small problems, but we think those problems are extremely small in comparison to these.

This slide answers the question that the person had upfront which is there are lots of problems with this, and hopefully, we won't give these quotes out, but Damodaran has been fairly adamant about this and I think he is right. The bottom line is when you go to court, these are just opinions. If you have different people with different opinions within the range of reasonableness of each of those variables for a company with the same cash flow, let's assume that both appraisers use the company projection of cash flow, you can get literally an answer with the high value being twice as much as the low value simply on the basis of what cost of capital technique you used or what discount rate you used based on all these differences.

Each of these, once again, are within the realm of reason of these adjustments from a point a view of within these polling variability that we receive when we do the polls.

Blake Lyman:

Poll Question 2 asks, “What company specific risk adjustment would you add to the discount rate if the subject company was approximately one million dollars in fair market value, and typical in risk characteristics for similar small private companies?”

The options are: Zero percent, 1 to 2 percent, 2 to 3 percent, 3 to 4 percent, and 5 percent plus. Please select an option.

It looks as though things are fairly evenly split around the 20 percent mark. The only one that is really lagging behind is the zero percent option which is at about 15 percent. So zero percent has about 16 percent of respondents. The second option of 1 to 2 percent has about 19.8 percent. Two to 3 percent has about 17.4

percent. There are 20.9 percent for 3 to 4 percent. The 5 percent plus option is in the lead now with 25 percent.

With that, I will close the poll and push the results to our audience.

Robert Dohmeyer: You can see they are evenly split like Blake said. Of course, once again this is going back to that mad judge looking at two appraisers with vastly different answers for the same company. Here you have it. You have poll data that shows that people would do it differently on the same company. That is the problem that we are trying to avoid with the IPCPL and IPCPM.

When you go back to all these adjustments that we make, I hate to repeat myself, but I will. There is no scientific data to use. There is no empirical data. With other asset classes, gold, junk bonds, small stocks, large stocks, bonds, and that kind of thing, all of those things have empirical data on what historical rates of return have been over long periods of time where you can observe those rates of return. For small privately held companies we have no such luxury and that puts us in the position that we are in. That in a nutshell is why there is so much controversy. There is just no data.

We have to make do with the best that we have. Again, when you really press people on this issue, here is the important point: Going back to that one person's original thought, here is why it is an issue. If you press somebody on this and say, "Why don't you use a 2 percent small stock premium or why don't you use a 35 percent small stock premium? Extrapolate all the way to the small company size of your subject company?"

The answer is you just don't know unless—and Pete mentioned this before—unless you can say... Here is what people will say if you press them all the way on this, peel the onion all the way back: People will say, "Wait a minute. If I use a 10 percent company specific risk premium and a 35 percent small stock premium then my answer is going to be ridiculously too small compared to my transaction approach." That is the inspiration behind IPCPL. That is the only thing that we really have, that empirical data that tethers the two results together from observation empirical understanding of the actual prices that people observe for small privately held companies being bought and sold.

Here we have used that data very thoroughly and consistently to come up with these rates of return. By using those rates of return that are on our web site using the IPCPL, if you use some rates of return that are above, or a cost of capital above those rates of return, and use that generally to value companies, you will come out with values below what the evidence suggests. The evidence is the price that people paid for small privately held companies. That is the only empirical evidence we really have that is reliable.

The other publicly held data has to be adjusted so much that it is pretty much unreliable. If you use the discount rate that is too low compared to the IPCPL rates, then you will come up with values that are above the evidence as to what privately held companies actually sell for. That is what we are doing here in a nutshell.

By the way, our data is cost of capital and a lot of people confuse cost of equity with cost of capital. Our data goes directly to a control valuation for an optimal cost of capital for a control valuation. When you compare our cost of capital data and properly adjust for taxes, and compare it across to the Pepperdine data, our data is usually for companies that are on the smaller end. Pepperdine uses pretty large companies, but there is an overlap in our data. Where it overlaps, our data for cost of capital is almost identical to the Pepperdine surveys.

People will sometimes say, no, the Pepperdine surveys are higher than your numbers, and that is just not true because what they are looking at is the Pepperdine cost of equity portion of their surveys. That portion is a highly levered cost of equity that is done with a lot of secured debt and subordinated mezzanine debt. When you un-lever all that or just leave it levered and calculate a cost of capital for the Pepperdine data and compare it to our cost of capital, the two are almost identical.

The next one is what does this IPCPL solve? We already brushed on this when we went through the judge example, but, of course, the small stock premium dilemma, we have talked enough about. It solves that problem. It solves the problem of what tax rate to use, the pass through entity premium, because we are backing into the actual price paid. Whatever tax rate you want to assume in your DCF, the IPCPL already automatically will adjust the IRR to get back to the same price. You will see that later in our cost of capital wizard.

What liquidity adjustment should you use? Once again, that is about 50/50 whether or not people apply a liquidity premium to a 100 percent interest or not. With our data, that discount if any is already baked into the price so the IRR is already net of any alleged liquidity premium. How to price unsystematic risk or the company specific risk? That is already baked in. Higher systematic risk—baked in. The cash add-back of excess cash—that is not a problem anymore because we are just solving it the same way you would a transaction approach where you add back cash.

Then the proportion of debt financing and the cost of debt—when I see people talk about cost of capital they really gloss over that. You will see that people talk about small stock premiums, cost of equity, and so forth, but they almost never get into how much debt you should put in your WACC for a control interest, and what the cost of debt is, and if you put that much debt in, what should you re-lever the equity to be? That gets kind of complicated and as a consequence since there is very little data on it, people don't talk about it. Of course, there is how to un-lever and re-lever beta, which is part of that same problem.

Rod Burkert:

Thanks, Bob. On the next slide, we are still summarizing what our frame of reference is for the IPCPL. Even though we have ticked off some points on the unreliability of the buildup method, we are also recognizing that IPCPL is not perfect, but we still think it might be more reliable than the buildup model.

IPCPL has gotten some good exposure so far. Articles have been published in the *Business Valuation Review* and the *Business Valuation Update*. In fact, I am not sure how many people have received their electronic or printed edition, but there is an article on the Implied Private Company Pricing Model in the March issue of

Business Valuation Update. This is our second webinar that we are doing for BV Resources. Jim Hitchner and Harold Martin talked about IPCPL in a webinar a month or two ago. It has also been discussed in a webinar for the PICPA and for the American Society of Appraisers as well.

I think our point in bringing this up is we are getting close to saying that we have some peer review here. This is not something on the fringe. Nobody has told us that we are way off of our rocker. Obviously, the feedback we get we continue to use in refining the work that we have done as evidence by going from the IPCPL Line to the IPCPM Model.

As Bob mentioned, another point of reference here is that the cost of capital is a discount rate—the cost of capital that results from pulling the number off of our web site or from the Implied Private Company Pricing Line—is a discount rate, not a capitalization rate, and that K_0 is a weighted average cost of capital, not a cost of equity.

We are recommending that this be used for small privately held companies. Our IPCPL Line would include companies up to about \$150 million in revenue. In my entire 15 or 20 year career doing business valuations, have only ever exceeded a company with \$150 million in revenue maybe two or three times during that time. This is applicable to the majority of companies that many appraisers spend almost all their time valuing, less than \$150 million revenue sized companies.

We can apply this cost of capital, K_0 , the WACC, to a control or minority discounted cash flow analysis. Importantly, right now Pete and Bob and I view this as a calibration tool. Much like we are being pushed to develop discount for lack of marketability using more than one methodology or more than one approach, IPCPL is another tool in the toolkit to triangulate in on what a reasonable cost of capital might be. You can use data from Duff & Phelps and come up with your weighted average cost of capital with Duff & Phelps data. You can use data from Morningstar and come up with a weighted average cost of capital with Morningstar data.

Lastly, you can use IPCPL which already is a weighted average cost of capital. You can use this as a calibration tool or a way of triangulating or testing your cost of capital from the other more accepted or more widely used methods other than IPCPL as a sanity check. We are almost waiting with baited breath for the new cost of capital yearbooks to come out and the valuation guide book that is being published by Duff & Phelps with the new cost of capital information that Morningstar has discontinued. We wait for that data to be published and then we use that data throughout the year.

Another advantage of the data of IPCPL is that we are updating this monthly, and you see the web site link at the bottom of slide 12.

Much like Damodaran provides a monthly update of his equity risk premium on his web site, we are providing monthly updates of the cost of capital for small privately held businesses on our web site. That is our frame of reference.

On the next slide, we see the Gordon model where we have rearranged the terms to come up with our formula for deriving the weighted average cost of capital. The IPCPL is aggregating 500 small private company transactions and directly estimates the aggregate internal rate of return on free cash flows. This internal rate of return, this ex-ante approach, is fundamentally the same as that which is being used by Dr. Damodaran in his implied equity risk premium approach.

By using fair market values paid for small privately held companies, as Bob alluded to a slide or two ago, all of the issues that we have when we try and extrapolate public security rates of return to small privately held companies that we all deal with, many of those issues become moot. I am going to get us started by recapping what goes into IPCPL. We start with *Pratt's Stats*. In our curve that you will see later, it is based on transaction prices of 500 private companies from the *Pratt's Stats* transaction database that is published by Business Valuation Resources. You might see us refer to this as the IPCPL 500.

That IPCPL 500 forms our first data point where we got transactions from BVR's *Pratt's Stats* database. We used transactions where owner compensation data was provided so that we could make an adjustment for that. We do not include any medical or dental practices in our transactions. All of the companies are U.S. entities with a private company acquirer. None of our transactions include a public company acquiring a private company, only a private company acquiring a private company.

In order to populate our IPCPL 500 data point, we went back 15 years to look at transaction data to get to our 500 companies. That is a recap. On the next slide, Bob is going to talk about what the aggregate statistics look like for those 500 transactions as of the time that we ran this calculation.

Peter Butler: Before Bob gets started, I want to take you back to the Gordon Growth Model. We have a question that I think is important to take care of now. So Bob can answer those before he continues on.

The first question is, "I assume 'P' plus 'g' is in parenthesis."

Robert Dohmeyer: It does not matter because the order in which you conduct operations is divide before you add. You can put it in parenthesis there, but it does not matter. You would divide before you add.

Peter Butler: To be clear there, I would not put that 'g' in the denominator. 'g' is out on its own.

Robert Dohmeyer: Right, it is the cash flow divided by the price which is the yield in real terms, plus the growth rate, is the total rate of return. That is the way to look at it.

Peter Butler: Do you want to handle those other questions? One is, "The lack of empirical data has been explained before as the reason why canned software can never equal the judgment of a live appraiser. Does the IPCPL remove the judgment factor?"

Robert Dohmeyer: No, in fact, this whole deal is about IPCPM and IPCPM takes IPCPL which is the best we have with empirical data. So based on what we have done with IPCPL, we think that is your starting point. There is just a ton of work that went into that starting point, and it is an empirical, observable fact. Of course, again, it does not mean it is perfect. It is just that if we have done our adjustments properly and so forth, then it is the best starting point from an empirical point of view.

Then you have to make adjustments to that number for a company that is different in terms of these four factors that we are going to get into with the cost of capital wizard. Judgment applies to those four factors. You will see there is plenty of judgment to use later on.

Peter Butler: Let's follow up with a couple more questions here and then we will continue on. "Will we be able to track historical months in developing our cost of capital using your database?"

Robert Dohmeyer: Yes, we are saving the model. By the way, I don't know if we mentioned this, but the model is downloadable. It is a totally open source program that we have developed. You can go to the web site and download the Excel model called IPCPL and it shows you every calculation we have done to make these calculations. If you have any questions or you think we are hiding anything, it is all right there out in the open for everybody to use and look at.

There is one caveat. We are using *Pratt's Stats* data so we can't show that data that goes in there. Instead, we show the transaction codes for the 500 transactions that are in the model. Those codes are in our IPCPL model that you can download. If you want to, if you are a subscriber to *Pratt's Stats*, you can look up those transactions using the codes we provide to actually back solve the entire model we have done for you.

Peter Butler: There are a couple of related questions, Bob, which are, "What industries are captured in the data?"

Robert Dohmeyer: The data as Rod described is all of the data that met those criteria. It covers every industry except for medical practices. The only reason we excluded medical practices is because we have to make an adjustment for owner compensation and we use those surveys for that. We use large companies so that we are not capturing owner compensation too much; it is a very small piece of the cash flow.

But since we don't have enough on those surveys for owner compensation, they do not cover medical firms which have much higher owner compensation than the market compensation of medical practices. It is difficult as probably everyone knows after doing a few of them. So we exclude them from the database.

Peter Butler: Why would you not consider a public company acquiring a private company?

Robert Dohmeyer: The probability that you are valuing a private company, all private companies out there that we would value, the universal private company let's say is X—it is millions. The number of private companies that are acquired by public companies

each year is a tiny, tiny fraction. Yet, all of those transactions get reported because of obvious SEC requirements. It is sort of an observation bias because all of that data is there, where as all of the data on private companies is not there.

The chance that your company, which you are looking at, being acquired by a public company is extremely low. That is answer one: We think it is not a significant thing in the data to begin with. Answer two is because of that problem, and because public companies buy private companies that have super high growth ability or something special about a private company if it is being acquired by a public company, generally speaking. There are probably exceptions, but you are going to get super high multiples and super low rates of return on those deals by looking at implied rates of return.

Of course, the growth rate makes up for that, but who knows what that growth rate is, so we just avoid the problem to begin with by throwing it out. If we added it in and adjusted our growth rate, we would probably get about the same answer, but it is a small piece of the total anyway, so we don't want to go through the complications of making all the adjustments.

Peter Butler: One last question on this topic, and then we will move on. The question is, "Does the *Pratt's Stats* include both asset sales and stock sales?"

Robert Dohmeyer: We get that question a lot. Yes, about 20 percent of our data is in the IPCPL 500. Roughly 27 percent of that is stock sales. The stock sales are supposed to be market value of invested capital anyway, so sometimes when you go into the consideration section, you can compare it across, the two different deals—the asset deals and the stock deals.

Sometimes under the asset deals, they will exclude other working capital in the purchase price, but they include inventory, and, of course, debt and equity, but the answer is that the other net working capital excluding cash other than inventory is roughly zero based on all the data sources that we have. When you look at the difference between stock deals and asset deals, there is not a big difference. We make sure that the data is capturing the same market value of invested capital and we don't make an adjustment. We use all the data.

Peter Butler: Okay, Bob, go ahead. There are other questions and we will try to capture those later on.

Robert Dohmeyer: Here is the IPCPL 500 in our Excel sheet. If you download the Excel sheet and go to the Point 1, the IPCPL 500, you will see this calculation. It is basically just rolling all the 500 companies that passed those tests that Rod spoke of, and they all add up. For example, the total revenue is \$3.2 billion. The market value is about \$1.9 billion. Operating income is \$340 million.

Since we have used 500 companies and we are biasing it toward the larger end of the private companies, we are getting really, really substantial results where the noise of private companies is pretty much washed out. This goes through the Gordon Model axiom of solving for the IRR using this IRR calculation: K_0 equals

the free cash flow divided by the price plus “g.” That once again is an axiom so that is the beauty of the IPCPL; it is just an axiom so, therefore, there is no arguing with it. It is just a question of whether you estimated those numbers accurately that go into that calculation.

How do we do it? We have kind of explained how we do it, but the growth assumption is probably the most difficult one. We can observe the free cash flow from the *Pratt’s Stats*. We know what the price is from the *Pratt’s Stats*. So what is the growth rate? We have gone through this before and we could spend 20 minutes talking about how to calculate the growth rate, but our description of it is in our last article.

Long story short, for the growth rate we have used two different ways of estimating it, both using *Pratt’s Stats*, doing a cross-sectional analysis on age of the company and the growth rate implied by it, and by the BLS data which is the Bureau of Labor Statistics using the Birth and Death Model. They both came out roughly at the same rate of growth.

After looking at failures of privately held companies, the net growth rate of an aggregation of small privately held companies is around zero to maybe a half percent real. So we use half a percent in our model.

Since growth utilizes excess—when you add growth to a company, you are going to change the amount of working capital in FF&E. When you do your DCF and you say that FF&E and working capital is a percent of revenue, when you change your growth rate, as you probably notice in your terminal value when you do your DCF, you don’t get the exact one for one increase in the answer. So using this model, when we increase growth rate by 1 percent, the IRR goes up by roughly half that amount because you are utilizing more working capital in FF&E. So it is not that sensitive to changes in growth—that is the bottom line.

Then we have the income lag adjustment. Mr. Hitcher asked me this question. He thought he had me, not in a bad way, but we were at the San Antonio webinar, and he said, “What about the fact that the transactions occur on one date and the P&Ls are a good 18 months older than that?” There is the date in *Pratt’s Stats* for the date of the P&L and then there is the transaction date. We use that growth rate analysis with both a nominal and a real growth rate that we gross up the income to the date of the transaction.

Seller finance—we have gone through a regression analysis and isolated the companies that had a seller finance component. We did a regression and solved for what the effect was of seller finance and adjusted out that figure because it did add a little to the value of companies. We are pulling out the seller finance piece to get it to a cash equivalent price.

Then we do a present day adjustment as Rod was saying. For every month we take Dr. Damodaran’s new equity risk premium and we plug that in with the new 20-year and 10-year treasuries. We make an adjustment to our aggregated 15-year data to reprice it based on today’s environment as opposed to the average over the last

15 years, similar to adjusting the Ibbotson data from a straight arithmetic average to the supply side adjustment, making a qualitative adjustment for current day.

IPCPL Point 2—we have all these data points, 500 transactions for Point 1. The average revenue size for that \$2.9 billion aggregate for 500, the average is around \$6 million in revenue. So that is Point 1 in the IPCPL curve. Point 2 is using what is called the Fama French Model. That is just a derivation of the CAPM model, but it adds two factors: One for duress that Pete was talking about that is a big part of the small stock premium; and a factor for size.

Basically, this is CAPM, but a little more accurate than CAPM in my view. We adjust for those factors using the IWC which is the micro cap index ETF for small companies. We solve for a publicly traded company, typical CAPM type approach, but then we that is for a public company so what would it be for a private company of the same size.

We simply take a private company adjustment being the cost of going and staying public. So we have data on how much it costs to stay public, the extra regulatory costs, and, of course, the cost to go public. We are backing into an indifference point, increasing the cost of capital from this public company to a private company knowing that the private company at that size can go public, so it should be just an indifference calculation. That gives us Point 2.

If we have Point 2 and Point 1, then we can go to the curve.

Peter Butler: I think we have a poll question first.

Blake Lyman: Before we get to Poll Question #3, I would like to remind our audience of today's CE codes. Those three four-digit CE codes once again are 1040, 8252 and 6491. Those numbers will appear in the bottom right corner of our current slide in red as well as on the next few successive slides.

A quick announcement as well, there was mention of the March 2014 *Business Valuation Update* article on the IPCPM. That article is included with your handout materials today.

With that, we will get to the third poll question today. The question is, "In the buildup method, which calculation estimate do you worry about the most?" The options are: risk-free rate, equity risk premium, small stock premium, industry risk premium or beta calculation, and unsystematic risk premium.

Right off the bat, we have about three-quarters of respondents saying that unsystematic risk premium is their most feared or most worried about part of the buildup method. There are about 15 percent saying industry risk premium or beta calculation, nearly 10 percent small stock premium, and about 2.5 percent say equity risk premium.

Peter Butler: Do you want to comment on those results, Bob?

Robert Dohmeyer: That is what we get all the time. The unsystematic risk premium is always the most problematic. I will pump our method. The unsystematic risk premium is baked into IRR calculations. This problem that everyone has, and that is clearly subjective, no one knows what the right answer is because again there is no data. When you back into the actual price being paid and calculate the IRR, you have it baked into the price.

Whatever discount people are making for an unsystematic risk premium or a company specific risk premium, it is baked into the IRR calculation so you don't need to worry about that as long as your subject is average. Also, to that point, there is a question here, "Should I not use IPCPL since healthcare companies are not included in the data?"

The answer is that you can use it. The IPCPL IRR now is the aggregate IRR for all those industries. Had we added the healthcare industry in, and we actually did for a portion of time where we were estimating what those market rates of return would be for the salary component; it does not change the answer. Even if it did, that represents the average IRR on privately held companies. You still have to make the second step and say, "Are healthcare companies more or less risky than average?"

This is an average rate of return. Just because one industry did not go into the component does not mean that is the industry you should not use. It just means you always have to make an adjustment for whether or not your company is more or less risky than average. I hope that answers that question.

Peter Butler: Since you brought up that question, why don't I follow on with another question related to that, "Why are the aggregate 500 companies not more or not less?"

Robert Dohmeyer: We did some statistical tests. We exaggerated a variance and we calculated a statistical variance of noise based on a theoretical noise factor for the data that goes into the databases. Occasionally there are errors in the databases, so we assumed that level of error which was quite high. We exaggerated the error. We put it in and we asked how many data points we needed that eliminate all that random error.

We came up with 500 as a belts and suspenders large enough number that covers the people's concerns that there are errors in the reported data and the data sometimes has crazy... I know one price that went into this and the person overpaid. One person will say this person underpaid. All those kinds of idiosyncratic noise that people can observe anecdotally are random. So if you use 500 you avoid that random error basically; that is why we picked 500. That was a good, nice, large round number, too.

Peter Butler: One last question for Bob, "How would you respond to an attack on this model that it is using many different industries to apply to one company that is your private subject company?"

Robert Dohmeyer: If we understand that when you use CAPM or the buildup approach, it is the same thing. The buildup approach starts with the rate of return on the market. The market is all these industries. This is precisely the same thing as the buildup approach.

CAPM and the buildup approach use the S&P 500. The S&P 500 is a proxy for the average risk of the average company.

We have a proxy being this 500 as the average risk of the average private company. It is actually a better proxy in my view because when you look at the 500 companies that are in our database, you are not going to see banks and utilities and so forth like you get with publicly traded companies. If anything, the publicly traded companies that use a bad proxy for industries because they are weighted toward industries that are just not as common for small business appraisal.

When you look at the companies within the IPCPL 500, you are going to see more of the distributors, restaurants, and the kinds of things that we value more frequently in our practice. Quite literally, this is a better proxy for the average risk than the S&P 500. I don't think it is that important, so I don't really say that is a big thing. It is just like the question about not using healthcare companies. It is just an average risk proxy. It is a good strong sample for the average risk because we are covering everything. Everything that is out there falls into this data.

Slide 19 basically gets us all the way up to what the new material is, which is IPCPM, but this covers IPCPL down to the last point. We have Point 1 and Point 2. Now we connect Point 1 to Point 2 using what is called a no-arbitrage curve. That is essentially saying the systematic risk of Point 1 and Point 2 are the same, so they ought to have the same rate of return.

We know empirically through the data we see that just is not true. There is a premium for unsystematic risk and for liquidity, and that is why small private companies have a higher IRR than large private companies. But they have the same systematic risk, so if markets were efficient, perfectly efficient, and there were no differences for unsystematic risk and liquidity, once again they should trade for the same price.

If you roll up the small companies into a large one, you can arbitrage. In economics and finance, you know there is a rule called no arbitrage. So we draw this curve between Point 1 and Point 2 using a curve such that it makes it most difficult to arbitrage between Point 1 and Point 2. That is why it is not a straight line; it is a curve because transaction costs of arbitrage are not linear. You are going to have much higher transaction costs in small private companies than you do in large private companies as a percent of the total value of the company, of course.

Once again, we could spend a lot of time on the no arbitrage rule itself, but we don't have time for that today. The next slide shows Point 1 and Point 2 connected through that no arbitrage curve. There are the results. Of course, these change all the time so you can go to the web site and see the numbers are not exactly the same. That is because the risk-free rate changes, the equity risk premium from Damodaran changes, the data is changing, the 500 companies slowly change over time, so the data is going to be a little bit different all the time.

Peter Butler:

Thank you very much, Bob. I will take over for a few slides now. Before we head into the IPCPM (the model), let's talk about the IPCPL (the line). This is a generic

manufacturing company with \$6 million in revenues. Anybody is allowed to go to the web site *biz-app-solutions.com*. You will be able to get there and find and pull up this particular page that is on the slide. You would simply type in \$6,000 because the revenues are in thousands per \$6 million. You hit submit and you would rather quickly get a printout, an output of the data for K_0 which we remember is a weighted average cost of capital.

We can adjust that K_0 for different tax rates. Some people like to use a pretax WACC which is the zero percent tax rate. As you can see there, that is 21.89 percent. As Bob mentioned earlier, a lot of people like to use for whatever reason reasonable conclusion I think of 35 percent tax rate for a small privately held company. Both outputs will get you to the same valuation conclusion. As you can see, obviously, as you tax effect the income stream, the discount rate that you will apply is decreased.

Similarly, you can see that if you are one of those appraisers who takes a liquidity adjustment for a smaller privately held company, even for a controlling issue valuation, if you took a 10 percent or a 15 percent discount after your original conclusion, you can see what you should apply in the discount rate to all get to the same valuation conclusion, while nine of those boxes, depending on your inputs, will get you to the same valuation conclusion for your private subject company. That is the IPCPL.

Any \$6 million manufacturing company, or for that matter, privately held company, would receive the same WACC or discount rate here. Of course, we came out with this and people had some concerns about that, of course, which is that every \$6 million revenue company should not have the same cost of capital, and we agree with you. That is the purpose of this presentation which is to introduce the IPCPM (the model) and how we read the line behind the curve. For every subject company, if you decide that your privately held company is not “average” you can read the line behind and use some judgment.

That probably answers some questions that I see arising in the private chat line about lack of judgment and things of that nature. The IPCPM certainly applies some judgment and we will get into that momentarily.

The model—as I said, what if your \$6 million manufacturing company is not average so to speak for a company of that size? Well, we can read the line behind. We can go to *biz-app-solutions.com* and download the wizard which we will talk about. We like to think that it is “like having a little wizard running behind all of your calculations in the buildup method.” Once again, we are not asking you necessarily to leave the buildup method behind, but this is another tool in your toolbox hopefully.

Robert Dohmeyer: In fact, it is not leaving the other tool behind; it is that this model is a buildup model with the IPCPM running in the background. It can be a tool you can use for what you do presently with this enhancement to it basically.

Peter Butler: Thank you for the clarification, Bob. I appreciate that. As you can see, we have some judgment applied now related to systematic risk, unsystematic risk, liquidity

risk, and also the ability for the company to receive debt financing. In other words, is the company financeable?

Let's move on to the next slide now. Here is another poll question.

Blake Lyman:

Our fourth poll question today has a very simple option here. The question is, "Do you discount a control DCF value for liquidity?" The options are very simply yes or no. There is also the caveat here with a footnote at the bottom that we are assuming small private \$5 million revenue company, liquidity discount achieved either by discounting a PV result or increasing the discount rate.

Right off the bat we are at about 50/50 here. We will push out the final results when they are in. We are at about 55 percent to 44 percent in favor of no. You should see those numbers appear on your screen, but it is still back and forth hovering around 50/50 for each.

Peter Butler:

Thanks, Blake. That is pretty much what we expected with previous polling. It is almost split right down the middle. Isn't that nice for the valuation industry? Obviously, this is a huge question mark for how we handle this as an industry. Again, I am not surprised because members of your presentation group today might have different answers on this or thoughts on that.

But the beauty of that is here we are as collaborators on the IPCPL and IPCPM. We might disagree on the answer to this particular poll, but when we look at the IPCPL, we don't care. It is already baked in as Bob has used that term frequently today. That is the beauty of the IPCPL and IPCPM.

Let's move on to the next slide. I mentioned this earlier, but we are going to depart from the IPCPL, the curve, using those four different metrics and we will get into that in a little bit here in more detail because I am sure you will have questions. I see you already have questions on our private chat line. Again, systematic risk differences, unsystematic risk differences, liquidity or lack thereof differences, and the ability to obtain debt financing or not.

The first factor where we will depart from the curve is systematic risk. Obviously, it is an important import to any cost of capital selection. Everybody is familiar with, in laymen's terms, what systematic risk is all about. How correlated is the business and the future cash flow to the economy?

We have a couple of examples. Again, as you can see, subjectivity is alive and present here. This is not a robot per se. We have put some limits on the scaling here. It is up to you, the individual appraiser to select what you think is appropriate for your privately held company. For example, we have an expensive dinner house. We said that is probably generally higher risk certainly than a fast food burger joint which would only earn a 3 on the scale. As you can see, a 3 would correlate to a beta of 0.88, and the 7 correlates to a beta of 1.63.

The average which is what the IPCPL uses is a 5. We determine that on average, a small privately held company would have a beta of 1.25, which by definition, of

course, is higher than a beta of 1.0 which we used in the CAPM for the S&P 500. Obviously, we believe that smaller privately held companies are more risk prone to the movement of the general overall economy. Another example there as you can see, we have a private jet manufacturer which is a nine. We believe that is probably even more prone to movements in the economy than an expensive dinner house.

On the flip side, with the commercial aircraft industry we have a defense contractor. The customer is the U.S. Government and we believe that generally speaking that would be on the lower end of the scale and selected a 2 which correlates to a 0.7 for the beta.

Robert Dohmeyer: These two, the dinner house versus fast food and private jet manufacturer versus defense contractor—we need to point out here that these are in the same industry. What we are trying to point out is that companies within the same industry which would receive the same industry adjustment factor from using your surveys of the Ibbotson data are going to give you the same answer for both the expensive dinner house and the fast food place, and they will give you the same answer for the jet manufacturer versus the defense contractor. That is another advantage of this method which is that it allows you to differentiate between companies within an industry.

Peter Butler: Thanks very much, Bob. That is an excellent point. I have one more slide and then I will turn it over to Rod. The IPCPM versus the IPCPL—is our second factor that we look at to jump off the line so to speak, and I use that term “jump” loosely. Chances are, we might not jump off the line that much because remember, we are already in the domain we want to be. We are not using large publicly traded stock price returns. We are using *Pratt’s Stats* market transactions, so that is something to keep in mind when you decide what is average. Where am I from the average point which again is 5 on our scaling?

The differences in unsystematic risk are a huge portion of selection of an appropriate discount rate for a privately held company. As we all know, unsystematic risk is not priced in the publicly traded stock world. That is why I transpose beta into total beta to look at it from those publicly traded stock price returns as if they were privately held now. That is why I use total beta. Here, unsystematic risk is baked into the answer already. Now we are just trying to decide if we are more or less risky on an unsystematic risk perspective from our average company of that size in our private domain.

The example here as we work our way up the scale is one customer with poor relations. We decided to give that a 10 and that is a very high total beta so to speak of 4.76, where the average total beta is 3.38. The other example that we use here is a well diversified customer base where no one customer is more than 2 percent. We scaled that to 1. Could it have been a 2? Yes, it could have been a 2 probably or maybe even a zero. Who knows, but again, hopefully we are in the relative decile so to speak in our scale here to help you select an appropriate cost of capital WACC using the IPCPM to get to an appropriate reasonable answer of value for your particular company.

With that, I would like to turn it over to Rod right now.

Rod Burkert:

Thanks, Pete. I have liquidity and debt capacity. With respect to liquidity, early on I mentioned that we have done a couple webinars all with poll questions. We asked that previous poll question about whether or not you would apply a discount for lack of marketability or lack of liquidity. The results have been fairly consistent with about 60 percent saying that they would apply an illiquidity discount to a 100 percent interest, and 40 percent that would not.

The issue here is looking at the universe or pool of potential hypothetical willing buyers for your subject company. Our range here is many competitors and no unique or specialized knowledge required to operate the business equals a 2, or low liquidity, low risk, or at the other end of the spectrum, two competitors with unique or specialized knowledge that are required to operate the business, and we represented that on our scale as an 8 with high illiquidity and high risk.

Again, population density in the market area for the company—not to pick on Pete, but are we in Boise, Idaho or are we in Philadelphia, Pennsylvania—your population density is going to vary dramatically there, and with that density, so will your pool of hypothetical willing buyers. Again, this is just allowing us to determine on a sliding scale what adjustment we would make to go from IPCPL to IPCPM.

The reason that we considered unique or specialized knowledge is that in most small private companies there is a tendency to have an owner operator rather than an absentee owner or someone who has made an investment in the business and is an absentee owner while a manager is taking care of the day to day operations. This makes the number of market participants for that small private company to be extremely low compared to common stock securities or even microcap companies that are traded on an exchange where literally almost anyone in the world can invest or speculate with just a few shares.

That is our adjustment for illiquidity. The other adjustment is for debt capacity with the ability to obtain financing. The question you ask yourself is, “Compared to other small privately held companies of the same size with 5 being typical or average, what are the differences in the ability of that small private company to obtain financing?” Rephrasing the question is, “How bankable are the assets? Are there sufficient collateralizable assets?” Most collateral assets happen to be fixed assets or inventory versus maybe accounts receivable.

Looking at the nature of the business will tell you what kind of assets the company has and, therefore, what its ability is to obtain financing. All of the things begin equal, higher debt capacity equals or lowers the amount of funds that are required from a hypothetical willing buyer in the market for small private companies. If you lower the paying threshold of ponying up funds for the company, it adds to the number or adds to the pool of participants of hypothetical buyers, and adds a source of financing that we all know has a lower price of liquidity.

We are looking here at the difference in ability to obtain financing, high inventory and accounts receivable is high bankability, low risk. Low inventory, low receivables

is a 3. High furniture, fixtures and equipment is an 8 versus low furniture, fixtures and equipment a 2. Again, the average company being embodied in our IPCPL line is a 5 or a debt to capital ratio of 0.33. That is our adjustment for obtaining financing.

Peter Butler: Thank you very much, Rod. There are a lot of questions coming in. We have about 12 minutes left in this presentation with a few slides to go. My goal is to reach the end of the presentation. If we have time to answer some of those questions, we certainly will. If we don't have an opportunity to get to those questions, we will respond via email at a later date.

Let me move on to the next slide. The IPCPM at average scale equal to 5 is the IPCPL. Any time we select a number for those four parameters other than 5, we are now going above or below the line depending on what you selected.

Robert Dohmeyer: This output here you are looking at is a part of the DCF model that you can download as this new cost of capital wizard. You can go to the IPCPL page and select New IPCPM advice and you will download an Excel model. It is a DCF model that gives you all these inputs and lets you use a BUM model to come up with your DCF answer with this IPCPM calculation that Pete is showing you here.

Peter Butler: You can see 5s up and down the line on the slide with a \$4 million revenue company. There was a question outstanding about what a typical cost of capital is. There you have it right there. The IPCPL at \$4 million anyway would provide a 15.5 percent cost of capital. If your company at \$4 million is not "average", then you can go above or below that depending on the selection of those four parameters.

Robert Dohmeyer: That is a 35 percent tax rate, too.

Peter Butler: Thanks, Bob. In any event, related to the wizard running behind the scenes now to help support your calculation potentially using the buildup method, how we have calculated the spreadsheet is you can compare and contrast your answer to your buildup answer. You can find out if the IPCPL / IPCPM thinks that your buildup method is a reasonable calculation for the cost of capital. It will tell you yes, it is okay; or it might tell you no, you are too low; or no, you are too high.

Therefore, you can go back and reassess as appropriate. Maybe some assumptions you made in the buildup method and/or the IPCPL / IPCPM and see if you can get those two answers to correlate within plus or minus 10 percent. Of course, we all know that this is valuation; it is not engineering or physics. So we thought that this was an appropriate variability to use to say that one or the other is okay.

Moving on to slide 30, what happens if we have a privately held company where we believe, given its size range of \$4 million give or take, it is just much more risky across all four parameters. As you can see there, I selected an 8, an 8, an 8, and a 2. Obviously, the debt finance capacity indicates higher risk there. As you can see, using those parameters, we jump 15.5 percent up to 20.5 percent.

Bob will take over with a slide next that shows a much lower risk and what that means. But as you can see, as we increase from the IPCPL 15.5 percent to the IPCPM 20.5 percent, a higher cost of capital, of course, resulted in a lower value, a decrease of about almost 40 percent as you can see there. Running behind the scenes we can compare and contrast with our buildup method. Lo and behold, given our parameters here and what we selected for our buildup method which I am not showing you here, we determined that our buildup method was okay.

It is running behind the scenes here so, therefore, we are getting a few questions related to this particular method, and I get this all the time with total beta, and the Pinkerton Calculator also: Hey, has it been used in a courtroom setting? Hey, has it passed the Daubert Challenge?

The answer to those two questions, of course, are no. While we are getting the word out so to speak, we have not encouraged anybody to go out and just use this as a sole method. Again, we are looking for you to potentially use it as another tool in the toolkit as corroboration or reconciliation method for your buildup method or your total beta method or whatever method you might use. We have a new method now and we think it is pretty neat running behind the scenes.

All those questions out there right now about people worried about adopting something new because it has not been Daubert tested—don't worry about that. Use it behind the scenes now. Get some comfort with it and maybe down the road this could potentially replace the buildup method, but that is not our goal as we speak right now.

With that, I will turn it over to Bob to take us to the finish line.

Robert Dohmeyer: The next one is when you analyze a company, the factors all reverse the other thing. The risks are essentially one minus the factors on Pete's slide. Of course, you get a much lower after tax cost of capital at a 35 percent tax rate. This is a company that has low risk across the board.

But to Pete's point, it does not need any more explanation other than the fact that it is the opposite of what Pete said, basically. But to Pete's point on the Daubert thing, this calculation is in our DCF model, but the BUM model that you calculate your answer with is independent of the IPCPM. IPCPM works in the background and says based on IPCPL your number is too high or too low. But when you print out your DCF model of BUM, it does not have any of this IPCPM in it. You get the benefit of the IPCPM which is essentially someone is a cost of capital expert saying I think based on your subjective inputs your number is too low without having that number in your analysis. It is literally outside of your analysis.

There is zero chance of it being Daubert tested because it is not part of your calculation. It is sitting back there questioning your calculations but it is not part of your calculation.

The next slide is the inputs for the BUM in the DCF model that is downloadable from the web site. You will notice these are all familiar inputs for company specific

risk, industry risk, small stock premium—you plug that in as you feel comfortable doing and you make the calculation of your DCF value. Answer the four of the five questions on IPCPM and boom, it automatically says, hey we think you are close, or not, just like Pete said.

I think that is the last slide and we can go to the questions.

Peter Butler: I think we have four minutes or so, give or take. One question is, “What does FCF stand for?” That stands for Free Cash Flow to the Firm. That is an easy one, so I can handle that one.

Bob, do you see any questions that look particularly interesting to build value to the group?

Robert Dohmeyer: I will start at the top. The question is, “Do you use cost of capital and discount rate and IRR changeably?” The answer is yes.

Another question is, “Mention please the dashes in the URL for Biz Apps Solutions are very important.” Yes, it is *biz-app-solutions.com*. I am sorry about the dashes, but obviously, the one without dashes was taken when we tried to get it.

Basically, people get answers that they believe in or answers they think are too low. Basically, the BUM method—some people come up with BUM calculations that are not reliable when it comes to using them on free cash flows when you consider the actual beta of transaction prices. Remember, if you don’t like our data, our data is calculated from the transaction prices. This is not our opinion; this is what is implied by the actual prices paid.

Sometimes we see sometimes that people will use overly optimistic cash flows, and then they will try to adjust those cash flows down by increasing their discount rate. Sometimes when you see BUM discount rates that are too high, they are doing it because they want to adjust for overly optimistic cash flows. That is just not the right way to do it. We don’t have time to get into that right now, but you should expect case cash flows in a DCF, not “hope for,” “management thinks so” or any of that stuff. There should be just as much risk that cash flows will go higher as there are risks that they will go lower. When there is a neutral probability of high versus low, that is the cost of capital that our model is designed for.

As you recall, we adjust the growth rate for failures, so this is the actual IRR on investing in small companies on average on an expected value basis, not if everything goes okay. That is why you will sometimes see people using BUM numbers that are much higher than what you get using our method. It is because they have to adjust for overly optimistic cash flows, or, quite frankly, they are doing a tax appraisal and they want a low value.

Rod Burkert: In my own personal experience, when I have compared by estimate of what I would do with the buildup model and then use the IPCPL model, I tend to overestimate the risks. The fact that I do a lot of tax purpose valuations—don’t let that influence you because I am not trying to drive a lower value. I just think we as a group have

a tendency to think companies are risky because they are small as opposed to saying companies are small from a market cap perspective because they are risky.

To use a little bit of hyperbole here, the only pizza shop in town in a good sized town may not be all that risky of a business from a discount rate perspective. Because if you are the only pizza joint in town, yes, you are a very small business but in that town where else is anybody going to go for pizza. You can say, yes, there is the possibility of competition coming in because there is only one pizza shop, but it is an example I am trying to give. I might have been tending to come up with a higher discount rate because I viewed small companies as being more risky when, in fact, that may not be true.

Robert Dohmeyer: Another thing is academics, finance academics, think our numbers are a little too high. Guys who do tax—I am not saying you try to get low values—but guys who are more of the non-academic tax appraisal type people will say they look a little low. Once again, they are what they are because we are solving for the IRR based on the actual transaction data.

Rod Burkert: I think this piggybacks on what Pete said too. We are not advocating that you advocate the use of the buildup model or the capital asset pricing model, and worry about explaining this to a judge. But turning that around, that said, to me explaining IPCPL is so much easier than saying to a judge, “Well I know we are here in this divorce case. We are valuing a \$6 million revenue company and I started off with the risk-free rate. Then I added this equity risk premium and then there was either beta or an industry risk premium adjustment, and then size, and, of course, there is company specific risk.”

I think going through that is much more difficult than trying to say, “Hey, we started off with a small microcosm of small companies that are very similar in risk to the company that is being valued for equitable distribution today.” Isn’t it much better to start with companies that are of the same size and character as our company being valued as opposed to starting off with some comparatively speaking astronomically large company and layering on premiums and risks to try to whittle us down to what we think should apply for a small company?

Robert Dohmeyer: If we knew how to do this upfront, you probably wouldn’t even use the BUM method. But we did not get here first, so that is what Pete was talking about.

Another question is, “Does the inclusion of debt capacity presume debt should exist in the capital structure or that it could exist?” That is a good question. Optimal capital structure—obviously, since it is a control value, you have to assume that the buyer is going to do whatever he can to do the best financing. Yes, if there is debt capacity available, and debt capacity is cheaper, then you should assume that there is some debt capacity in your cost of capital.

Once again, IPCPL already factors in the average amount of debt capacity so you don’t really have to... Other than, of course, the adjustment for debt capacity if you think your subject is much different than the average.

I just did an insurance agency. Insurance agencies violate that rule of what is higher debt capacity. They have premium policies, renewals that are intangible that are very financeable. So they are highly financeable and they are mostly intangible in nature, so it sort of violates the basic rule of thumb that Pete went through.

This is more of a comment, “Looks like great work having been put into a model that is desperately needed. I will be happy to include it as a second method and look forward to the day when I can dump the buildup method for all the reasons you noted. Question, I like using the IPCPM and abandoning BUM and not referring to BUM at all in my report. Is this an unusual reaction?”

Frankly, I wish we had more of those reactions, but it is not totally unusual.

Blake Lyman: We are just over our allotted time today. I think a good way to conclude is with this last question we just received, “How does one go about learning how to actually use the IPCPM in Excel?”

Robert Dohmeyer: If you go to the web site you can download this new IPCPM model. You will see once you download it, it will say BUM model DCF. You click on that tab and you will see a standard BUM DCF model. You use it just like you would any other DCF model. There is one for multi period which is DCF. Pete just built one for a single period capitalization that is on the next tab over. You will see it and it will be standard DCF, standard BUM. You will immediately be able to use it since you are doing this already.

Then you just answer the questions for the IPCPM and it will automatically flow those questions out into your DCF background. It won't change the answer; it is just going to say hey, this is looking a little low or looking a little high based on the inputs you have given me. It is pretty self explanatory. If you need any further answers, of course, you can email us and we would be more than happy to help out.

Blake Lyman: With that, we will conclude today's presentation. On behalf of everyone at BVR, I would like to thank Robert Dohmeyer, Peter Butler and Rod Burkert for their expertise today and all of our listeners for attending.

Thank you. You may now disconnect.

Utilizing the Implied Private Company Pricing Model: The Cost of Capital Wizard

Listener Questions

[QUESTION]: *Will we be able to track historical months in developing our cost of capital using your database?*

[Bob Dohmeyer] Yes, we now track and archive history (as of January 2014).

[Q] *What are your thoughts on a modified CAPM approach to apply beta derived from comparables to the equity risk premium and then account for the small company and company-specific premiums?*

[BD] The difficulties that we mentioned throughout the presentation were the catalyst to come up with something better.

[Q] *Aren't some of the private company acquisitions synergistic?*

[BD] Yes, some are synergistic; however, there are also transition losses in many acquisitions. Appraisers, when valuing control interests, generally assume zero net impact to cash flow for these items, and we assume the same zero net effect in our IRR estimation.

[Q] *How would you respond to an attack on this model using too many different industries to apply to one company?*

[BD] The historical return of the stock market (all industries) is used in CAPM and BUM. IPCPL is conceptually the same. The IPCPL rate of return represents the IRR/required return for average risk (all industries). IPCPL uses a more representative average—no utilities and banks, for example.

[Q] *Can you explain how you got to the 3.27% growth in the example?*

[BD] *IPCPL 500 aggregate growth assumption.* Recall we employ the valuation axiom $K_0 = (FCFF_1/P) + g$ to solve for the IPCPL 500 K_0 /IRR. One input we must estimate is the aggregate growth rate (g) for our 500 companies to solve for the aggregate K_0 /IRR. But importantly, we note that the growth rate assumption, within reason, is not critical. Since higher growth dampens $FCFF_1$, due to increased investments in fixed assets and working capital, we calculate that K_0 /IRR changes only by about one-half of the assumed change in growth.

To estimate aggregate growth, we used real revenue growth and business age data from *Pratt's Stats* as well as small business failure rate data from the Bureau of Labor Statistics (BLS). This was our process:

First, we sorted 10,000 companies in *Pratt's Stats* by business age—from one to 30 years—using a 10-year moving average. This yielded an unbiased estimate of revenue for companies aged five to 25.

Second, we examined these sorted data by looking at the change in revenue as a function of age. While the average real growth rate was 4.8%, these sorted data only consider surviving companies—a statistical bias.

Third, we took the *Pratt's Stats* business-age-sorted data and adjusted the surviving number of companies to reflect that the total number of companies is growing over time. Specifically, we “grossed-up” the number of older companies by the BLS’s “net birth rate” of 0.44%.¹ For example, if there were 500 companies that were 10 years old, we adjusted the figure higher, to $500 \times (1 + 0.0044)^{10}$. Based on this analysis, the implied average failure rate of our 10,000 companies was approximately 5%. We compared this figure to data from the BLS that similarly indicated a long-run small business failure rate of approximately 5%.

Fourth, from the sorted and adjusted data of 10,000 companies, we calculated aggregate revenue by company age. The result is set forth in Exhibit 5.²

Based upon the foregoing, we estimate the *real* aggregate growth rate of the IPCPL 500 to be 0.50%. Consequently, we expect aggregate *nominal* growth equal to long-term inflation. Therefore, as part of our “present day” adjustment (see next section), we update aggregate growth to include changes in inflation expectations. In Exhibit 2, our proxy for long-term inflation is the 20-year Treasury.

[Q] ***What is the value you use for the “seller finance adjustment”?***

[BD] Based on a regression analysis that compares transactions with and without seller financing, we reduce the aggregate value of all seller financed transactions in the IPCPL 500 by 6.4%. See seller finance sheet in the IPCPL Excel model.

[Q] ***Does this analysis apply equally to companies with revenues less than \$1 million? Or between \$1 million and \$5 million?***

[BD] The sweet spot is between \$1 million and \$15 million, but the extrapolation to less than \$1 million is not a large leap of faith.

[Q] ***So ... there is no specific company risk consideration by the appraiser?***

[BD] The appraiser accounts for company-specific risk in the unsystematic risk adjustment factor of the IPCPM.

1 Net birth data from the BLS indicate new business formations exceed old business deaths by 0.44% annually over the relevant time frame.

2 Had real growth been as low as 1%, for example, the aggregate revenue in Year 25 would have exceeded \$500 million.

[Q] *Because your original source is market transactions, do you have some concerns that this becomes a blending of the market and income approaches? Maybe less “pure” of an income approach if that makes sense ...*

[BD] No, we do not have any concerns. The market approach is the tethering device used now by appraisers. This approach is not a market approach. It uses market comps to estimate the (implied) required return used by investors in small private companies. Therefore, it is most definitely an income, not market, approach.

[Q] *In the last 15 years, what was the total number of transactions per the Pratt’s Stats data and how did you determine which 500 transactions to include/exclude from the model? Is there a place where the methodology is explained?*

[BD] From our *BVU IPCPL* paper:

The IPCPL 500 consists of *Pratt’s Stats* private company acquirer transactions from 1998 to 2013 with either: (1) total revenue between \$4.4 million and \$10.0 million; or (2) total assets (excluding cash) between \$1.3 million and \$4.5 million.³ Both size criteria span the 95th and 99th percentiles of *Pratt’s Stats* transactions in the past two years, and both resulted in approximately the same number of transactions. We adjusted these figures slightly to create a rounded number of 500 companies. Further, we only included transactions of U.S. companies that were acquired by a private company and which reported owner’s compensation. And we did not double count deals that fell into both the sales- and asset-size criteria.

[Q] *So if it is baked in, what do those do who don’t believe a discount for liquidity applies?*

[BD] For the liquidity adjustment in IPCPM, use 5, which is the average and correlates to a 0% adjustment.

[Q] *What does 0 scale signify in the table?*

[BD] The least amount of risk for beta and total beta and liquidity risk; the most amount of risk for ability to receive debt financing.

[Q] *How do you adjust for changes in the risk-free rate, which at any given time can be drastically different than the average of the 15-year period you’re using for the IPCPL 500?*

[BD] *IPCPL 500 ‘present day’ adjustment.* The IPCPL 500 is composed of transactions that occurred over the last 15 years. All else being equal, a current increase in the S&P 500 equity risk premium would decrease the value (P) of the IPCPL 500 and increase risk (K_0 /IRR). Therefore, we modestly reprice our 15-year sample of *Pratt’s Stats*

3 Both size criteria span the 95th and 99th percentiles of *Pratt’s Stats* transactions in the past two years, and both resulted in approximately the same number of transactions. We adjusted these figures slightly to create a rounded number of 500 companies. Further, we only included transactions of U.S. companies that were acquired by a private company and which reported owner’s compensation. And we did not double count deals that fell into both the sales- and asset-size criteria.

transactions to account for the risks of today's market versus the average market conditions that existed over the 15-year sampling period. To do so, we applied this formula: $(ERP_0 - ERP_{15yravg})/2$. We divided by two, creating a simple average, because: (1) real interest rates correlate negatively with equity risk premiums; (2) the cost of capital is slightly less responsive to changing equity risk premiums than the cost of equity; and (3) to make a more modest adjustment, generally.

The current present day adjustment is only a 0.6% increase to our IPCPL 500 K_0 /IRR estimate, which would be added to the "raw" 18.1% K_0 /IRR calculated in Exhibit 2. The 20-year Treasury is updated every month and adds one to one to the IPCPL K_0 rates (via the nominal G input to the Gordon model). See the Present Day sheet in the IPCPL Excel model.

[Q] *What is the source for these liquidity adjustment factors? 3.09% seems quite precise.*

[BD] See our microstructure/liquidity adjustment discussion in our new IPCPM paper.

[Q] *Obtain financing with or without personal guarantees by the stockholder?*

[Q] *Slide #28, 1st bullet seems to suggest that high bankability, low risk is a "7." Is that what you mean?*

[BD] Yes.

[Q] *Do you use cost of capital and discount rate and IRR interchangeably?*

[BD] Yes.

[Q] *FCFF—is this the same as invested capital cash flow? What, specifically, is FCFF shorthand for? I've looked in your various articles and haven't seen it stated.*

[BD] Yes.

[Q] *How does the 20% vs. 15% vs. 11% compare to the distribution of rates in the Pratt's 500?*

[BD] We don't know. All 500 are needed statistically to obtain the reliable aggregate IRR.

[Q] *How transparent is Pratt's for getting its market/transaction data (organized, voluntarily, methodical screening/gathering, updated)?*

[BD] Relative to other private transaction databases, we think it is the best.

[Q] *Is the additional usage of "not average items/corrections" not further accentuating the flaws of BUM? After all, the assigned weights are arbitrary.*

[BD] The difference is that we are already in, or at least very close to, the domain we should be in, so the adjustments should not be nearly as large as the BUM. Thus, the subjectivity is far less on average and infinitely less if the subject is deemed typical.

Using the Implied Private Company Pricing *Model*: The Cost of Capital Wizard

BVR Webinar

Presented by:

Rod Burkert,
Peter Butler, and
Bob Dohmeyer

March 5, 2014

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

1

IPCPL: $K_0 = FCF_1 / P + g$

In the land of the blind, the one eyed man is king.
Erasmus of Rotterdam, circa 1510

Today's Agenda:

- Where we are now: Flaws of BUM
- Where we are going: Description of IPCPL
- The Refinement: The IPCPM
 - Case examples
- Questions and Answers

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

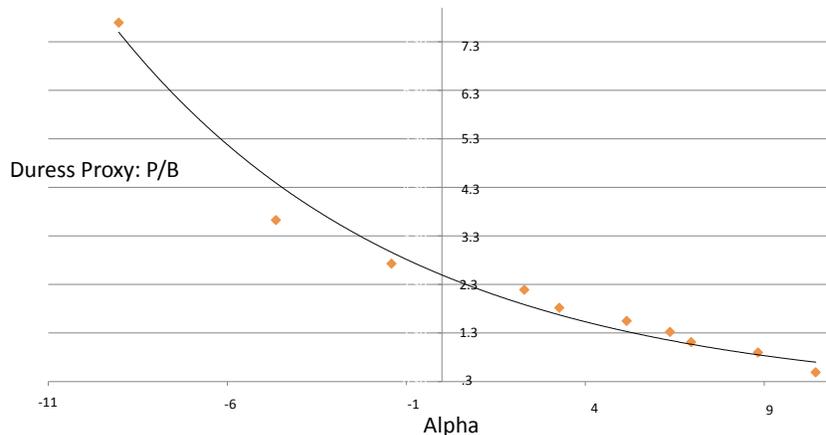
2

Would You Use the BUM ... if it were new?

- ❖ Dr. Damodaran: *The build-up method is a **recipe for disaster**.*
- ❖ Dr. Paglia: *In a galaxy far far away, where unicorns prance on the back of the Loch Ness monster and privately-held companies have access to public equity markets, appraisers estimate cost of capital ... [using returns of publicly traded equity securities]*
- ❖ Pepperdine survey: 78% of respondents did not feel comfortable with our industry's current cost of capital methods, using returns on publicly traded equity securities.

There is no small stock premium

Fama-French Perspective Last 50 Years
 Fama-French Decile 10 (10 size X 10 B/P)



Excluding the 20% most duressed, the remaining 80% alpha is not statistically significant.
 The median operating margin of 10z is approximately 0% vs. about 15% for the S&P 500.

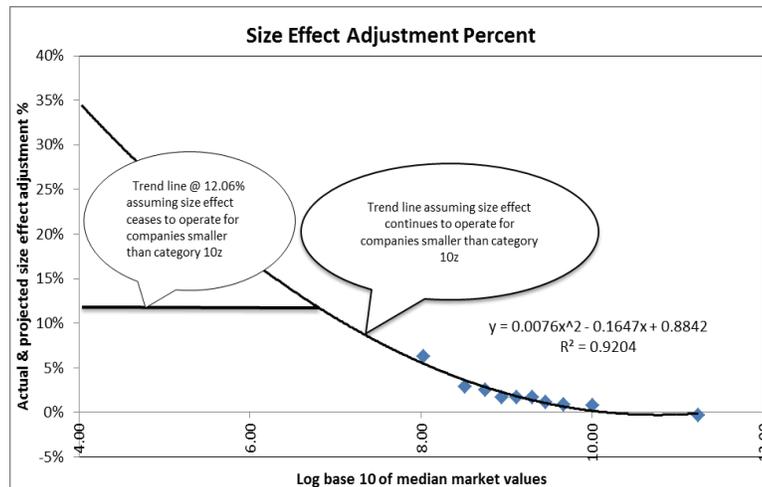
Poll Question #1

If you are valuing a company that has a FMV of \$1 million (using the market approach), what “small stock” premium do you use in the corroborating income approach?

- A) 10
- B) 10a or 10b
- C) 10z
- D) 10z plus – Extrapolate to \$1 million FMV
- E) I don’t use the small stock premium

New or Old: Here are the facts

Whatever is being measured: Why do we stop?



BUM Model

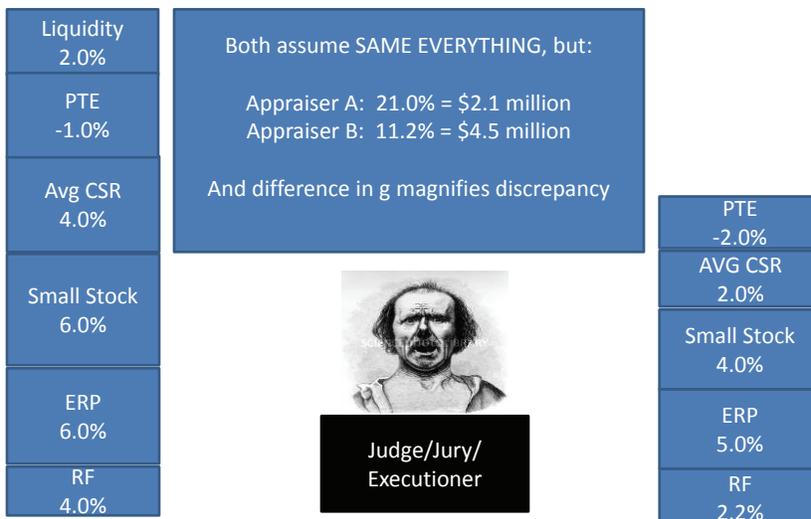
- Small stock premium = arbitrary (almost any number)
- Company specific risk premium = arbitrary (if not using total beta)
- All other asset classes have return *evidence*
 - No tethering device to valuation reality
- When questioning BUM users on anything:
 - Fall back on Transaction Data
- Notice no instruction on “how to ... ”

BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

7

Unreliability of BUM in Action

Two Appraisers; Much Different Conclusions



BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

8

Poll Question #2

What company specific risk adjustment would you add to the discount rate if the subject company was approximately \$1 million in FMV and typical in risk characteristics for similar small private companies?

- A) 0 %
- B) 1 % to 2 %
- C) 2 % to 3 %
- D) 3 % to 4 %
- E) 5.00 % plus

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

9

The Inspiration Behind IPCPL

- The only rough tethering device to valuation reality (if not using TB) is the market approach and implied transaction multiples
 - Using *lower* discount rates would yield values greater than actual transaction evidence.
 - Using *higher* discount rates would yield values less than actual transaction evidence.
- So, let's do that "right" with the IPCPL.
 - IPCPL is consistent with Pepperdine Surveys

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

10

IPCPL Implicitly Solves These BUM Problems:

- Extrapolation of SSP dilemma: Poll Data
- What tax rate to use for a PTE? Poll Data
- What, if any, liquidity adjustment? Poll Data
- How to price unsystematic (CSR) risk? Poll Data
- How to handle higher systematic risk?
- Cash add-back?
- Proportion of debt financing/cost of debt?
- How to un-lever/re-lever beta?

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

11

IPCPL: Frame of Reference

- Not perfect, but more reliable
 - Exposure: BV Review, BV Update, BV Resources webinar, Hitchner webinar, PICPA webinar, ASA webinar
- Discount rate; not cap rate
- K_0 is WACC; not K_e
- Small, privately-held company
- Control or minority DCF
- Calibration tool to enhance reliability
- Updated monthly at (www.biz-app-solutions.com)

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

12

IPCPL: $K_0 = \text{FCFF}_1 / P_0 + g = \text{Gordon Model (axiom)}$

- The IPCPL aggregates 500 small private company transactions and directly estimates the aggregate IRR.
 - This IRR (ex-ante) approach is fundamentally the same as Dr. Damodaran's equity risk premium approach.
- By using prices paid (FMV) for small privately held companies, all of the public security return extrapolation issues become moot.

IPCPL 500 Selection Criteria

- Pratt's Stats
- Owner compensation data provided
- No medical/dental practices
- US entity
- Private acquirer
- Last 15 years
- Size (large minimum) to get to 500

IRR Aggregation of the IPCPL 500 (Point 1)
 (\$ Millions - 500 Private Company Transactions Combined)

IPCPL 500	
<i>From Pratt's Stats</i>	
	\$Millions
Revenue TTM	\$3,293
Operating Income TTM	\$335
Operating Income Margin (%)	10.17%
Market Value (P)	\$1,928
Operating Income Multiple	5.76
Estimated Growth (G)	3.27%
Operating Book Capital % of Revenue	27.3%
Operating Income Year+1	\$346
Operating Book Capital	\$899
Operating Book Capital Growth Year+1	\$29
Operating FCFF Year+1	\$317
Operating FCFF Year+1 / Market Value	16.42%
Ko=FCFF1/P + G	19.69%
Present Day Adjustment	0.76%
Ko = FCFF1/P + G Present Day	20.45%
Holding the above relationships constant:	
FCFF1 = \$335 * 1.0327 - \$899 * 3.27%	= \$317
$K_o = \frac{FCFF_1}{P_0} + g$	
$= \$317/\$1,928 + 3.27\% = 19.69\% = IRR$	

BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

15

$$K_o = FCFF_1 / P_0 + g$$

How we do it?

- Growth (g) estimation:
 - Estimating growth for 1 company is difficult
 - Estimating expected aggregate growth for 500 companies is easy
 - BLS data, Pratt's Stats data = zero real growth
 - A 1% change in growth = 0.5% change to Ko
- Income lag adjustment
- Seller finance adjustment
- Present day adjustment

16

IPCPL Point 2

IPCPL Cost of Capital (\$150 million Sales)			
Size Adjustment:			
<i>Micro Cap ETF - Ticker IWC(1): (Fama French Model)</i>			
	Market F	SMB	HML
	1.05	1.10	0.17
			Implied ERP
			5.46%
	Cost	Weight	Subtotal
Cost Of Equity	10.94%	100.00%	10.94%
Cost of Debt - AFIT (2)	3.25%	0.00%	0.00%
Cost of Capital		100.00%	10.94%
Cost of Capital - Public Company	10.94%		
Private Company Indifference Discount	0.70%		
Private Company Cost of Capital Equivalence	11.64%		
Private Company Indifference Discount (\$000s)			
Revenue	\$150,000		
Operating Margin	8.11%		
Operating Income	\$12,168		
Annual Staying Public Company Costs (3)	500		
Annual Staying Public Company Costs %	4.1%		
Going Public Cost	2.3%		
Private Company Indifference Discount	6.41%	0.70% of 10.94%	

Notes:

- (1) IWC actual median size of revenue \$230Mil Approx.
 We adjusted SMB for \$150Mil according to smb relationship of SPY IWM and IWC
 (2) Sample of IWC companies had slight negative net debt position
 (3) Source: http://www.cfo.com/article.cfm/14582443/c_14582548

Poll Question #3

In the build-up method, which calculation/estimate do you worry about the most?

- A) Risk-free rate
- B) Equity risk premium
- C) Small stock premium
- D) Industry risk premium or Beta calculation
- E) Unsystematic risk premium

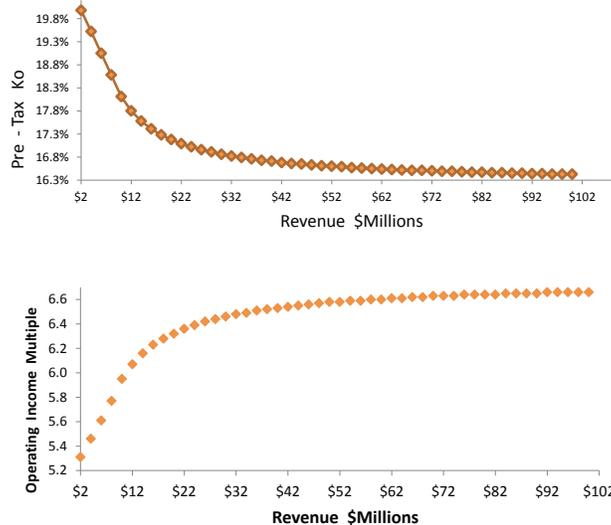
IPCPL - The Line (Curve)

- Point 1 – \$6 million using private company aggregate IRR
 - “Pratt’s Stats IPCPL 500”

- Point 2 – \$100 million ETF IWC Comp (Using Fama-French/CAPM)
 - Adjusted for cost of going and staying a public company

- Point 1 & Point 2 Connected Using “No-Arbitrage” Rule
 - Based on Double Lehman Formula Curve ... proxy for liquidity and unsystematic risk effect ... consistent with Dr. Damodaran’s liquidity discussions

IPCPL: The Conclusion



Practical Example: IPCPL

- Manufacturing company
 - \$6.0 M in revenues

Biz App Solutions

Home > Cost of Capital > IPCPL

Revenue
(in Thousands)

6000

Submit

Cost of Capital (K_o) used on FCFF

Assuming you tax FCFF at:

	0% Tax Rate	20% Tax Rate	35% Tax Rate
K _o	23.89%	17.87%	14.86%
Liquidity (1)			
Liquidity @ 10%	20.01%	16.90%	13.69%
Liquidity @ 35%	19.08%	15.66%	13.30%
Operating Income Multiple (2)	5.47		

(1) For users that prefer applying estimated liquidity effect to PV result
(2) TTR Stable and Normal - APPROX

> IPCPL Excel Model Download
> NEW Download Build-Up DCF With IPCPM Advice
> Market Compensation Excel Model Download
> About IPCPL
> BVR Website

Last updated 2/3/2014

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

21

IPCPM: Implied Private Company Pricing MODEL

- What if our \$6.0 M company is not “average” privately held company of this size? E.g.,
 - Systematic risk
 - Unsystematic risk
 - Liquidity
- Go to Biz-app-solutions.com
 - Download the “wizard”
 - Like having a cost of capital expert helping you in the background to avoid the BUM pitfalls

BVR Questions@BVResources.com
What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

22

Poll Question #4

Do you discount a control DCF value for liquidity? (1)

- A) Yes
- B) No

(1) Assume small private \$5 million revenue company. Liquidity discount achieved either by discounting PV result or increasing the discount rate.

IPCPM

- How do we depart from the IPCPL?
 - Systematic risk
 - Unsystematic risk
 - Illiquidity
 - Ability to obtain debt financing

IPCPM v. IPCPL: Systematic Risk

- Compared to other small, privately held companies of the same size on a scale of 0-10, with 5 being typical/average:
 - Differences in systematic risk: How correlated is the business and future cash flow to the economy?
 - Expensive dinner house = 7 (high risk); Fast food burger joint = 3
 - Private jet manufacturer = 9 (high risk); Defense contactor = 2

Scale	Beta
0	0.30
1	0.50
2	0.70
3	0.88
4	1.10
5	1.25
6	1.40
7	1.63
8	1.80
9	2.00
10	2.20

IPCPM v. IPCPL: Unsystematic Risk

- Compared to other small, privately-held companies of the same size on a scale of 0-10, with 5 being typical/average:
 - Differences in unsystematic risk: How uncertain are the future cash flows?
 - One customer with poor relations = 10 (high risk); Well diversified customer base where no one customer is more than 2% = 1

Scale	Total Beta
0	2.00
1	2.50
2	2.80
3	3.05
4	3.20
5	3.38
6	3.56
7	3.71
8	3.96
9	4.26
10	4.76

IPCPM v. IPCPL: Liquidity Risk

- Compared to other small, privately-held companies of the same size on a scale of 0-10, with 5 being typical/average:
 - Differences in liquidity: How shallow is the pool of potential buyers?
 - Many competitors, no unique or specialized knowledge = 2 (low illiquidity, low risk); Few competitors, unique/specialized knowledge = 8 (high illiquidity, high risk)
 - High population density = 3; Low population density = 7

Scale	Liquidity
0	-3.09%
1	-2.26%
2	-1.54%
3	-0.93%
4	-0.41%
5	0.00%
6	0.41%
7	0.93%
8	1.54%
9	2.26%
10	3.09%

BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

27

IPCPM v. IPCPL: Ability to Obtain Financing

- Compared to other small, privately-held companies of the same size on a scale of 0-10, with 5 being typical/average:
 - Differences in ability to obtain financing: How bankable are the assets?
 - High inventory and accounts receivable = 7 (High bankability, low risk); Low inventory and accounts receivable = 3
 - High FFE = 8; Low FFE = 2

Scale	Debt/capital
0	0.00
1	0.10
2	0.18
3	0.25
4	0.30
5	0.33
6	0.37
7	0.42
8	0.49
9	0.57
10	0.67

BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

28

IPCPM v. IPCPL: Results

The IPCPL: Average

DCF Model Revenue (1)	\$	4,090,041
Factors: Zero to 10, 5 Average		
Systematic Risk (2)		5
Unsystematic Risk (3)		5
Illiquidity - Complexity, Uniqueness, Geographic		5
Debt Finance Capacity		5
IPCPL - Adjusted by IPCPM		15.50%
IPCPM PV Increase (Decrease) from IPCPL Rate Derived PV		0.0%
IPCPM M&A Advisor Says the Build-Up DCF FMV Conclusion is:		ok
IPCPM M&A Advisor Says the Build-Up CAP FMV Conclusion is:		na
Using the Cap model? Input 1 for Cap Model and zero for DCF		0
(1) For IPCPL Look-Up (DCF Profitability/Revenue Quality Adjusted)		
(2) A 2.5% Industry Risk Premium Equates to a "7".		
(3) This is for risk (return/denominator) only. Be sure to estimate cash flows (numerator) such that downside and upside risk to cash flow outcomes are equal.		

IPCPM v. IPCPL: Results

The IPCPM: Much Higher Risk (across all indicators)

DCF Model Revenue (1)	\$	4,090,041
Factors: Zero to 10, 5 Average		
Systematic Risk (2)		8
Unsystematic Risk (3)		8
Illiquidity - Complexity, Uniqueness, Geographic		8
Debt Finance Capacity		2
IPCPL - Adjusted by IPCPM		20.50%
IPCPM PV Increase (Decrease) from IPCPL Rate Derived PV		-38.4%
IPCPM M&A Advisor Says the Build-Up DCF FMV Conclusion is:		ok
IPCPM M&A Advisor Says the Build-Up CAP FMV Conclusion is:		na
Using the Cap model? Input 1 for Cap Model and zero for DCF		0
(1) For IPCPL Look-Up (DCF Profitability/Revenue Quality Adjusted)		
(2) A 2.5% Industry Risk Premium Equates to a "7".		
(3) This is for risk (return/denominator) only. Be sure to estimate cash flows (numerator) such that downside and upside risk to cash flow outcomes are equal.		

IPCPM v. IPCPL: Results

The IPCPM: Much Less Risk (across all indicators)

DCF Model Revenue (1)	\$	4,090,041
Factors: Zero to 10, 5 Average		
Systematic Risk (2)		2
Unsystematic Risk (3)		2
Illiquidity - Complexity, Uniqueness, Geographic		2
Debt Finance Capacity		8
IPCPL - Adjusted by IPCPM		11.12%
IPCPM PV Increase (Decrease) from IPCPL Rate Derived PV		33.7%
IPCPM M&A Advisor Says the Build-Up DCF FMV Conclusion is:		ok
IPCPM M&A Advisor Says the Build-Up CAP FMV Conclusion is:		na
Using the Cap model? Input 1 for Cap Model and zero for DCF		0
(1) For IPCPL Look-Up (DCF Profitability/Revenue Quality Adjusted)		
(2) A 2.5% Industry Risk Premium Equates to a "7".		
(3) This is for risk (return/denominator) only. Be sure to estimate cash flows (numerator) such that downside and upside risk to cash flow outcomes are equal.		

BVR Questions@BVResources.com
 What It's Worth © 2013 Bob Dohmeyer, Peter Butler, and Rod Burkert. All rights reserved.

31

IPCPM v. BUM: What's OK?

Present Value of Forecasted Free Cash Flows	\$	2,375,054
Plus Excess Operating Working Capital		-
Less: Net of Cash Debt	\$	107,771
Liquidity Discount Applied to Equity PV		10%
Equals Equity FMV		\$2,040,554
Implied Terminal Value/ Operating Income		5.65
Implied Terminal Value/ EBITDA		4.76
Valuation date:		
Cash Balance	\$	102,354
Interest Bearing Debt Balance	\$	210,125
Acquisition Marginal Debt to Capital		20%
Acquisition Debt Interest Rate		7%
Build - Up:		
Implied Equity Risk Premium		5.17%
Applicable Risk Free Rate - 10Year US Treasury		2.72%
Small Stock Premium - 10a decile		6.00%
Industry Risk Premium		0.00%
Company Specific Risk (CSR):		
Higher Financial Leverage		0.00%
Qualitative Factor 1		
Qualitative Factor 2		
Qualitative Factor 3		
Qualitative Factor 4		
Input Total		2.00%
Unlevered Ke		15.89%
Unlevered Beta - Small Stocks		1.25
Debt to Equity		6%
Relevered Beta		1.30
Relevered KE		16.14%
WACC - After Tax		13.82%
IPCPM WACC (Go to IPCPM Sheet)		15.50%
PV	\$	2,066,281
Plus: Excess Working Capital		-
Less: Net of Cash Debt	\$	107,771
Equity FMV	\$	1,958,510

32

Frequently Asked Questions

Question: *Why should I use IPCPL?*

and

Question: *Is the build-up method unreliable and unscientific?*

A: Professor Damodaran calls the build-up approach a “recipe for disaster,” and, according to a recent survey, 78% of respondents feel uncomfortable with standard BVal cost of capital techniques because they extrapolate returns of public equity securities.

The IPCPL cost of capital model solves all of the following problems:

- What tax rate should I use?
- How should I adjust for the lower liquidity of small privately held businesses?
- What equity risk premium should I use?
- Should I adjust for the higher (than S&P 500) systematic risk of small privately held business? If yes, how?
- Should I adjust for the much higher unsystematic risk of privately held companies? If yes, what level of diversification should I assume?
- Should I use a “small” stock premium? If yes, which small stock premium should I use? How do I extrapolate it to a small privately held business without double counting liquidity and higher systematic risks?

The IPCPL aggregates 500 *Pratt’s Stats* private company transactions and directly estimates the aggregate IRR on free cash flows. This IRR, aka “ex ante,” approach is fundamentally the same as Professor Damodaran’s calculation of the implied equity risk premium approach. By using prices paid (FMV) for small privately held companies, all of the above public security

return extrapolation issues are rendered moot. Effects of liquidity, unsystematic risk, taxes, etc. are reflected in (“baked-into”) the (FMV) clearing prices paid for the businesses.

We note that ,when challenging appraisers on, for example, why they use decile 10 instead of the closer-in-size 10Z or why do they start with a company-specific risk premium of 5% instead of 0%, most admit that there is nothing scientifically sound about how they do it except:

If I use 10z instead of 10 I would get PV results that are probably too low compared to the comps and if I were to use a 0% company specific risk premium instead of 5%, I would get PV results that are probably too high compared to the comps.

With this data and this model, we developed cost of capital estimates that are most consistent with the observable FMV prices paid for small privately held businesses. *Employing cost of capital figures that are generally lower than IPCPL would yield fair market values in excess of the empirical FMV evidence, and employing cost of capital figures that are generally higher than IPCPL would yield fair market values below the empirical FMV evidence.*

Question: *I like the (IPCPL) idea, hate using public data to reconcile to small companies. How long has IPCPL been in practice? Do you use it regularly? Has it been challenged? Is IPCPL ready for the courthouse?*

A: No. This model was developed very recently and has not yet been widely distributed and exposed and, therefore, even though it’s more reliable than traditional methods, it needs some time to be vetted and used in nonlitigation. We recommend IPCPL as a means to calibrate the traditional “recipe for disaster” cost of capital methods to avoid the disaster and to accurately test opposing expert’s cost of capital figures. Also, for nonlitigation and or “calculation” engagements, we prefer IPCPL.

Question: *How can I learn more about this model?*

A: We recommend people read “The Implied Private Company Pricing Line 2.0” available on BVR’s website www.bvresources.com/ipcpl

Question: *What if my subject company is not average or typical? How do I adjust the IPCPL rate for this situation? Is a \$1 million (revenue) construction firm treated the same as a \$1 million wholesaler?*

What happens in the IPCPL model when a subject company has a different sensitivity to systematic risks than other companies in the database?

A: Both the \$1 million construction company and the \$1 million wholesaler would have the exact same starting point with IPCPL. Users may adjust the IPCPL rate as they do now using the company-specific risk premium. However, if your typical CSRP was 5% generally and you would use 7% for a specific subject company, then the adjustment to IPCPL would be plus 2%, all else being equal. Users may also adjust as they always have using industry risk adjustments.

We are in the development phase of the implied private company pricing model (IPCPM) that will allow users to move off the IPCPL (line - size adjusted average). The model will be the only specific private company cost of capital model that is indexed directly to the IPCPL cost of capital. The model will facilitate adjustments from the IPCPL size-based indication for comparable differences in:

- Systematic risk (i.e., beta);
- Diversifiable and total risk (i.e., total beta);
- Liquidity; and
- Debt capacity;

Question: *How do IPCPL results compare with the Pepperdine Private Capital Markets Project results?*

A: The Pepperdine *equity* hurdle rates are based on highly levered deals typically in the range of 125% to 200% debt to equity. When approximating a WACC including debt costs for these highly levered deals, the results are very similar to IPCPL cost of capital. For example based on the 2014 Pepperdine study, the after-tax WACC for its smallest size point (\$3 million FMV) compared to IPCPL was:

Pepperdine 16.50%

IPCPL 16.70%

The size-based shape of our curve and its size-based WACCs as a function of size are also very similar.

Question: *Do you tax affect at statutory C corp rates or at a rate that you assume to be the effective rate inherent in your ERP data, e.g., Ibbotson or Duff & Phelps?*

A: Our IPCPL K_0 or IRR is before entity tax. However, since we are back solving for the observed multiple of aggregate reported pretax operating income, we back solve the IRR based on different assumed tax rates. Based on the IRS data that show nearly 100% pass-through entity formation at the relevant sizes, we can conclude there is at least some benefit over a C corp tax assumption. Whatever the net pass-through tax benefit is, the IPCPL solves for the cost of capital at any assumed tax rate that back solves to the observed values:

Assuming you tax FCFF at:			
	0% Tax Rate	20% Tax Rate	35% Tax Rate
K_0	20.24%	16.70%	14.05%

Question: *The IPCPL has the form $K_0 = FCFF_1/P_0 + g$. In which factor/term in the model does the excess cash, leveraging, etc. adjustments show up? And,*

Question: *Per Dr. Damodaran, cash is excluded when calculating working capital for DCF. What are your assumptions of including it in the calculation of WC? And,*

Question: *Is your observed cost of equity levered?*

A: No. Since we solve for cost of capital K_0 (not equity, K_e) based on a control basis and unlevered FCFF derived from operating income, we are solving for optimal K_0 , and, since P is the control price, it is also the *optimal* K_0 . This way we can use the model where we do not need to make any assumptions regarding debt leverage or interest rates on debt. We recommend that users employ the model unlevered and then simply subtract the market value of any interest-bearing debt and add interest-bearing cash.

The model solves for the optimal cost of capital (the transactions are mostly levered, but the price is MVIC, so we don't have to worry about WACC). The IRR is already control/optimal WACC by definition. Cash is excluded from "price/MVIC," so the IRR is before any interest-bearing cash. So all interest-bearing cash needs to be added to the result.

By assumption, SME companies operate and sell at an optimal capital structure. So, on average, the IPCPL implementation results in pricing an optimal capital structure, etc. by assumption, and this is impounded in both P_0 and $FFCF_1$.

We agree with Professor Damodaran on this. We don't recommend including cash in WC except for "wasting," aka "non-interest-earning," cash such as cash required in cash registers. You could theoretically include interest-earning cash in WC, but you would have to relever for the negative leverage that results from the significant interest-earning asset.

Question: *My understanding is some noted experts have criticized the transaction data as being unreliable at times. How does this play into IPCPL?*

A: The most common concern we encounter with the transaction data we employ is that they are inherently flawed by imperfections, such as incorrectly reported information. Indeed, based on obvious transaction duplicates between *Pratt's Stats* and BIZCOMPS, we see that some data were occasionally contradictory by significant amounts—making the data potentially unreliable on a data point-by-data point basis. However, because this noise is random, the aggregated data are, in fact, highly reliable with a large sample size of 500 data points. In the same way, a large portfolio of stocks nearly eliminates unsystematic risk; a portfolio of 500 transactions does the same to data errors. Exhibit 3 shows how the noise/errors are eliminated by the "law of large numbers." (Please see the IPCPL 2.0 article for the exhibits referenced here.)

To demonstrate the ability of our large sample size to cure any bad data problem, we performed the statistical analysis described below.

Assume that: (a) there were no "crazy" prices paid by buyers or sold by sellers; and (b) the reported transaction data relevant to determining a price-to-operating income multiple was a perfectly accurate 6.00. Next, assume a significantly large actual data problem using a sample of 100 transaction data points, with a true mean of 6.00 and a standard deviation of 1.35, as shown in Exhibit 4.

As we see from the statistical analysis in Exhibit 3 (which uses the data problems illustrated in Exhibit 4), our aggregated data set for the IPCPL 500 transactions is nearly perfectly reliable. Specifically, with a sample size of 500, we are 95% confident that the reported data mean operating income multiple is between 5.88 and 6.12 if the true mean is 6.00.

Furthermore, the purchase price in a transaction is relatively straightforward compared to the allocation of purchase price that has been criticized. We examined the broker supplied “consideration” notes to the 500 transactions and found that the explanation of the MVIC/price was coherent and consistent with the definition of MVIC in nearly every case. (Please see the IPCPL article for the exhibits referenced here.)

Question: *It seems as if your model is simply backing into the cost of capital that would yield values equal to normalized completed transaction FMV. Is that cheating?*

A: No, it's not cheating; but your observation is a good one.

Question: *If smaller stocks are more illiquid, then the higher the small stock risk premium, the greater the risk of overlap between K_0 and DLOM, correct?*

A: Yes. Precisely correct. “While it would be foolhardy to attribute all of the well documented excess returns that have been associated with owning small market capitalization and low price to book stocks to illiquidity, smaller and more distressed companies (which tend to trade at low price to book ratios) are more illiquid than the rest of the market.... The key is to avoid double counting the cost of illiquidity since some of the small stock premium may be compensation for the illiquidity of small cap companies” (Professor Damodaran). By using completed transactions where buyers “bake-in” illiquidity discounts, IPCPL counts illiquidity accurately and only once.

Question: *If my subject company demonstrates different executive comp than the sample, or a different growth rate, or different operating margins, or has more than 1% cash/has different debt/equity leverage, it seems as if I need to make some sort of adjustment to the IPCPL indicated cost of capital. Is this correct?*

A: No. The IPCPL cost of capital is a *market*-derived cost of capital using information from the 500 transactions and is therefore *independent* of all of those considerations. (Use IPCPL just like you would with other models.)

Question: *Unsystematic risk, or company-specific risk, is a measure of believability in my opinion. Do you agree? Have you heard it called this before?*

A: Future cash flows should already be discounted to “expected value” or probability weighted such that the chance of achieving better or worse cash flows are both about 50%. So from there, we discount the believable cash flows at a higher discount rate to reflect the higher uncertainty/variability (risk) of outcomes.

Question: *How is the issue of time dealt with in deriving the cost of capital given your 15-year lookback?*

and

Question: *How much bias could there be due to time forward from 15 years ago in the Pratt data, i.e., is there any significance to how recent or how old a data point is? And,*

Question: *What period of time do you use for your completed transactions data? And,*

Question: *I rarely find 500 comparables. What kind of yearly range are you using? Stuff back from the 1990s? If so, how would those transactions be comparable? It was a much different economic landscape back then.*

A: We adjust the sample monthly for time.

IPCPL 500 'present-day' adjustment. The IPCPL 500 is composed of transactions that occurred over the last 15 years, which assures a midcycle average sample. All else being equal, a current increase in the S&P 500 equity risk premium would decrease the value (P) of the IPCPL 500 and increase risk (K_0 /IRR). Therefore, we modestly reprice our 15-year sample of *Pratt's Stats* transactions to account for the risks of today's market versus the average market conditions that existed over the 15-year sampling period. To do so, we applied this formula: $(ERP_0 - ERP_{15yravg})/1.5$. We divided by 1.5 because: (1) real interest rates correlate negatively with equity risk premiums; and (2) the cost of capital is slightly less responsive to changing equity risk premiums than the cost of equity.

Also, we very recently ran a regression pricing analysis of super-high-frequency small business transactions. The data show a strong inverse relationship to the "VIX" (aka fear/uncertainty index).

These data confirm our ERP adjustment technique. As of 2013, the valuation data are recovering slowly from the steep recession but more slowly than the VIX/fear recovery. IPCPL incorporates this market reality in our present-day repricing section.

Question: *Still not clear what a beta has to do with a private company where there is no evidence of private company price fluctuation similar to that of a public market.*

A: Private company FCFF generally correlates somewhat with the market's FCFF, so, all other things being equal, a partially or totally diversified investor would rather have FCFF from a private business that did not correlate with his or her other holdings.

Question: *Will you separate stock transactions vs. asset transactions? If not, why? I thought that the transactions should be separated based on transaction types.*

A: To avoid observation biases, you should avoid culling samples. There is no meaningful useful difference in our opinion. Please email one of us if you believe there is a logical reason to do something different.

Question: *How did you arrive at the 2.44% revenue growth, G?*

A: *IPCPL 500 aggregate growth assumption.* Recall we employ the valuation axiom $K_0 = (FCFF_1/P) + g$ to solve for the IPCPL 500 K_0 /IRR. One input we must estimate is the aggregate growth rate (g) for our 500 companies to solve for the aggregate K_0 /IRR. But importantly, we note that the growth rate assumption, within reason, is not critical. *Since higher*

growth dampens $FCFF_1$, due to increased investments in fixed assets and working capital, we calculate that K_0/IRR changes only by about one-half of the assumed change in growth.

To estimate aggregate growth, we used real revenue growth and business age data from *Pratt's Stats* as well as small business failure rate data from the Bureau of Labor Statistics (BLS). This was our process:

- First, we sorted 10,000 companies in *Pratt's Stats* by business age—from one to 30 years—using a 10-year moving average. This yielded an unbiased estimate of revenue for companies aged five to 25.
- Second, we examined this sorted data by looking at the change in revenue as a function of age. While the average real growth rate was 4.8%, these sorted data only consider surviving companies—a statistical bias.
- Third, we took the *Pratt's Stats* business-age-sorted data and adjusted the surviving number of companies to reflect the total number of companies that is growing over time. Specifically, we “grossed-up” the number of older companies by the BLS’s “net birth rate” of 0.44%. For example, if there were 500 companies that were 10 years old, we adjusted the figure higher, to $500 \times (1 + .0044)^{10}$. Based on this analysis, the implied average failure rate of our 10,000 companies was approximately 5%. We compared this figure to data from the BLS that similarly indicated a long-run small business failure rate of approximately 5%.
- Fourth, from the sorted and adjusted data of 10,000 companies, we calculated aggregate revenue by company age. The result is set forth in Exhibit 5.

Based upon the foregoing, we estimate the *real* aggregate growth rate of the IPCPL 500 to be 0%. Consequently, we expect aggregate *nominal* growth equal to long-term inflation. Therefore, as part of our “present-day” adjustment, we update aggregate growth to include changes in inflation expectations. Our proxy for long-term inflation is the 20-year Treasury bond less 0.75%.

Question: *My understanding is that there can be a significant gap in time between the income and balance sheet data reported by Pratt's Stats and the actual date of sale. Any consideration of this issue?*

A: Yes. In *Pratt's Stats*, the P&L date and the transaction date are provided. With this information, we gross up the aggregate revenue, operating income, etc. to the transaction date.

Question: *Asset pricing theory tells us that price is a function of expected cash flows and a discount rate that's a function of cash flow risks. Could you explain briefly what the IPCPL model says about the “risks” driving private company values?*

A: It strongly indicates that, due to many logical imperfections (agency costs, minority costs, etc.), diversifiable risks are priced at increasing rates as size decreases for small private companies

Question: *Did you include any of the completed transactions where the buyer was a public company?*

A: No. We believe this may introduce a potential “observation bias” in the figures. These companies may indeed be companies that have some high net present values of growth capital. By observation bias, we are referring to the fact that the proportion of firms in the databases acquired by a public company is many times the proportion of all comparably small private firms that could be acquired by a public company. In other words, the uniqueness of the firm makes it more likely to be acquired by a public company and show up in the databases. This bias is not necessarily a problem in that, as long as we can estimate G, it, of course, is of no consequence if the buyer was a public company. We believe that our above generalization of greater G being offset by a lower ratio of P/FCFF is reliable as long as a substantial number of outliers that have a very special ability to earn very substantial excess profits are not disproportionately represented. We believe that small private companies that are acquired by a public company are disproportionately likely to be those special companies.

Question: *I look forward to trying the model and comparing to what I currently use. How often is model info updated?*

A: Monthly.

Question: *How did you estimate the size effect?*

A: We first estimated K_0 for our sample of 500 companies with average revenue of \$6 million using the aggregate IRR. We then calculated the cost of capital using the Fama French three-factor model for a relatively large (\$150 million in revenue) publicly traded companies using the ETF for microcap stocks (ticker IWC). We then estimated the cost of capital differential for those publicly traded companies versus the same companies as if hypothetically private, by estimating the total costs of going public and staying public. We then interpolated between these two known points using a “no-arbitrage” curve shape that accounted for proportionately lower arbitrage costs as a percentage of revenue as size increases. We used the double Lehman formula as our estimate of the shape of arbitrage costs.

Question: *What are the selection criteria for your 500 private company transactions?*

A: Criteria—includes *all Pratt’s Stats* transactions:

- Last 15 years;
- In U.S., with private acquirer;
- With owner compensation data;
- Excludes medical doctors and dentist offices; and
- In size range specified below to achieve 500 sample size.

Sample Total	500
Between:	
Sales	Total Book Assets
\$15,000,000	\$8,000,000
\$4,000,000	\$1,111,000

Question: *It seems that using the Gordon growth model derivative equation to solve for K_0 would assume capitalization as opposed to DCF, i.e., constant growth into perpetuity. Correct?*

A: If you look at our IRR below, it is FCFF, not capitalization of income. It is a “single-stage” IRR.

	\$ Millions	% Revenue
Revenue (TTM)	2,943.0	
Operating Income (TTM)	239.0	8.1%
P_0 = Fair Market Value (T_0)	1,439.0	48.9%
Operating Book Capital – Year 1	604.8	20.6%
Operating Book Capital (T_0)	586.0	19.9%
Increase in Operating Book Capital	18.8	
Aggregate Revenue Growth	3.2%	
Operating Income – Year 1	246.6	
Less: Increase in Operating Book Capital	18.8	
FCFF	227.9	
IRR = FCFF/ $P_0 + g$	19.0%	



Your Trusted Source for Private & Public Company Intelligence

Any informed stakeholder in business valuation, performance benchmarking, or risk management turns to Business Valuation Resources (BVR) for authoritative market data, training, and expert opinion. Trust BVR for unimpeachable business valuation intelligence for every use. Our clients include business appraisers, certified public accountants, merger and acquisition professionals, business brokers, lawyers and judges, private equity and venture capitalists, owners, CFOs, and many others. BVR's market databases and analysis have won in the courtroom—and the boardroom—for 18+ years.

Deal & Market Data:

- Pratt's Stats®
- Public Stats™
- BIZCOMPS®
- Economic Outlook Update™
- Factset Mergerstat/BVR Control Premium Study™
- The FMV Restricted Stock Study™
- Valuation Advisors Discount for Lack of Marketability Study™
- ktMINE Royalty Rate Data & License Agreements
- First Research Industry & State Profiles
- Butler Pinkerton Calculator™ Total Cost of Equity (TCOE) and Public Company Specific Risk Calculator™
- Mergerstat® Review (includes Mergerstat Review Monthly)
- Duff & Phelps Risk Premium Report & Calculator™
- BizMiner Industry Financial Reports
- PitchBook Guideline Public Company Comps Tool

News & Research:

- Business Valuation Update™
- BVLaw™
- BVResearch™
- Business Reference Guide Online

Training & CPE:

- Webinars
- Web Workshops & Symposia
- Desktop Learning Centers

Guides, Books & Reports:

- Guides & Books
- Industry Transaction & Profile Annual Reports
- Special reports
- International Risk Reports (BMI)

Practice Management:

- Content Licenses
- Data Licenses

Learn more at www.BVResources.com