

VALUATION



# Using the Private Cost of Capital Model



By John K. Paglia, PhD, CFA, CPA; and Robert T. Slee, CBA, CM&AA

Using public company stock price return data to estimate discount rates for privately held companies has become increasingly complex over the past decade. Definitive answers to fundamental questions surrounding the topic of adjusting public returns to apply to privately held companies remain in debate. Among those questions that consume a considerable amount

of intellectual resources and bandwidth, in no particular order:

- What is an appropriate size premium?
- How much is a discount for lack of marketability?
- What is the difference between marketability and liquidity, and how do I determine an adjustment for each?
- How do I adjust for a controlling interest?
- Should I use a historical equity risk premium or one that is forward-looking?
- Is Beta or Total Beta more appropriate when using the capital asset pricing model?
- Should I tax-effect or not?

The complexity and confusion is reflected in recent survey data. In fact, just 39 percent of business appraisers reported a level of comfort with using public data to estimate discount rates for privately held companies in the range of \$5 million to \$25 million in revenues, while 60 percent indicated some level of comfort when estimating cost of capital for privately held companies with revenues between \$25 mil-

lion and \$100 million.<sup>1</sup> It appears the uncertainty surrounding answers to the questions above has created a lack of confidence with the application of publicly traded stock data to privately held companies. This raises an even more fundamental question:

Should we be using publicly traded company stock return data as the primary basis for estimating cost of capital for privately held companies?

To help answer that question, we reflect on the following:

- Do privately held firms obtain capital from the public markets? [No.]
- Do the majority of privately held companies go public? [No.]
- Do we have robust sources for obtaining capital in the private capital markets? [Yes.]
- Do these capital sources price risk in their particular segments? [Yes.]
- Is it possible to learn what these return expectations are by segment? [Yes.]

1 Pepperdine Private Capital Markets Project, Summer 2010 Report (<http://bschool.pepperdine.edu/privatecapital>).

Given the answers to these questions, it then seems apparent that Shannon Pratt is correct in saying that cost of capital is the expected rate of return that the *relevant market* requires in order to attract funds to a particular investment.<sup>2</sup> In other words, cost of capital estimates for privately held companies should be taken from the markets in which they raise capital.

In an earlier article,<sup>3</sup> we made the arguments for using a model that captured discount rates from the markets in which privately held companies fund based upon actual investment checks written by the providers of that capital. We also unveiled the private cost of capital model to be used to estimate discount rates for businesses that are not publicly traded.<sup>4</sup>

The purpose of this article is to offer guidance on the application of the private cost of capital model and to address questions that have arisen in regard to the usage of this model.

## PRIVATE CAPITAL ACCESS DRIVES DISCOUNT RATE

The broad categories of capital available in the private capital markets are called capital types. The capital types

2 *Valuing a Business*, 5th Edition, by Shannon P. Pratt, McGraw-Hill, 2008, Page 182.

3 Robert T. Slee, *Private Capital Markets: Valuation, Capitalization, and Transfer of Private Business Interests*, John Wiley & Sons, 2004.

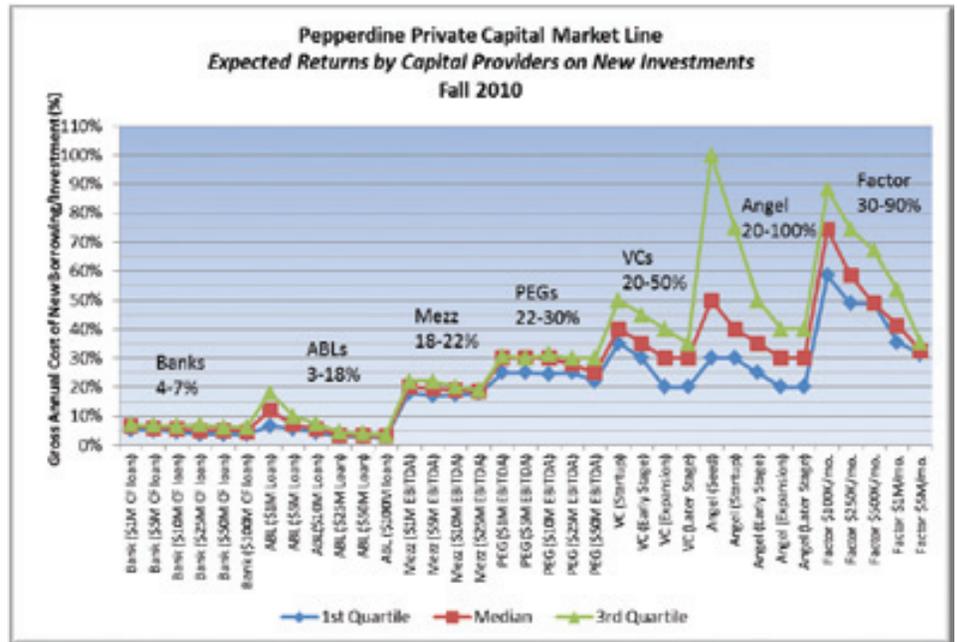
4 Robert T. Slee and John K. Paglia, "The Private Cost of Capital Model," *The Value Examiner*, NACVA, March/April 2010.

are bank lending, asset-based lending, mezzanine financing, private equity, factoring, angel investment, and venture capital. These capital types correspond to *institutional* capital offerings in the marketplace.

When investments are made or credit is extended in the private capital markets, it is with a certain return expectation. That is, capital providers will write investment checks or grant credit to those companies that offer the best expected returns given risk appetite, size preferences, industry preferences, geographical considerations, and other unique influences.

We stress the importance of using expected rates of return. First, this return is the expected rate of return *the provider would accord the investment at hand, given the provider's capital type*. In other words, capital providers require a certain "all-in" return to compensate them for taking the risk of extending the credit or making the investment. This expected return is the effective cost to the borrower or investee as it is inclusive of various transactions costs. For example, the borrower may incur legal, brokerage, environmental, and other costs in effecting the transaction. These costs are considered when calculating an effective or all-in cost to the borrower or investee.

Second, cost of capital should be based on expected rather than realized returns, even though there are often substantial differences between the two rates. Expected returns are used because capital providers offer credit and structure deals based on what they expect to receive from the investment. Therefore expected returns on new investments or credit most accurately reflect the economics of the private capital markets. This forward-looking assessment of all-in capital costs is essential when evaluating future benefit streams. Simply assess-



Source: Pepperdine Private Capital Markets Project Winter 2011 Report, December 2010.

ing future cash flows with historical costs of capital may result in significant errors.

Third, because of the limited amount of capital deployed and constrained resources in the capital allocation process, investors will frequently invest capital at an expected return that exceeds their hurdle rate. So in order for companies to obtain capital in these markets, they must transact with the capital sources at the providers' expected return levels, not hurdle rates or required rates of return.

Expected returns for newly issued investment or credit checks can be obtained through direct inquiry. One such source of this information is the Pepperdine Private Capital Markets Project private cost of capital surveys.

### PEPPERDINE SURVEYS

The Pepperdine private cost of capital (PCOC) survey project, launched in 2007, is the first comprehensive,

simultaneous, and ongoing investigation of the decision-making behavior of private capital providers. The survey specifically examines the activity and behavior of senior (cash flow) lenders, asset-based lenders, factors, mezzanine funds, private equity groups, venture capital firms, and angel investors, in addition to other groups involved in the private capital markets including business owners, intermediaries, limited partners, and appraisers.

The Pepperdine PCOC survey investigated, for each major private capital type, the important benchmarks that must be met in order to qualify for capital, how much capital is typically accessible, and what the expected returns are for extending capital in the current economic environment. Four survey cycles have been completed thus far. The first survey report, based on 627 responses from private capital market participants, was pub-

**TABLE 1: PRIVATE COST OF CAPITAL DATA  
(GROSS ANNUALIZED RATES %)**

Capital Type / Segment	1st Quartile	Median	3rd Quartile
Bank (\$1M Cash Flow loan)	5.4	6.5	7.1
Bank (\$5M Cash Flow loan)	5.0	6.0	6.8
Bank (\$10M Cash Flow loan)	4.5	5.5%	6.6
Bank (\$25M Cash Flow loan)	3.8	5.0	7.0
Bank (\$50M Cash Flow loan)	3.8	5.0	6.3
Bank (\$100M Cash Flow loan)	3.6	4.8	6.1
ABL (\$1M Loan)	6.5	12.0	18.0
ABL (\$5M Loan)	5.5	7.0	10.0
ABL (\$10M Loan)	4.4	5.5	7.4
ABL (\$25M Loan)	3.0	3.5	4.5
ABL (\$50M Loan)	3.0	3.3	4.0
ABL (\$100M loan)	2.8	3.0	3.5
Mezz (\$1M EBITDA)	18.0	20.0	22.0
Mezz (\$5M EBITDA)	17.0	19.5	22.1
Mezz (\$10M EBITDA)	17.3	18.9	20.0
Mezz (\$25M EBITDA)	17.9	18.5	19.0
PEG (\$1M EBITDA)	25.0	30.0	30.8
PEG (\$5M EBITDA)	25.0	30.0	30.0
PEG (\$10M EBITDA)	24.5	30.0	31.3
PEG (\$25M EBITDA)	25.0	28.0	30.0
PEG (\$50M EBITDA)	22.0	25.0	30.0
VC (Startup)	35.0	40.0	50.0
VC (Early Stage)	30.0	35.0	45.0
VC (Expansion)	20.0	30.0	40.0
VC (Later Stage)	20.0	30.0	35.0
Angel (Seed)	30.0	50.0	100.0
Angel (Startup)	30.0	40.0	75.0
Angel (Early Stage)	25.0	35.0	50.0
Angel (Expansion)	20.0	30.0	40.0
Angel (Later Stage)	20.0	30.0	40.0
Factor \$100K/mo.	58.5	74.5	88.2
Factor \$250K/mo.	48.8	58.5	74.5
Factor \$500K/mo.	48.8	48.8	67.2
Factor \$1M/mo.	35.4	41.2	53.6
Factor \$5M/mo.	31.3	32.7	35.4

Source: *Pepperdine Private Capital Markets Project Winter 2011 Report, December 2010.*

lished in August 2009. The fourth report, which yielded nearly 2,000 responses, was published in December 2010.<sup>5</sup> The next report will be released in May 2011. The web-based surveys are administered semi-annually, each having 25 to 50 questions.

In these surveys, return expectations are captured from the various segments of the private capital markets along with the credit boxes, which are the criteria prospects must display in order to qualify for an investment. Return expectations can be plotted on a graph, which, in the case of using the Pepperdine surveys, is the Pepperdine Private Capital Market Line (PPCML). This graph contains seven major capital types, and it appears on page 8.

The PPCML encompasses various capital types in terms of the provider's all-in expected returns. The PPCML is described as median, pre-tax expected returns for institutional capital providers. The PPCML is stated on a pre-tax basis, both from a provider and from a user perspective. In other words, capital providers offer deals to the marketplace on a pre-tax basis. For example, if a private equity investor requires a 25 percent return, this is stated as a pre-tax return. Also, the PPCML does not assume a tax rate to the investee, even though some of the capital types use interest rates that generate deductible interest expense for the borrower. Capital types are not tax-effected because many owners of private companies *manage* their company's tax bill through various aggressive techniques. It is virtually impossible to estimate a generalized appropriate tax rate for this market.

Table 1 contains the expected return data used to generate the PPCML. This

<sup>5</sup> Pepperdine Private Capital Markets Project Survey Report, December 2010, John K. Paglia, <http://bschool.pepperdine.edu/privatecapital>.

table outlines median (50th percentile) returns, 1st quartile (25th percentile), and 3rd quartile (75th percentile) expected returns by capital type and for various segments of each. For instance, according to the table, a \$10 million bank loan based upon cash flow has a median all-in rate of 5.5 percent, while the median cost of capital for a private equity investment to a company with approximately \$50 million in earnings before interest, taxes, depreciation, and amortization (EBITDA) is 25.0 percent.

It should be noted that each capital type has its own rules regarding capital access. These rules are important for creating a capital structure for our subject company. Specifically, the major “rules” utilized by banks, asset-based lenders, mezzanine funds, private equity, venture capital, angel investors, and factors are identified in the following sections.

### SENIOR CASH FLOW LENDERS

Senior cash flow lenders generally lend up to an amount that is primarily a function of an EBITDA multiple after meeting fixed charge or debt service coverage threshold tests. The various ratios, their limits, and their importance are outlined in Table 2. For instance, the median approval limit for the senior debt service coverage ratio is 1.3x. More detailed information on these ratios can be found in the most recent Pepperdine Private Capital Market Project reports.

The loan amounts extended are generally based on a multiple of historical recast (or adjusted) EBITDA. Median senior leverage EBITDA multiples for a manufacturing company, for instance, range from 1.3x for a company producing \$1 million in EBITDA to 3.0x for a company with \$100 million in EBITDA (see Table 3).

**TABLE 2: SENIOR (Cash Flow) LENDER CREDIT ANALYSIS BENCHMARKS (Fall 2010)**

Financial Indicator	Average Borrower	Approval Limits	Importance Score (0-4)
Current ratio	1.4	1.3	1.7
Senior debt service coverage (or FCC) ratio	1.3	1.3	3.2
Total debt service coverage (or FCC) ratio	1.3	1.3	3.7
Senior debt to cash flow	2.5	3.0	3.0
Total debt to cash flow	3.0	3.5	3.2
Debt to net worth	2.0	2.4	2.5
Revenue growth rate	3.0%	2.1%	1.8

**TABLE 3: SENIOR LEVERAGE MULTIPLES FOR MANUFACTURING COMPANIES (Fall 2010)**

Manufacturing EBITDA	1st Quartile	Median	3rd Quartile
\$1M EBITDA	1.3	1.3	2.0
\$5M EBITDA	2.1	2.5	3.0
\$10M EBITDA	2.4	2.5	3.0
\$25M EBITDA	2.6	3.0	3.0
\$50M EBITDA	2.5	3.0	3.0
\$100M EBITDA	2.3	3.0	3.2

### ASSET-BASED LENDERS

Asset-based lenders (ABLs) generally lend against certain assets the company owns up to certain limits or advance rates. A company will generally choose asset-based lending for any of the following three reasons: they don't qualify for a loan against cash flow, they have an asset backed borrowing capacity that exceeds a loan amount obtainable from its cash flow, or if the all-in rate is cheaper than that offered by a cash flow based loan. As a result, ABLs may also hold a senior position in the capital structure.

ABLs establish certain thresholds for amount of loan based on advance rates, which vary by collateral class and quality of collateral. For instance, the loan limit for accounts receivable asset backed loans will generally be between 80 and 85 percent of the face value of those receivables. High quality inventory will produce a loan size of approximately 55 to 60 cents on the dollar at an orderly liquidation value. Other classes of collateral produce different advance rates. These are noted in Table 4.

**TABLE 4: ASSET-BASED LENDER ADVANCE RATES (FALL 2010)**

Collateral Type	Typical Loan (Median Advance %)	Upper Limit (Median Advance %)
Marketable Securities	80	90
Accounts Receivable	80	85
Inventory - Low Quality	25	40
Inventory - Intermediate Quality	40	50
Inventory - High Quality	55	60
Equipment	60	80
Real Estate	60	70
Land	50	50

**TABLE 5: ASSET-BASED LENDER CREDIT ANALYSIS BENCHMARKS (Fall 2010)**

Financial Indicator	Average Borrower	Approval Limits	Importance Score (0-4)
Current ratio	1.0	1.0	1.1
Total debt service coverage ratio	1.2	1.0	2.6
Total debt to cash flow	3.5	3.8	2.4
Debt to net worth	2.1	2.5	2.1
Revenue growth rate	1.1%	1.0%	1.5

Because of the pledged collateral, ABLs are slightly less concerned than cash flow lenders about the various ratios that typically guide an evaluation of credit access. The most important ratio is the debt service coverage ratio, but at an importance level of 2.6 it is significantly less weighty than the 3.7 rating reported by cash flow lenders. Table 5 shows the various indicators along with their importance scores.

**MEZZANINE**

Mezzanine funds invest in companies that are generating a positive cash flow of at least \$1 million on a recast basis. A large percentage of mezzanine fund investments get deployed in manufacturing, services, and healthcare businesses. The amount a mezzanine fund is willing to invest depends largely upon a multiple of EBITDA, which is generally expressed on a historical and recast basis.

As a general rule, but not in all cases, mezzanine funds will invest debt after it has been determined how much senior debt can be raised, since senior debt is commonly the cheaper source. Mezzanine funds will then invest an amount that brings the investee company up to the specified threshold. As an example, the median maximum mezzanine investment threshold is 4.0x EBITDA for a company with approximately \$10 million in EBITDA. If we look back at cash flow lender size limits, we find a 2.5x EBITDA threshold for companies of approximately \$10 million in EBITDA. Because a mezzanine fund will lend up to a total limit of 4.0x, there remains 1.5x EBITDA in lending capacity. So the mezzanine fund can deploy 1.5x EBITDA in loan amount to hit that 4.0x threshold. Other lending thresholds, expressed in EBITDA multiples, can be found in Table 6 (page 12).

Similar to cash flow and asset-based lenders, mezzanine investors also focus on certain financial indicators to determine if a company qualifies for investment. Among those that are considered most important are senior debt service coverage ratio, funded debt service coverage ratio (based upon amount funded by a particular provider), and senior debt to cash flow ratio. Table 7 (page 12) shows the various indicators along with their importance scores.

**PRIVATE EQUITY**

Private equity groups generally make equity investments in companies that are generating a positive cash flow of at least \$1 million EBITDA on a recast basis. A large percentage of private equity fund investments get deployed in manufacturing, services, and healthcare businesses. Company valuations are largely based on a multiple of recast

**TABLE 6: MEZZANINE FUNDS LENDING CAPACITY (EBITDA Multiples) BY COMPANY EBITDA SIZE**

Statistic	\$1M EBITDA	\$5M EBITDA	\$10M EBITDA	\$25M EBITDA
1st Q	2.9	3.5	3.5	4.4
Median	3.5	3.5	4.0	4.8
3rd Q	4.1	4.0	4.0	5.0

**TABLE 7: MEZZANINE INVESTMENT ANALYSIS BENCHMARKS (Fall 2010)**

Financial Indicator	Average Borrower	Approval Limits	Importance Score (0-4)
Current ratio	2.0	1.3	2.9
Senior debt service coverage ratio	1.6	1.3	3.3
Funded debt service coverage ratio	1.3	1.2	3.4
Total debt service coverage ratio	1.3	1.2	2.7
Senior debt to cash flow	2.5	3.0	3.4
Total debt to cash flow	3.5	4.0	1.4
Debt to net worth	2.1	2.3	2.4
Revenue growth rate	10%	2.5%	1.3

EBITDA. Median deal multiples reported range from 4x EBITDA for companies with approximately \$1 million in EBITDA to 7.5x for companies with approximately \$50 million in EBITDA. These deal multiples and others can be located in Table 8 (page 13).

Private equity funds consider many factors when evaluating an investment opportunity. In terms of importance of various attributes, aside from having positive cash flow and positive growth prospects, they report that the management team and future prospects of the company are among the most important considerations when deciding to write an investment check. They also indicate that historical operating performance and a general lack of customer concentrations are items that guide their investment analysis. Other factors along with their weights and overall scores can be located in Table 9.

## VENTURE CAPITAL

Venture capital as an asset class invests in high-growth companies that span the range from startups to later-stage companies. Companies that typically qualify for venture capital have great growth prospects, top-tier management teams,

attractive and addressable markets, significant competitive advantages, and scalable and capital-efficient business models. Table 10 shows those and other factors along with their weights and overall scores.

Venture capital funds report that median company values at time of investment range from \$3 million for seed/startup companies to \$35 million for later-stage investments. Additional details can be found in Table 11.

## ANGEL

Angel investors invest in high-growth companies that span the range from startups to later-stage companies, but most of their focus is on the seed, startup, and early stages. Angel investors report median company values at time of investment of \$1 million for seed investments, \$2 million for startup companies, and \$3 million for early stage investments. Companies that typically qualify for angel investments have great growth prospects, top-tier management teams, attractive and addressable markets, significant competitive advantages, and scalable and capital-efficient business models. These and other factors along with their weights and overall scores can be located in Table 12 (page 14).

## FACTORS

Factors generally provide capital against accounts receivable assets. Generally as long as a company has accounts receivable that are collectable with a high degree of certainty, a company can obtain capital from factors. Median advance rates range from 80 to 90 percent where the advanced amounts generally increase with increases in monthly volume. Current median advance rates are shown in Table 13 (page 14).

**TABLE 8: PRIVATE EQUITY GROUP DEAL MULTIPLES (FALL 2010)**

Company Size	1st Quartile	Median	3rd Quartile
\$1M EBITDA	3.9	4.0	5.3
\$5M EBITDA	4.5	5.0	5.7
\$10M EBITDA	5.0	6.0	7.0
\$25M EBITDA	5.5	6.0	7.8
\$50M EBITDA	7.5	7.5	8.0

**TABLE 9: PRIVATE EQUITY GROUP IMPORTANT FACTORS WHEN INVESTING (FALL 2010)**

Factors	Unimportant	Of little importance	Moderately important	Important	Very important	Score (0-4)
Firm size	6.0%	10.3%	46.2%	29.9%	7.7%	2.2
Customer concentrations	0.8%	3.4%	13.4%	42.0%	40.3%	3.2
Market leadership	0.8%	5.9%	33.9%	40.7%	18.6%	2.7
Historical operating performance	0.0%	3.4%	13.6%	53.4%	29.7%	3.1
Industry sector	0.9%	5.1%	22.2%	41.9%	29.9%	2.9
Future prospects of company	0.0%	0.0%	3.4%	22.0%	74.6%	3.7
Management team	0.0%	0.0%	7.2%	25.3%	67.5%	3.6

**TABLE 10: VENTURE CAPITAL IMPORTANT FACTORS WHEN INVESTING (FALL 2010)**

Factors	Unimportant	Of little importance	Moderately important	Important	Very important	Score (0-4)
Top tier management teams	0.0%	2.0%	2.0%	36.7%	59.2%	3.5
Attractive addressable markets	0.0%	0.0%	6.1%	38.8%	55.1%	3.5
Significant competitive advantages	0.0%	2.0%	4.1%	34.7%	59.2%	3.5
Investment syndicates with aligned interests	2.1%	8.3%	25.0%	33.3%	31.3%	2.8
Scalable and capital efficient business models	0.0%	0.0%	4.1%	36.7%	59.2%	3.6
Deals that are not widely shopped	4.2%	12.5%	54.2%	22.9%	6.3%	2.1

**TABLE 11: VENTURE CAPITAL: COMPANY VALUE AT TIME OF INVESTMENT (FALL 2010)**

Statistic	Startup/Seed (\$ millions)	Early stage (\$ millions)	Expansion (\$ millions)	Later stage (\$ millions)
1st quartile	2.0	4.0	12.3	25.0
Median	3.0	8.0	20.0	35.0
3rd quartile	5.0	10.5	33.5	75.0

**TABLE 12: ANGEL INVESTORS IMPORTANT FACTORS WHEN INVESTING (Fall 2010)**

Factor	Unimportant	Of little importance	Moderately important	Important	Very important	Score (0-4)
Top-tier management teams	2.5%	0.0%	7.5%	25.0%	65.0%	3.5
Attractive addressable markets	0.0%	0.0%	2.5%	49.4%	48.1%	3.5
Significant competitive advantages	0.0%	0.0%	7.5%	41.3%	51.3%	3.4
Investment syndicates with aligned interests	6.3%	15.2%	38.0%	30.4%	10.1%	2.2
Scalable and capital efficient business models	1.3%	0.0%	16.3%	42.5%	40.0%	3.2
Deals that are not widely shopped	12.7%	29.1%	30.4%	20.3%	7.6%	1.8
No VCs involved	26.7%	35.6%	13.3%	22.2%	2.2%	1.4

**TABLE 13: FACTOR MEDIAN ADVANCE RATES % (FALL 2010)**

Monthly Volume	1st quartile	Median	3rd quartile
\$25,000	80.0	80.0	89.0
\$50,000	80.0	80.0	90.0
\$100,000	80.0	80.0	86.0
\$250,000	80.0	80.0	86.0
\$500,000	80.0	80.0	85.0
\$1M	80.0	80.0	85.0
\$5M	80.0	80.0	85.0
\$10M	80.0	80.0	87.5
\$25M	79.8	82.5	90.0
\$50M	78.5	85.0	90.0
\$100M	87.5	90.0	90.0
> \$100M	90.0	90.0	95.0

**PRIVATE COST OF CAPITAL MODEL**

A relevant private discount rate model should enable the user to determine the expected rate of return that the market of private capital providers requires in order to attract funds to a particular subject or investment. The PCOC model yields such a discount rate by positioning the user into the decision-making process of private capital providers. We created this model to empower users of private capital market data, such as from the Pepperdine capital market surveys, to derive a discount rate that is generated from empirical data.

The PCOC model is as follows:

$$PCOC = \sum_{i=1}^N \left[ (CAP_i + SCAP_i) \times \frac{MV_i}{\sum_{i=1}^N MV_j} \right]$$

Where:

- N is the number of sources of capital.
- $MV_i$  is the market value of all outstanding securities  $i$ .
- $CAP_i$  equals the median expected return for capital type  $i$ .
- $SCAP_i$  equals the specific CAP risk adjustment for capital type  $i$ .

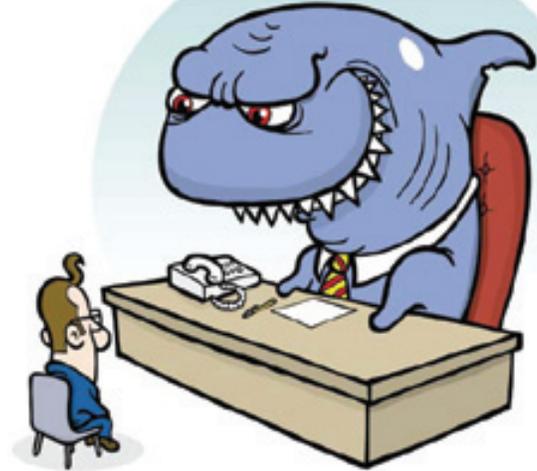
PCOC depends on private cost of debt (PCOD), private cost of equity (PCOE), and private cost of preferred (PCOP) where applicable.

There are four steps to determining PCOC.<sup>6</sup>

1. To determine the appropriate capital types by which to compare, review the credit boxes described in the most current Pepperdine survey. Select the appropriate median CAP from the survey results for each qualifying capital type.
2. Determine the market value of each capital type.
3. Apply a specific CAP risk adjustment (SCAP) to the selected median capital type based on a comparison

<sup>6</sup> Steps have been consolidated from the five initially indicated in "The Private Cost of Capital Model" (2010) by Slee and Paglia.

# BEWARE!



## 5 Things You Don't Want To Do When You Value Equipment...

1. Don't rely on the word of the owner.
2. Don't rely on the depreciation schedule.
3. Don't rely on book value.
4. Don't you guess.
5. Don't rely on the word of an auctioneer or dealer who is not Certified. They may have another agenda.

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of subject results to the appropriate survey credit box. Use first and third quartile returns as a guide to this adjustment.

4. Calculate the percentage of capital structure for each CAP. Multiply each weight of capital structure component by its CAP. Add the individual percentages to derive PCOC.

The following example demonstrates the model's usage.

### Example 1: Cost of Capital for PrivateCo Assuming Known Value and Optimal Capital Structure Already in Place

PrivateCo's discount rate will now be derived below.<sup>7</sup> To determine the appropriate capital types by which to compare, review the credit boxes described in the appropriate Pepperdine survey.<sup>8</sup> Select the appropriate median CAP from the survey results.

PrivateCo, reporting adjusted EBITDA of \$5 million, has a relatively simple capital structure. CAP is found for each capital type from a recent Pepperdine survey. For existing debt, in lieu of using the empirical data from the Pepperdine survey, the analyst may calculate the expected (all-in) return directly from the loan agreement.<sup>9</sup> Table 14 (page 17) shows the market value capital structure along with the CAPs.

By reviewing the PPCML and associated data, the CAP for PrivateCo's term loan and equity is 6.5 percent and 30 percent, respectively. The equity CAP is 30 percent, the same number as shown for equity on the PPCML, because PrivateCo fits within the "\$5M EBITDA" category of the Pepperdine survey.

Next we focus on a specific capital type (SCAP) risk adjustment for debt to the selected median capital type based on a comparison of subject results to the appropriate survey credit box. Use first and third quartile returns as a guide to this adjustment.

To determine the SCAP risk adjustment, the appraiser must compare surveyed and subject credit boxes for each capital type. Table 15 shows this comparison for the term loan.

The surveyed results represent the qualifying minimum (or maximum) threshold for loan approval. For example, in order to make a loan, lenders require a minimum current ratio of 1.3, minimum fixed charge coverage of 1.3, and so on as a median. Not all credit box characteristics are considered equally important, as the "Very Important" and "Score" columns indicate.

<sup>7</sup> PrivateCo is the fictitious company described in Slee's *Private Capital Markets* book. The market valuation and other numbers specific to PrivateCo are taken from that book.

<sup>8</sup> With respect to the effective valuation date.

<sup>9</sup> This may be done if the debt was obtained at a point in time recent to the date of valuation, was at arm's length, and reflective of market conditions. Furthermore it may be relevant only if the capital structure, financial position, or business prospects have not changed materially since it was obtained.

For instance, current ratio and debt to net worth are less important variables to the lending decision than total debt service ratio and senior debt to EBITDA. The Pepperdine survey asked respondents to score their responses on a four-point scale. Only senior fixed charge coverage, total fixed charge coverage, senior debt service, and total debt service scored a 3.0 or above. For purposes of deciding PCOD SCAP, greater weight should be assigned to these variables.

As the last column in Table 15 shows, PrivateCo compares favorably against median results for all metrics. Since PrivateCo generates a high level of EBITDA relative to investment in the business, its leverage ratios are outstanding, as witnessed by a low total debt to EBITDA of 0.6, which is substantially lower than median survey results. Further, PrivateCo's coverage ratios indicate low debt in the business yet high profitability. PCOD SCAP will reflect that PrivateCo's financial results compare favorably to 1st quartile survey responses.

The next step in determining PCOC is to derive PCOE SCAP. This is accomplished by comparing surveyed private equity group expectations to PrivateCo's results. Table 16 makes this comparison.

The surveyed results represent Private Equity's credit box; that is, the criteria that prospects must display in order to qualify for investment. PrivateCo is expected to perform well in revenue and EBITDA growth when compared to median expectations from the winter/spring 2010 survey. However, PrivateCo is not expected to surpass 3rd quartile expectations in these areas.

Private equity groups also scored various investment measures. PrivateCo compares as follows:

A. PEGs are rightly concerned about customer concentrations. PrivateCo has no single customer that represents more than 20 percent of annual sales. The top 10 customers represent 40 percent of annual sales. The top 50 customers represent 70 percent of sales. This diversity of customers and lack of customer concentration would be viewed as a positive by PEGs.

B. PEGs are less concerned than all of the other categories about market leadership. PrivateCo is not viewed as a market leader in its space. Rather, it is considered a well run, follow-the-leader company.

C. Historical operating performance is moderately important to private equity investors. PrivateCo has a fairly stable operating performance over the past few years.

D. PEGs view industry sector as moderately important. PrivateCo operates in a sector with relatively long periods of stability. This sector is not expected to change appreciably in the foreseeable future.

E. PEGs are mostly concerned with the future prospects of a company. PrivateCo will perform well into the future, but not at a breakneck pace. This is mainly due to conservative policies set by the owner of PrivateCo.

F. PrivateCo's management team is seasoned, but mainly home grown. The average tenure of direct reports to the owner is more than 20 years. While this offers stability, it may present a problem if a PEG invested in the company and wished to make major changes.

In summary, PrivateCo qualifies for private equity investment, but would likely be viewed as an average performer, with average expectations. For this reason, PCOE SCAP is zero.

The next step is to determine PrivateCo's CAP by capital type, as shown in Table 17 (page 19).

By comparing survey results to PrivateCo's actual or expected results, SCAP can be determined for PCOD and PCOE. PrivateCo compares favorably to survey term debt results, as shown in Table 17, but the loan size is smaller than the \$1 million minimum. Thus, PCOD SCAP is 0.6 percent, which is the number needed to convert CAP to the 3rd quartile survey result of 7.1 percent. In other words, PrivateCo can expect to pay an all-in PCOD of 7.1 percent.

Deriving PCOE SCAP requires comparing surveyed results from private equity groups to PrivateCo's actual and expected results. As this illustration shows, PrivateCo would likely be viewed by PEGs as an average candidate. Thus, PCOE SCAP is 0, and PCOE CAP is 30 percent.

Next we calculate the percentage of capital structure for each CAP and add the individual percentages to derive PCOC. Table 18 shows PrivateCo's PCOC calculation, assuming no taxes.

In this example, PrivateCo has a pre-tax private cost of capital of 29 percent (rounded).

The next example determines PCOC given a more complicated capital structure.

**Example 2: Arranging a Capital Structure and Calculating PCOC for Middle Market Manufacturing**

Next we calculate the cost of capital for Middle Market Manufacturing, Inc. (MMM). MMM has recast EBITDA of \$5 million, and it is determined that similar manufacturing companies are selling at deal multiples of 7x EBITDA. This produces a market value of \$5 million EBITDA x 7 = \$35 million (ignor-

**TABLE 14: PRIVATECO CAPITAL STRUCTURE AND CAPS**

Capital Type	Market Value	PPCML CAP
Term loan (cash flow loan)	\$500,000	6.5%
Equity	\$13,700,000	30.0%

**TABLE 15: COMPARISON OF SURVEYED AND PRIVATECO TERM LOAN CREDIT BOXES**

Term Loan	Pepperdine Survey					PrivateCo
	1st Quartile	Median	3rd Quartile	Very Import.	Score (0-4)	
Current ratio	1.1	1.3	1.3	13.8%	1.7	2.5
Senior debt service or fixed charge coverage	1.2	1.3	1.3	59.3%	3.2	3.5
Total debt service or fixed charge coverage	1.2	1.3	1.3	80.6%	3.7	2.5
Senior debt to EBITDA	2.0	3.0	3.0	46.4%	3.0	.2
Total debt to EBITDA	2.4	3.5	4.2	57.1%	3.2	.6
Debt to net worth	1.9	2.4	3.3	20.7%	2.5	1.5
Revenue growth rate	0.8%	2.1%	4.5%	10.3%	1.8	7%

**TABLE 16: COMPARISON OF SURVEYED AND PRIVATECO PRIVATE EQUITY CREDIT BOXES**

Private Equity	Pepperdine Survey					PrivateCo
	1st Quartile	Median	3rd Quartile	Very Import.	Score (0-4)	
Revenue growth rate (minimum)	5%	5%	10%			7%
Revenue growth rate (expected)	9%	10%	15%			7%
EBITDA growth rate (min)	7%	10%	10%			12%
EBITDA growth rate (exp)	10%	15%	19%			12%
Customer concentrations				40.3%	3.2	A
Market leadership				18.6%	2.7	B
Historical operating performance				29.7%	3.1	C
Industry sector				29.9%	2.9	D
Future prospects of company				74.6%	3.7	E
Management team				67.5%	3.6	F

ing net working capital). We simplify the example by ignoring the impact of taxes and assume that MMM qualifies for the maximum amounts of “cheap capital” at the median costs. So MMM would qualify for 2.5x EBITDA in senior lending, which is \$5 million EBITDA x 2.5 = \$12.5 million in bank loans. They also qualify for up to 3.5x in total debt when adding mezzanine financing. Since they already qualify for 2.5x in senior lending, this leaves an additional 1x, or \$5 million, for mezzanine. Finally, in order to complete the capital structure at a value of 7x EBITDA, the private equity group would contribute an additional 3.5x or \$17.5 million in financing.

Now that we have built the capital structure, we can calculate the private cost of capital as performed in Exhibit A (page 19). For this example, assume that MMM qualifies for the median CAP, thus SCAP will not be incorporated into the PCOC calculation.

The private cost of capital in this example is 19.75 percent.

## SPECIAL TOPICS

There are a number of clarifications with regard to the application of the private cost of capital model. The guidance we provide is rooted in the decision-making processes actually employed by those who deploy capital in the private capital markets. Based upon our knowledge of the activity and behavior in the private capital markets at this time we offer commentary as guidance on the following 10 items.

### *Adjustments for Control*

The majority of investment data collected for private equity group capital deployments reflect control investments. Since the return expectations are already reflective of control transactions, no ad-

ditional adjustments are necessary when valuing a control level of interest.

### *Minority Interests*

The evidence on minority interests continues to evolve. For middle market companies, private equity groups will purchase minority interests and for doing so, *most* do not demand a premium in expected rate of return as a result. Perhaps one of the contributing reasons is the comprehensive set of contracts put together to protect the fund when making an investment. These contracts typically include employee agreements, shareholder agreements, and buy/sell agreements. These agreements are necessary to entice a private equity firm to purchase a minority interest in a privately held company.

While the Winter/Spring 2010 Pepperdine Private Capital Markets Project Survey (Report II) indicated that, for the 70 percent of private equity firms interested in making minority investments, a median discount of 20 percent was appropriate, more recent data suggests most are making minority investments with no expected return premiums. This information puts into question whether a minority interest discount should be applied for middle market companies that would be eligible for private equity investment in today’s economic environment.

### *Cash Flow Stream: Assets or Equity?*

The private cost of capital (PCOC) rate is to be applied to the net pre-tax cash flows produced by the firm (free cash flows from assets). In the case of using private cost of equity (PCOE) as the discount rate, the relevant cash flows to be discounted would be free cash flows to equity.

### *Tax*

The Pepperdine Private Capital Markets Project survey asked institutional

investors to report on expected pre-tax cash on cash returns for new investments. Because we collected pre-tax returns, discount rates from the survey should be applied to pre-tax net cash flows.

### *Diversification*

Investors in the private capital markets (i.e., private equity groups, mezzanine funds, venture capital, etc.) generally leverage some special industry knowledge or contacts, concentrate in certain geographic areas, or focus on certain sizes of companies. Any one particular fund generally contains between eight and 25 different investments once fully invested, and those investments have expected holding periods of between three and seven years. As a result, any particular fund is largely undiversified when compared to professionally managed portfolios of assets in the public markets. Furthermore, there is a general inability to rebalance portfolios by entering/exiting investments quickly. The implication is that a general lack of diversification discount, to the extent one exists, is largely priced in the return expectations of institutional capital providers.

### *DLOMs*

Discounts for lack of marketability (inclusive of DLOLs) are assessed and calculated relative to the specific data used in the valuation process. Because PCOC relies on expected returns derived from new investments in privately held companies, DLOMs are largely unnecessary at the company level but may be relevant at the specific interest level.

### *Circularity of Value and Cost of Capital*

Value depends on cost of capital, and cost of capital depends on capital structure. In the private markets,

**TABLE 17: DETERMINATION OF PRIVATECO'S CAP BY CAPITAL TYPE**

Capital Type	Market Value	CAP	1st Quartile	3rd Quartile	SCAP	PCOD	PCOE
Cash flow loan	\$500,000	6.5%	5.4%	7.1%	.6%	7.1%	
Private equity	\$13.7M	30.0%	25%	30%	0%		30%

**TABLE 18: PRIVATECO PRIVATE COST OF CAPITAL CALCULATION**

Capital Type	Market Value	% of Total	Adjusted CAP	Tax Effect	Weight x CAP
PCOD	\$500,000	4	7.1%	0%	0.25
PCOE	\$13,700,000	96	30.0%	0%	28.95
			Pre-tax Private cost of capital		29.2%

**EXHIBIT A: MIDDLE MARKET MANUFACTURING, INC. (Market Value Balance Sheet)**

Assets	\$M	Liabilities and Equity	\$M	Invest. Size	Cost of Capital (CAP)
Net working capital	0.0				
Long-lived assets	35.0	Senior Debt	12.5	2.5x	5.5%
		Subordinated Debt (Mezz)	5.0	1.0x	19.5%
		Equity	17.5	3.5x	30.0%
<b>Total Assets</b>	<b>\$35.0</b>	<b>Total Liabilities &amp; Equity</b>	<b>\$35.0</b>	<b>7.0x</b>	
EBITDA	\$5				
Multiple	7x				
Market Value	\$35M				

$$PCOC = (CAP * \% \text{ market value}) + \dots PCOC = [5.5\% * (2.5/7)] + [19.5\% * (1.0/7.0)] + [30.0\% * (3.5 / 7.0)]$$

$$\text{Pre-tax PCOC} = 19.75\%$$

deal values are obtained by applying a multiple (most often of EBITDA) to a recast EBITDA stream. Then the attention turns to securing financing to support the deal. Since that process is how capital structures are arranged, we recommend using deal multiples to first estimate the company value. This exercise will initially arrange the capital structure so that the PCOC can be calculated. Further refinement may be necessary afterwards, however.

### **Optimal Capital Structure**

In the private capital markets, each capital structure is built one company at a time. The strategy in arranging the optimal capital structure is to start with the cheapest sources of financing and then to move to the next most expensive source once the maximum amount of capital is obtained or after determining the company wouldn't qualify for that particular capital source. Repeat this process until all of the capital structure is arranged.

It is likely that many companies will not qualify for capital types less expensive than factoring. In these cases, the appropriate volume level of factoring should be used. For example, companies that factor \$250,000 receivables per month have a median CAP of 58.5 percent. We believe that most companies of size qualify for factoring, and that the high cost of factoring reflects its role as the capital provider of last resort.

**Friends and Family Investments**

For companies that are able to tap friends and family as a financing source, it shouldn't be assumed that the terms are at arm's length and in accordance to "market" pricing of risk. Frequently friends-and-family financing is extended at below market rates because of a special relationship that exists. In these instances, it is not appropriate to use the terms of a friends-and-family loan or investment.

**Small Companies**

Small businesses (those that don't qualify under any of the credit boxes in the survey) rely on a variety of financing sources that are not priced by institutional capital providers. Small business owners commonly rely on personal investments (savings, investment portfolio, home equity), friends and family, credit cards, and loans with personal guarantees. As a result, the Pepperdine cost of capital survey does not have *market*-driven empirical data at this time to support discount rates for this segment of the economy. Any capital extended based on a requirement that personal income or assets be pledged will not reflect a pure business risk-adjusted cost of capital.

**COMPARISON TO CURRENT PRACTICE**

One may wonder how PCOC compares to equity discount rates currently used in practice. In Table 19, we compared PCOE estimates from PCOC to those median inputs obtained from the business appraiser survey in the Pepperdine study.<sup>10</sup> Once adjusting for differences in DLOM usage

<sup>10</sup> Appraiser results are reported in *Pepperdine Private Capital Markets Project Summer 2010* report with exception of the DLOM for *controlling interests*, which was not surveyed until Spring 2011. Some of the reported differences, particularly in the \$1M category, may be attributed to appraisers estimating on revenues versus EBITDA.

**TABLE 19: MANUFACTURING COMPANY**

Cost of Equity Capital Comparison: Buildup vs. PCOC by Size (Spring 2010)			
	\$1M	\$25M	\$250M
Risk-free (survey)	4.0%	4.0%	4.0%
Equity Risk Premium (survey)	6.2%	6.2%	6.2%
Industry Adjustment (survey)	2.0%	2.0%	2.0%
Size Premium (survey)	6.8%	5.8%	4.0%
Company Specific (survey)	5.0%	3.8%	2.3%
Buildup Equity Rate (after-tax)	24.0%	21.8%	18.5%
Buildup Equity Rate (pre-tax @ 30%)	34.3%	31.1%	26.4%
<hr/>			
DLOM (survey)	20.7%	16.6%	14.0%
Buildup Equity Rate (Pre-tax, DL0M-adjusted)	41.9%	36.4%	29.9%
PCOC (Pre-tax as reported)	30.0%	30.0%	25.0%
Difference	11.9%	6.4%	4.9%

and tax treatment, we observe lower net discount rates using PCOC. One potential explanation for the difference is that PCOC rates may reflect costs of capital for higher quality privately held companies on average.<sup>11</sup>

In any event, using PCOC as a starting point will result in significantly fewer adjustments and is more aligned with the actual markets in which privately held companies raise capital.

**RAMIFICATIONS OF USING PCOC**

The temptation to use readily available public information to value private companies is strong. Note that within the private capital markets, mainly academics and business appraisers use the guideline public company method. Other parties in the private capital markets—business

<sup>11</sup> We assumed rates reflected controlling interests and also applied DLOMs based upon survey results for controlling interests. Final estimates ultimately depend on the facts and circumstances of the information pertaining to the subject interest.

owners, lenders, investors, estate planners, and so forth—rely on valuation methods that are specifically useful for making decisions in their markets.

Why do parties in the private capital markets not employ public information in their decision-making process? Because these parties have real money in the markets; valuation is not notional to them. Making proper financing and investment decisions requires using theories and methods that are appropriate to the subject's market, such as choosing the correct value world and resulting process when making a valuation decision.

Using a discount rate that is derived from empirically derived, private data could alter professional, legalistic, compliance business appraisal in four ways. First, adjustments such as lack of marketability discounts and control premiums may not be needed. These adjustments were originally created based on the faulty premise that public return expectations could be manipulated to

derive private values. Once risk is defined using private return expectations, these public-to-private adjustments are largely unnecessary.

Second, PCOC provides a risk definition that can be applied across value worlds (standards of value). Each world also has an authority, which is the agent or agents that govern the world. The authority decides whether the intentions of the involved party are acceptable for use in that world, and prescribes the methods used in that world. More specifically, authority refers to agents or agencies with primary responsibility to develop, adopt, promulgate, and administer standards of practice within that world. Authority decides which purposes are acceptable in its world, sanctions its decisions, develops methodology, and provides a coherent set of rules for participants to follow. Authority derives its influence or legitimacy mainly from government action, compelling logic, and/or the utility of its standards. Authorities from the various value worlds will finally have an empirically derived method of defining risk. Hopefully these authorities will prescribe use of PCOC in their respective worlds.

Third, business owners will finally be able to determine their companies' cost of capital. This knowledge will help them learn whether they are creating economic value; that is, generating returns on invested capital greater than this cost. This should promote economic value creation as a practical and useful tool. Plus it opens an avenue for business valuers to consult with business owners to help them make better investment and financing decisions.

Finally, the PCOC model will make business appraisal more relevant. Cur-

rently, an industry of business appraisers inhabits mainly the notional value worlds. Business owners need more help in competing in a global economy. The value gap—the difference between what owners want/need the market value of their businesses to be and the value the market assigns—has never been larger. Tools like the PCOC model will help the appraisal industry become more value-added.

### CONCLUSION

The private capital markets offer market-based solutions to arranging capital structures and determining privately held company values. These markets evaluate risk, and price that risk, in conjunction with granting credit or deploying investment capital. Despite the proliferation of the private capital market segments over the past couple of decades, there has been relatively little attention paid to the return expectations of providers of capital as a basis for discount rates.

With four survey cycles completed, the Pepperdine Private Capital Markets Project collects data on the activity and behavior of the private capital market segments. Data collected include credit box statistics and return expectations based upon actual investment checks written. These empirical data points, including return expectations, can now be used to derive privately held company costs of capital. One such model that employs the Pepperdine data is the private cost of capital model.

The PCOC model is a market-based, empirically driven solution for estimating discount rates for privately held companies. PCOC makes the discount rate estimation process relevant by examining the actual markets where privately held companies fund their capital

needs. This direct estimation process significantly reduces the need for many “public to private” adjustments such as DLOMs and control premiums, and more importantly, provides appraisers a framework for helping private company managers deal with value creation measurement and management. **VE**



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