Case Study Using Allocation Method 2: Probability-Weighted Expected Return Method (PWERM)

When the scenarios are mapped out, the allocation of the equity value in a waterfall under each scenario using the PWERM is as simple as the allocation of the equity value in the CVM. The breakpoint region a future equity value would fall into determines how the value would be allocated across the capital structure. The breakpoints are tied to those described in the CVM case study (see Exhibit 30–2).

Scenario 1: Under the first scenario, the projected equity value of $1,400,000 falls in the first breakpoint region ($0 to $1,500,000). In this scenario the preferred stockholders receive their liquidation preference up to an amount of $1,400,000. The option and common equity holders receive no distribution. See Exhibit A30–1.

Exhibit A30–1

Case Study Using PWERM
Equity Allocation Under Scenario #1

Equity Value	$1,400,000
Options Premium	$0
Equity Value plus Premiums	**$1,400,000**
Less: Liquidation Preference	1,500,000
Residual	**$ 0**
Preferred Stock	0
Common Stock	1,000,000
Options	0
Total Shares	**1,000,000**
Residual per Share	$0.00
Preferred Stock Value	$1,400,000
Common Stock Value	0
Options Value	0
Total	**$1,400,000**

Scenario 2: Under the second scenario, the projected equity value of $2,200,000 falls in the third breakpoint region ($1,930,000 to $2,557,000; see Exhibit 30–2). In this scenario, the preferred stock would not convert into common stock and the options are exercised at a strike price of $0.43. The preferred stockholders receive their liquidation preference of $1,500,000. The residual amount left plus the option proceeds of $43,000 are then allocated on a pro-rata basis between the option and common stockholders. Note the option proceeds of $43,000 are deducted from the amount allocated to the options to calculate the net payoff. See Exhibit A30–2.

Exhibit A30–2

Case Study Using PWERM
Equity Allocation Under Scenario #2

Equity Value	$2,200,000
Options Premium	43,000
Equity Value plus Premiums	**$2,243,000**
Less: Liquidation Preference	1,500,000
Residual	**$743,000**
Preferred Stock	0
Common Stock	1,000,000
Options	100,000
Total Shares	**1,100,000**
Residual per Share	$0.68
Preferred Stock Value	$1,500,000
Common Stock Value	675,455
Options Value	24,545
Total	**$2,200,000**

An alternative calculation, that does not involve separately adding the option proceeds to the equity value prior to allocating the value across the securities, consists of performing the analysis assuming the options would *net settle* as opposed to being physically exercised. When the options are net settled, the company pays an amount in excess of the contractual strike price of the options to the option holders. In other words, the option holders do not pay the strike price, there is no additional inflow of capital to the company, and the equity value gets allocated across the securities in tranches based on the percentage each security is entitled to receive at each step. For example, using the net-settlement approach the projected equity value under Scenario 2 of $2,200,000 would be allocated as shown in Exhibit A30–3:

Exhibit A30–3

Case Study Using PWERM – Equity Allocation
Alternative Calculation Under Scenario #2 – Assuming Options are Net Settled

Equity Value	$2,200,00
Less: Liquidation Preference	1,500,00
Residual 1	**$700,000**
Less: 100% Allocation to Common	430,000
Residual 2	**$270,000**
Preferred Stock	0
Common Stock	1,000,000
Options	100,000
Total Shares	**1,100,000**
Residual per Share	$0.25
Preferred Stock Value	$1,500,000
Common Stock Value	675,455
Options Value	24,545
Total	**$2,200,000**

Following the example in Exhibit A30–3, the preferred stockholders receive their liquidation preference of $1,500,000 leaving a residual balance of $700,000. Second, the common stockholders receive a distribution until a common stock price per share of $0.43—the strike price of the options—is achieved at which point the option holders start to receive distributions. Since there are 1,000,000 common shares outstanding the amount distributed at this step is $430,000 leaving a residual balance of $270,000. Finally, the residual amount of $270,000 is allocated to the common stockholders and option holders on a pro-rata basis.

The common stockholders receive 90.9% (1,000,000 / 1,100,000) of the residual amount and the option holders receive the remaining 9.1% (100,000 / 1,100,000). The total distributions to the common stockholders of $675,455 are calculated as the sum of $430,000 plus $245,455 (90.9% x $270,000). The distributions to the option holders of $24,545 are calculated as the product of 9.1% times $270,000. It is interesting to note the two sets of calculations, physical or net settlement of the options, produce the same results.[1]

Scenario 3: Under the third scenario, the projected equity value of $5,000,000 falls in the last breakpoint region of Exhibit 30–2 (>$2,557,000). In this scenario, the preferred stock converts into common stock and the options are exercised at a strike price of $0.43 per share. The projected equity value plus the option proceeds of $43,000 are allocated on a pro-rata basis across all the shares. Like Scenario 2, the option proceeds of $43,000 are deducted from the amount allocated to the options. See Exhibit A30–4.

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[1] In the case study using the OPM method, the allocation of value is performed using the net-settlement approach.

Exhibit A30–4

Case Study Using PWERM
Equity Allocation Under Scenario #3

Equity Value	$5,000,000
Options Premium	43,000
Equity Value plus Premiums	**$5,043,000**
Less: Liquidation Preference	0
Residual	**$5,043,000**
Preferred Stock	1,500,000
Common Stock	1,000,000
Options	100,000
Total Shares	**2,600,000**
Residual per Share	$1.94
Preferred Stock Value	2,909,423
Common Stock Value	1,939,615
Options Value	150,962
Total	**$5,000,000**

As is explained in more detail in the text, the future values in each scenario are discounted to present value at an appropriate risk-adjusted yield. For simplicity, the values of the three securities are discounted at a yield of 13.5% (rounded) over the relevant periods. The values of the securities could be discounted at different yields because they have different risk profiles. Then the present values are probability weighted See Exhibit A30–5.

Exhibit A30–5

Case Study Using PWERM – Values Under Three Scenarios

	Liquidation in 1 year	Sale in 3 years	IPO in 5 years	Value
Probability	33.3%	33.3%	33.3%	**100%**
Preferred Stock	$1,233,955	$1,027,081	$1,547,615	**$1,269,550**
Common Stock	$0	$462,498	$1,031,743	**$498,080**
Options	$0	$16,807	$80,301	**$32,369**

The discussion of applying the PWERM continues in the text of the chapter.