

Marriott Corporation: The Cost of Capital

Third time's the charm...

$$P(\text{chosen 3x in a row}) = 1/12 * 1/12 * 1/12 = 0.00058$$

Types of investments we could value using Marriott's WACC

There are two requirements that should be satisfied before using Marriott's WACC to evaluate prospective investments:

- The investment opportunity must have the same systematic risk as Marriott as a whole.
- The investment must have a similar leverage ratio to Marriott as a whole.

Cost of Capital for Marriott as a whole

To find the cost of capital, we use the following information:

- MRP = 7.43%
- Beta of stock = 0

$$r_D = \frac{1}{1 + \frac{D}{E}} \times r_{MRP} = \frac{1}{1 + 0.02} \times 7.43\% = 7.28\%$$

$$r_E = r_D + \beta \times (r_{MRP} - r_D) = 7.28\% + 0 \times (7.43\% - 7.28\%) = 7.28\%$$

$$r_{WACC} = \frac{D}{D+E} \times r_D + \frac{E}{D+E} \times r_E = \frac{0.02}{1.02} \times 7.28\% + \frac{1}{1.02} \times 7.28\% = 7.28\%$$

Summary of Case

Marriott Corporation is made up of three divisions:

- Lodging
- Restaurants
- Contract Services

They are looking for the cost of capital for each of their divisions.

How would using a single corporation hurdle rate affect the company over time?

As different divisions have different systematic risks and leverage levels, using a single corporation hurdle rate to evaluate investment opportunities would be inappropriate. Risk for the whole corporation would be lower than the risk for the single project because risk for the whole corporation is more diversified.

- If hurdle rate is too low, more projects will be accepted.
- If hurdle rate is too high, fewer projects will be accepted.

This could ultimately result in investments which are not aligned with overall objectives.

Cost of Capital for Each Division

Scenario 1: Equal weighting for comparable company betas

Equal weighting for comparable company betas means that each division's cost of capital is calculated based on its own systematic risk and leverage ratio, but the overall cost of capital for the corporation is the average of these three costs.

Scenario 2: Revenue-based weighting

Revenue-based weighting means that the cost of capital for each division is calculated based on its own systematic risk and leverage ratio, but the overall cost of capital for the corporation is weighted based on the revenue contribution of each division.

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Cost of Capital for Marriott as a whole

To find the cost of capital, we use the following information:
 mmp=7.43%
 beta of debt=0

$$r_{LD} = r_{FD} + \beta_{LD} * MRP = 8.95\% + 0 * 7.43\% = 8.95\%$$

$$r_{SD} = r_{FD} + \beta_{SD} * MRP = 8.95\% + 1.11 * 7.43\% = 17.20\%$$

$$r_{M} = \frac{w_{LD}}{w_{LD} + w_{SD}} * r_{LD} + \frac{w_{SD}}{w_{LD} + w_{SD}} * r_{SD} = 41\% * 8.95\% + 59\% * 17.20\% = 13.82\%$$

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Cost of Capital for Each Division

Scenario 1: Equal weighting for comparable company betas

$$\beta_{M} = 0.1225; \beta_{LD} = 0.9546$$

$$r_{LD} = r_{FD} + \beta_{LD} * MRP = 8.95\% + 0.9546 * 4.2237 = 12.09\%$$

$$r_{SD} = r_{FD} + \beta_{SD} * MRP = 8.95\% + 1.11 * 4.2237 = 13.69\%$$

To find overall beta, overall cost rate is the sum of the weighted department beta

$$\beta_{M} = \beta_{LD} * \frac{w_{LD}}{w_{LD} + w_{SD}} + \beta_{SD} * \frac{w_{SD}}{w_{LD} + w_{SD}}$$

$$0.1225 = 0.9546 * \frac{0.41}{0.41 + 0.59} + \beta_{SD} * \frac{0.59}{0.41 + 0.59}$$

$$0.6549 = 0.1225 * 0.339 + 0.5946 * 0.46 * \beta_{SD} \rightarrow \beta_{SD} = 0.770549$$

$$r_{LD} = 8.95\% + 0.9546 * 4.2237 = 12.09\%$$

$$r_{SD} = 8.95\% + 0.770549 * 4.2237 = 12.29\%$$

Scenario 2: Revenue-based weighting

$$\beta_{M} = 0.4113; \beta_{LD} = 0.8436$$

$$r_{LD} = r_{FD} + \beta_{LD} * MRP = 8.95\% + 0.8436 * 4.2237 = 12.60\%$$

$$r_{SD} = r_{FD} + \beta_{SD} * MRP = 8.95\% + 0.8436 * 4.2237 = 12.62\%$$

To find overall beta, overall cost rate is the sum of the weighted department beta

$$\beta_{M} = \beta_{LD} * \frac{w_{LD}}{w_{LD} + w_{SD}} + \beta_{SD} * \frac{w_{SD}}{w_{LD} + w_{SD}}$$

$$0.4113 = 0.8436 * \frac{0.41}{0.41 + 0.59} + \beta_{SD} * \frac{0.59}{0.41 + 0.59}$$

$$0.6549 = 0.3479 * 0.113 + 0.1270 * 0.46 * 0.16 * \beta_{SD} \rightarrow \beta_{SD} = 0.81729$$

$$r_{LD} = 8.95\% + 0.8436 * 4.2237 = 12.60\%$$

$$r_{SD} = 8.95\% + 0.81729 * 4.2237 = 12.62\%$$

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$$r_{LD}^D = r_{LD}^E + \beta_{LD}^D * MRP = 8.95\% + 0 * 7.43\% = 8.95\%$$

$$r_{LD}^E = r_{LD}^D + \beta_{LD}^E * MRP = 8.95\% + 1.11 * 7.43\% = 17.20\%$$

$$r_{MC} = \frac{w_D}{w_D + w_E} * r_{LD}^D + \frac{w_E}{w_D + w_E} * r_{LD}^E = 41\% * 8.95\% + 59\% * 17.20\% = 13.82\%$$

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Scenario 1: Equal weighting for comparable company betas

$$\beta_{LD}^D = 0.1225; \beta_{LD}^E = 0.9566$$

$$r_{LD}^D = r_{LD}^E + MRP = 8.95\% + 0.1225 * 7.43\% = 12.09\%$$

$$r_{LD}^E = r_{LD}^D + \beta_{LD}^E * MRP = 12.09\% + 0.9566 * 7.43\% = 17.10\%$$

To find overall beta, overall cost rate is the sum of the weighted department beta

$$\beta_{LD}^D = \beta_{LD}^D * w_D + \beta_{LD}^E * w_E = 0.1225 * 0.11 + 0.9566 * 0.89 = 0.8775$$

$$r_{LD}^D = r_{LD}^D + \beta_{LD}^D * MRP = 12.09\% + 0.8775 * 7.43\% = 14.72\%$$

Scenario 2: Revenue-based weighting

$$\beta_{LD}^D = 0.4113; \beta_{LD}^E = 0.8436$$

$$r_{LD}^D = r_{LD}^E + MRP = 8.95\% + 0.4113 * 7.43\% = 12.00\%$$

$$r_{LD}^E = r_{LD}^D + \beta_{LD}^E * MRP = 12.00\% + 0.8436 * 7.43\% = 15.22\%$$

To find overall beta, overall cost rate is the sum of the weighted department beta

$$\beta_{LD}^D = \beta_{LD}^D * w_D + \beta_{LD}^E * w_E = 0.4113 * 0.11 + 0.8436 * 0.89 = 0.8173$$

$$r_{LD}^D = r_{LD}^D + \beta_{LD}^D * MRP = 12.00\% + 0.8173 * 7.43\% = 13.02\%$$

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