a.   The book value of equity is the book value per share times the number of shares, and the book value of debt is the face value of the company's debt, so:

$BV_E = 7{,}000{,}000 \times \$8 = \$56{,}000{,}000$

$BV_D = \$70{,}000{,}000 + 40{,}000{,}000 = \$110{,}000{,}000$

So, the total value of the company is:

$V = \$56{,}000{,}000 + 110{,}000{,}000 = \$166{,}000{,}000$

And the book value weights of equity and debt are:

$E/V = \$56{,}000{,}000/\$166{,}000{,}000 = 0.3373$

$D/V = 1 - E/V = 0.6627$

b.   The market value of equity is the share price times the number of shares, so:

$MV_E = 7{,}000{,}000 \times \$68 = \$476{,}000{,}000$

Using the relationship that the total market value of debt is the price quote times the par value of the bond, we find the market value of debt is:

$MV_D = 0.97 \times \$70{,}000{,}000 + 1.08 \times \$40{,}000{,}000 = \$111{,}100{,}000$

This makes the total market value of the company:

$V = \$476{,}000{,}000 + 111{,}100{,}000 = \$587{,}100{,}000$

And the market value weights of equity and debt are:

$E/V = \$476{,}000{,}000/\$587{,}100{,}000 = 0.8108$

$D/V = 1 - E/V = 0.1892$

c. The market value weights are more relevant because they represent a more current valuation of the debt and equity.

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First, we will find the cost of equity for the company. The information provided allows us to solve for the cost of equity using the dividend growth model, so:

$R_E = [\$3.25 \times (1.05)/\$68] + 0.05 = 0.1002$, or 10.02%

Next, we need to find the YTM on both bond issues. Doing so, we find:

$P_1 = \$970 = \$30 \times PV_A(R; 42) + \$1,000 \times DF(R; 42)$

$R = 3.129\%$

$YTM = 3.129\% \times 2 = 6.26\%$

$P_2 = \$1,080 = \$32.50 \times PV_A(R; 12) + \$1,000 \times DF(R; 12)$

$R = 2.471\%$

$YTM = 2.471\% \times 2 = 4.94\%$

To find the weighted average aftertax cost of debt, we need the weight of each bond as a percentage of the total debt. We find:

$W_{D_1} = 0.97(\$70,000,000)/\$111,100,000 = 0.6112$

$W_{D_2} = 1.08(\$40,000,000)/\$111,100,000 = 0.3888$

Now we can multiply the weighted average cost of debt by one minus the tax rate to find the weighted average aftertax cost of debt. This gives us:

$R_D = (1 - 0.21) \times [(0.6112) \times (0.0626) + (0.3888) \times (0.0494)] = 0.0454$, or 4.54%

Using these costs and the weight of debt we calculated earlier, the WACC is:

$$\text{WACC} = 0.8108 \times (0.1002) + 0.1892 \times (0.0454) = 0.0898, \text{or } 8.98\%$$