

Using the OPM to Back-Solve for Equity Value

In the previous section, the company's total equity value is assumed to be estimated using a standard valuation technique prior to being allocated across the securities in an OPM. Pre-revenue early-stage companies typically burn through cash quickly and therefore must frequently raise capital to finance their operations. The amounts raised, usually in the form of new rounds of preferred stock, provide good information regarding the overall value of the company. These transactions can be utilized to calculate the implied equity value using the technique previously titled as the *back-solve*.

As noted earlier, the back-solve method consists of calibrating the allocation model to obtain a value for the newly issued securities that matches the amount raised by the company. For example, assume the subject company in the previous example raised \$1,500,000 in the form of preferred stock with the same features (i.e., \$1 per share, 1:1 conversion, etc.) shortly before the valuation date. In this instance, the OPM can be calibrated to the recent transaction by iteratively changing the current equity value to achieve a value of \$1,500,000 for the preferred stock. In this case, the calibrated equity value would be \$2,207,178. The results are presented in Exhibit A30-10. Note that the breakpoints are the same as in Exhibit A30-6.

Exhibit A30-10**Allocation of Equity Value – Using OPM to Back-Solve Equity Value**

	Call 0	Call 1	Call 2	Call 3	
Equity Value	\$2,207,178	\$2,207,178	\$2,207,178	\$2,207,178	
Strike Price	\$0	\$1,500,000	\$1,930,000	\$2,557,000	
Equity Volatility	50.0%	50.0%	50.0%	50.0%	
Risk-Free Rate	1.0%	1.0%	1.0%	1.0%	
Expected Term	5.0 years	5.0 years	5.0 years	5.0 years	
Option Value	\$2,207,178	\$1,211,406	\$1,052,882	\$873,996	
	Region 1	Region 2	Region 3	Region 4	
TEV Range (\$000)	[\$0 – \$1,500]	[\$1,500 – \$1,930]	[\$1,930 – \$2,557]	>\$2,557	Total
Call _n minus Call _{n+1}	\$995,772	\$158,524	\$178,886	\$873,996	\$2,207,178
% Allocation	45.1%	7.2%	8.1%	39.6%	100.0%
	Shares				
Preferred Stock	1,500,000	0	0	1,500,000	
Common Stock	0	1,000,000	1,000,000	1,000,000	
Options	0	0	100,000	100,000	
Total	1,500,000	1,000,000	1,100,000	2,600,000	
	Percentage Allocation				
Preferred Stock	100.0%	0.0%	0.0%	57.7%	
Common Stock	0.0%	100.0%	90.9%	38.5%	
Options	0.0%	0.0%	9.1%	3.8%	
Total	100.0%	100.0%	90.9%	38.5%	
	Allocation of Value				Total
Preferred Stock	\$995,772	\$0	\$0	\$504,228	\$1,500,000
Common Stock	\$0	\$158,524	\$162,624	\$336,152	\$657,300
Options	\$0	\$0	\$16,262	\$33,615	\$49,878
Total	\$995,772	\$158,524	\$178,886	\$873,996	\$2,207,178

As shown above, when the equity value is \$2,207,178 the preferred stock is estimated to be worth the amount raised of \$1,500,000. As this example illustrates, the back-solve approach has the advantages of incorporating recent market transactions into the analysis, and of not requiring the equity value be separately estimated.