

DO YOU KNOW?

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A free periodical to promote education and alert you to important areas of interest in the financial valuation, fraud, and litigation services profession.

Do You Know...

...if there are cost of capital benchmarks?

Most valuation analysts either use the build-up method (BUM) and/or the modified capital asset pricing model (MCAPM) to develop their cost of equity capital. While there is some disagreement on the inputs to these models, they are still widely used and accepted. However, in certain litigation venues it can be difficult to explain the intricacies of these models and data inputs so that the trier of fact can fully understand what was done. That's where some benchmarking can come in handy. Let's take an example (illustration only) of the use of the BUM and the MCAPM. Then let's compare the results to some benchmark data that I have been reviewing over the past few years.

The basic formula for MCAPM is expressed as follows.

(Note: E(Ri) is often referred to as ke):

$$E(R_i) = R_f + \beta(RP_m) + RPs \pm R_{Pc}$$

Where:

- E(Ri) = Expected rate of return on security i
- Rf = Rate of return available on a risk-free security as of the valuation date
- β = Beta
- RPm = Equity risk premium (ERP) for the market as a whole
- RPs = Risk premium for smaller size
- R_{Pc} = Risk premium attributable to other company risk factors

The basic formula for the traditional build-up model is:

$$E(R_i) = R_f + RP_m + RPs \pm R_{Pi} \pm R_{Pc}$$

Where:

- E(Ri) = Expected rate of return on security i
- Rf = Rate of return available on a risk-free security as of the valuation date
- RPm = Equity risk premium (ERP) for the market as a whole
- RPs = Risk premium for smaller size
- R_{Pi} = Industry risk premium
- R_{Pc} = Risk premium attributable to other company risk factors

Let's assume we are valuing a smaller company that is reasonably profitable as of December 31, 2016. For purposes of this illustration only, we will present the calculations based, in part, on the Duff & Phelps *2016 Valuation Handbook-Guide to Cost of Capital*, appendix 3, supply-side ERP and CRSP data, from 1926 to 2015.

MCAPM

$ke = 2.8 + 1.2(6.0) + 5.6 + 3.0$
 $ke = 18.6\%$
 Say 19%

BUM

$ke = 2.8 + 6.0 + 5.6 + 2.0 + 3.0$
 $ke = 19.4\%$
 Say 19%

In this illustration, the cost of equity capital is 19%. Now let's look at some benchmark data to see how the 19% compares. Exhibit 1 is in the form of a build-up model that shows increasing risks and the associated increase in the required rate of return. Our subject company fits in as shown below.

• Large-cap stock (\$77 billion average)	11%
• Micro-cap stock (\$199 million average)	18%
• Subject Company	19%
• Small-cap stock (\$102 million average)	20%
• D&P category 25 (\$148 million average)	24%

Exhibit 1

Cost of Capital Benchmark Data

As of December 31, 2016

U.S. 30-day Treasury bill [1]	0.43%
U.S. five-year Treasury note [2]	1.93%
U.S. 20-year Treasury bond [3]	2.79%
Prime rate [4]	3.75%
Aaa corporate bond [5]	3.98%
30-year conventional mortgage [6]	4.32%
Baa corporate bond [7]	4.73%
Large-cap stock (\$77 billion average) [8]	11.05%
Micro-cap stock (\$199 million average) [8]	17.93%
Small-cap stock (\$102 million average) [8]	20.26%
Subdecile category 10b (\$2 million - \$109 million) [8]	23.26%
D&P size category 25 (\$148 million average) [9]	24.13%
Subdecile category 10z (\$2 million - \$65 million) [8]	25.69%
VC Bridge/IPO [10]	20%-35%
VC second stage/expansion [10]	30%-50%
VC first stage/early development [10]	40%-60%

Notes:

[1] <https://fred.stlouisfed.org/series/TB4WK>

[2] <https://fred.stlouisfed.org/series/DGS5>

[3] <https://fred.stlouisfed.org/series/DGS20>

[4] <https://fred.stlouisfed.org/series/WPRIME>

[5] <https://fred.stlouisfed.org/series/WAAA>

[6] <https://fred.stlouisfed.org/series/MORTGAGE30US>

[7] <https://fred.stlouisfed.org/series/WBAA>

[8] Duff & Phelps *2016 Valuation Handbook-Guide to Cost of Capital*, pp. 7-9, 7-11, appendix 3, all data from 1926 to 2015, large cap is decile 1, micro-cap is deciles 9 and 10, small cap is decile 10.

[9] Duff and Phelps *2016 Valuation Handbook*, Exhibit A-1, all data from 1963 to 2015.

[10] *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, Accounting & Valuation Guide, 2013, American Institute of Certified Public Accountants, p. 148.