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Marriott Corporation: The Cost of Capital

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Case Study #3

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EXECUTIVE SUMMARY

Introduction and Recommendation

This paper is to figure the cost of capital of Marriott Corporation for 1988 with the data given in the brief case for internal and external use of business sustainability. Marriott at that time of 1987 has three business lines (divisions) – 1. Lodging, 2. Contract Services, and 3. Restaurants, and each of the segments has their own financial strategies as they have different debt capacity and thus the risk rates vary. In this paper, I will calculate the cost of capital for the corporation as a whole, by using the weighted average of the cost of capital for each division so that it can be used to determine internal annual incentive compensation, to evaluate investment on specific projects and/or to calculate the warranted equity value for repurchases appropriately. In Hotels/Gaming industry comp data shows its WACC is 7.66% while Marriott's overall WACC I figured in this study is 7.65% so I recommend utilizing opportunities of 1988 with Marriott to expand business internally and externally.

The Problem Statement

In April 1988, the VP of project finance at Marriott Corporation, D. Cohrs was preparing his annual recommendations for hurdle rates (WACC). Cohrs was aware of several factors to consider in calculating the corporate and divisional hurdle rate such as; the negative correlation of projects' profit rate, debt on partnership hotels, warranted equity value for its common shares and coverage-based financing policy. As the divisions of Marriott have different equity ratio, we have to find the cost of capital for each divisions first, then consolidate the data by their weights in the company to be reflected into WACC. The data including betas should be adjusted for each division so we can see the weighted average as accurate as possible to the accrued amount for future reference and estimates. Also, the case itself is of nearly 20 years ago so some variables

needed to calculate Marriott's WACC are to be determined from external data during the procedure.

Analysis of the Environment

Marriott business started out with the root beer stand in 1927 during Prohibition, so its strength is business on food and beverage services and thus it ended up in 3 divisions which all provides food/beverages and lasted over 60 years as of 1988. More than half of the Marriott's profit was generated from the operation by Lodging division at that time mainly due to the durable asset compared to the other divisions' limited lives of assets. Marriott's sales was booming the last four years and to endorse its 1987 annual report which forecasts their aggressive development in business, Marriott was considering incentive compensation of 30 to 50% of base salary which seems to be pretty high in our scale said to be 10 to 25% today. ROE in 1987 was 22% but the number of which it consists of the market growth/risk such as WACC might appear to be more accurate to assume such internal spending.

Alternative Strategies

The alternative strategy is to reduce the WACC if it is relatively high in the industry however, it returned as very close. We could also consider the Contract division's lower profit margin compare to the other divisions, but it's not as critical. What they had better do for business development at the time of 1988 is to have strong brand image so closing or downsizing Contract segment should not be the option but spreading their name by expanding Hotel or Restaurant division is.

DETAILED CASE ANALYSIS

Quantitative Analysis

Marriott has three operational divisions and each calculates their financial statements respectively. This is Marriott applies its coverage-based financial policy to each of its divisions because all three of the cost-of-capital inputs could differ, however, they consolidate the data to evaluate the company as a whole to manage hotel assets, invest in projects that increase shareholder value, optimize the use of debt in the capital structure, and repurchase undervalued shares.

Cohrs is aware that the hurdle rate increase by 1% decreases the PV of inflows by 1% per below.

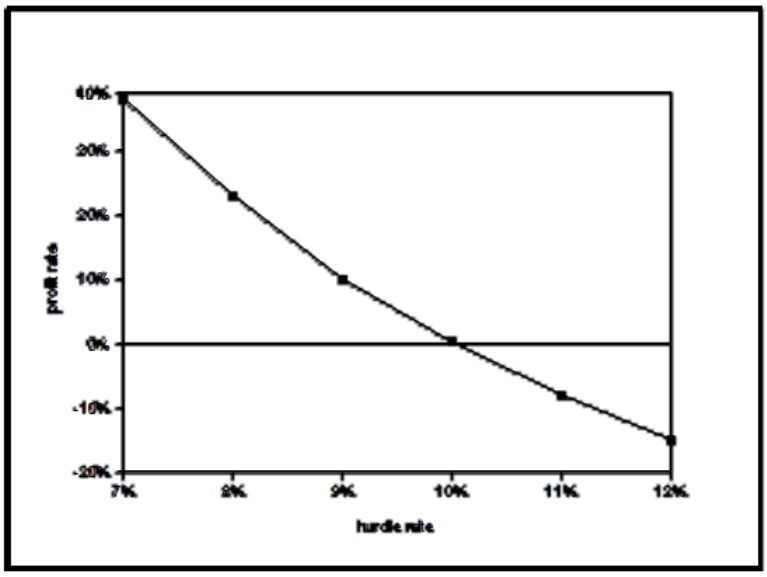

Figure A: Typical Hotel Profit and Hurdle Rates

Source: Casewriter estimates. Profit rate for a hotel is its net present value divided by its cost.

Marriott's sales grew by 24% and the ROE was 22% in 1987. From the Figure A above, to keep the profit rate more than 20% means that they need to have hurdle rate of 8% or lower.

First of all, I calculated the average cost of capital of Hotel/Gaming industry using NYU Stern's data. Unfortunately the data I could find was of from 1998 to 2016, and the oldest cost of capital is still 10 years younger than the data in this case study, so I regressed the market risk premium (slope of the cost of equity on average), on cost of capital to seek the relations and they were found to be correlated positively per below (the data is in appendix (Marriott_XLS069-XLS-ENG.xls) "Industry").

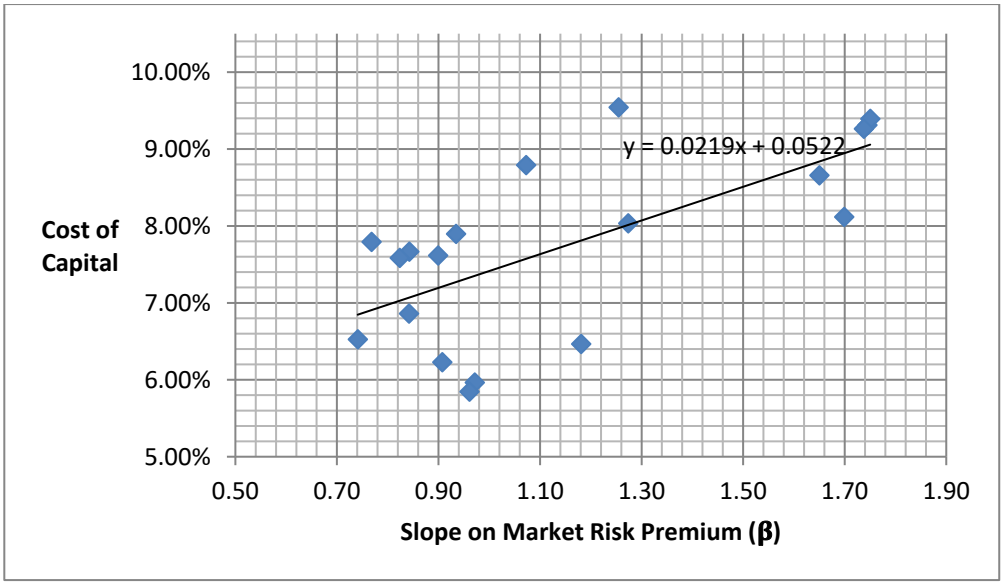

Fig. B

This means that the industry's cost of capital on average can be found in the equation below;

Estimated Cost of Capital *on Average* in Hotels/Gaming Industry

= .0522 + .0219**Slope on MRP (β)***

and if we know the beta of the company, we know what to expect. Marriott had beta of 1.11 in 1988, so by applying the Hotel/Gaming average, .522 + .0219*(1.11) and Marriott has to have

7.66% of WACC to be running at normal consistency. Again, as to keep the profit rate more than 20%, the WACC of lower than 8% needed so this 7.66% can be the benchmark of all in finding Marriott's operational advantage.

With this in mind, I like to process the WACC approach for Marriott. Firstly, each division's operational contribution to Marriott by profit amount each division makes. The total profit of Marriott in 1987 was $516.9 million and each segment's profit was $263.9M, $170.6M, $82.4M by Lodging, Contract, and Restaurants respectively and this sums up the weight of the profit as below;

Fig. C

1987	Profit	Profit Weight
Lodging	263.9	51.1%
Contract	170.6	33.0%
Restaurants	82.4	15.9%
	$516.9	1

($ in millions)

I will later use this weight to calculate the consolidated WACC at the end.

Next, we determine the components to find WACC, and we use the formula;

$$\mathbf{WACC = W_E \bullet K_E + W_D \bullet K_D(1\text{-}T)}$$

where $\mathbf{W_E}$ is weight of equity, $\mathbf{K_E}$ is cost of equity, $\mathbf{W_K}$ is weight of debt, $\mathbf{K_D}$ is cost of debt and **T** is for tax rate. For cost of equity, we use CAPM approach which will be shown in later paragraph.

Weight of debt ($\mathbf{W_D}$) out of total value for each segments are 74%, 42%, and 40% respectively as in Table A and by which the weight of equity ($\mathbf{W_E}$ = 1 - W_D) is figured as 26%, 58%, and 60% for Lodging, Contract, and Restaurant respectively.

K_D is a divisional corresponding spread over Treasury bond. In 1988, the U.S. Government Interest Rates were as shown in the Table B, where we can apply each segment's "Debt Rate Premium Above Government" in the Table A. The interest rate we use for each segment here is determined by its characteristics of business, specifically the durability of the assets they hold, thus the long-term debt rate (30-YTM) for Lodging and short-term rate (1-YTM) for Contract and Restaurant divisions. Below is the chart that I combined the

Table B U.S. Government Interest Rates in April 1988

Maturity	Rate
30-year	8.95%
10-year	8.72%
1-year	6.90%

Table A Market-Value Target-Leverage Ratios and Credit Spreads for Marriott and Its Divisions

	Debt Rate Premium Above Government	Cost of Debt (Kd)
Lodging	1.10%	**10.05%**
Restaurant	1.40%	**8.30%**
Contract	1.80%	**8.70%**

The **T** at the end of the formula denotes a tax rate. I figured the tax rate by averaging the tax rate of 1985, 1986, and 1987 as they show quiet a difference in percentage - 43% in 1985 and 47% in 1986 even though the net income marked the highest in Exhibit 1 with 44% of tax rate (median). So our T is 44.75% in this paper for WACC approach.

Fib. D

Summary of Operations	*1985*	*1986*	*1987*	
Income before income taxes	$295.7	360.2	398.9	
Income taxes	128.3	168.5	175.9	
Tax Rate	43.39%	46.78%	44.10%	**44.75%**

($ in millions)

Now back to **K_D**, I use CAPM approach to find cost of debt, and the formula is written as;

$$\textbf{CAPM} = K_E = E(r) = r_f + \beta \bullet \textit{risk premium}$$

where $\mathbf{r_f}$ is a risk free rate which is found in Table B for each divisions and the risk premium is determined as it's in the Exhibit 5 of the appendix. We also need to find the adjusted beta for each segments to plug into this CAPM model and my approach in finding beta is to first unlever the equity betas given in the Exhibit 3 and average it as a comp data, then relever it for Marriott's each segments.

Beta is unlevered by multiplying it by the equity ratio to equity and after-tax debt ratio combined as $\beta_L \bullet \left[\frac{E}{E+D(1-T)}\right]$.

For Lodging, the Hotels' unlevered betas are .70, .43, .39, and .66 from four samples. This gives us the average unlevered beta of .55, which is to be used to figure (re)levered beta for Marriott's Lodging division. To relever the unlevered data, the we simply divide the unlevered by the equity ratio to equity and after-tax debt ratio combined as $\beta_{UL} \bullet \left[\frac{E+D(1-T)}{E}\right]$.

$\beta_{\text{Lodge}} = .55 \bullet \frac{26+74(1-44.75)}{26} =$ **1.405**

In the same manner, the Restaurants unlevered betas are 1.42, 1.36, .55, .76, .80, and 1.15 from six sample variables that give us the average unlevered beta of 1.01. We relever this beta for Restaurant division and it is figured as;

$\beta_{\text{Restaurant}} = 1.01 \bullet \frac{58+42(1-44.75)}{58} =$ **1.409**

We do not have a comp data for contract business in this case but as Marriott's overall beta is regressed as 1.11 by its' five month historical data, so it can be said that the Contract division has a beta of **.517** calculated as 1.11 is an arithmetic mean.

Now we apply these numbers into the CAPM model for each segment to find cost of equity.

K_E for Lodging = 8.95% + 1.405 • 7.92% = .201

K_E for Contract = 6.90% + 1.409 • -.23% = .066

K_E for Restaurant = 6.90% + .517 • -.23% = .068

Finally with all the components above, the divisional WACCs are figured as;

$WACC_{Lodge}$ = 26% • .201 + 74% • .1005(1-.4475) = **9.33%**

$WACC_{Contract}$ = 60% • .066 + 40% • .0830(1-.4475) = **5.74%**

$WACC_{PC}$ = 58% • .068 + 42% • .0870(1-.4475) = **5.99%**

These results are pretty legitimate for a globally growing company to me, except the cost of capital for Lodging division is actually relatively high and this is due to the higher cost of debt that the division recognizes. Finally, for the consolidated company WACC, I calculate the weight by the divisions' Profit ratio to the whole according to the Fig. C.

9.33% • 51.05% + 5.74% • 15.94% + 5.99% • 33.00 = **7.65%**

and this is my WACC for Marriott as a whole for 1988.

Support of Recommendation

In 1988, expected cost of capital for Marriott was 7.66% while my result of WACC for Marriott was slightly below as 7.65% but we can say this is quite an average of Hotel industry even though the divisional WACCs vary. This means the company is growing but the risk in average level. So for investment purposes, I could say it's healthy, especially around the time when people were taking risks for riskier products for higher return around 1988. In addition, the hotel industry's WACC itself between 1998 and 2016 is 7.77% (appendix "Industry), so from this aspect the WACC of Marriott in 1988 was pretty normal that both investors and the internal

decision makers can rely on for business expansion however, the compensation of 30 to 50% of base salary is still quite high so this is where they can reduce their cost, and consider labor efficiency instead including so they can raise base salary without increasing the cost on compensation.

References

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