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Marriott Cost of Capital
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1) Marriott's financial strategy had 4 components each of which addresses its objective of aggressive growth.

Manage rather than own hotel assets

Marriott is not in the real estate business. It is not looking to increase value by buying and selling real estate. Therefore, it develops its hotels and then sells them recognizing a profit on that sale. But it still generates revenues by retaining operating control and retaining fees of 20% of profits before depreciation and debt service. By selling the assets and tying up the capital in structures, Marriott can use its cash to develop new properties and further generate revenue from operating activities.

Invest in projects that increase shareholder value

Marriott goes through an extensive analysis to find valuable projects. They determine a hurdle rate based on "market interest rates, project risk, and estimates of risk premiums". It tried to achieve consistency across projects using company wide assumptions for cash flows. Projects were audited through the life of the project to evaluate and reevaluate the assumptions. However, each division could make adjustments as such broad assumptions may not be appropriate for all divisions. They also take on projects that are similar. This helps with the accuracy of estimates as past performance can be analyzed.

Optimize the use of debt in the capital structure

Marriott realized that it can grow by expansion and that expansion requires the use of debt.

Repurchase undervalued shares

Marriott carefully determined what its share price should be through a detailed analysis of its value. When the share price fell below this value, it buys back shares. It does a thorough analysis such that when price falls it does not reevaluate the hurdle rate used to make the price estimate. Therefore, their justification for buying the shares and finding a value and growth opportunity in its own equity is good.

2) How does Marriott use its cost of capital estimate? Marriott determined a separate WACC as the measure of cost of capital for company as a whole and for each division. This makes sense as each division is like a separate company and the inputs to the cost of capital similarly is different among divisions. This WACC was updated annually.

3) To determine Marriott's overall WACC I used the equation

WACC = r(Debt)(1-Tc) * D/V + r(equity) * E/V

Since each division used a different debt sources, I calculated a separate cost of debt for each division. Also each division used a different mix of floating and fixed debt.
See attachment.

For the risk free rate of Lodging division, a longer term investment, I used the 30 year Treasury Bond rate as of April 1998 (Table B) as the fixed rate. For the floating rate, I used the historical geometric mean of Treasure Binds for floating rate from 1926-2003. (Source htttp://pages.stern.nyu.edu/%7Eigiddy/wacc.htm. This historical range is further out than the case, so this number should be revised.) I multiplied the fixed and floating rate by the fraction of fixed and floating debt for the Lodging division, 50% each (Table A).

I did a similar calculation for the risk free rate of the Restaurant division, using 10 year T Bond rate in April 1988 as the fixed rate. Since Restaurants are a longer term investment, I again used the geometric mean historical mean of T bonds as the floating rate. Since Services are a shorter term investment, I used the arithmetic mean of T Bills from 1926-2003 for the floating rate and 1 year T bill rate in April 1988 as the fixed rate.

Rf Restaurant = .07795
Rf Lodging = .06985
Rf Services = .06252

Once I calculated the risk free rate for each division, I calculated an overall risk free rate for Marriott by weighting each division cost of debt by the percentage contribution to overall profits by that division. I took the sum of the three weighted cost of the rf calculations and added the spread given in Table A of .013 to arrive at the overall cost of debt for Marriott.

Rf Marriott = .0687
Rd Marriott = .081

I calculated a tax rate of 44% by using the income taxes paid/EBIT shown in the financial data in Exhibit 1.

For cost of equity, I used the CAPM equation Re = rf + Be (rm-rf).
For the risk free rate, I used the risk free rate for Marriott calculated above. For the market rate, I used the geometric average of stocks from 1928-2003, 9.85 %.

This gives a cost of equity for Marriott as a whole of 10.17%.

For WACC, I used WACC = ra = r(Debt)(1-Tc) * D/V + r(equity) * E/V.

To determine the Equity, I multiplied number of shares outstanding by stock price is 3540M. Total assets are 5370M (From exhibit 1).
So D/V = .4652 and E/V=.5457.

This gives a WACC for Marriott of 8.26%.

4) What risk free rate, and risk premium did you use to calculate the cost of equity?
I described the process for determining the risk free rate and risk premium used to calculate the cost of equity above.

To summarize, I calculated a separate risk free rate for each division and took a weighted average of the division rates based on profits. Since each division has different length of time for investment, I used the following rates:

a) For Lodging, I used the 30 year Tbond rate for the risk free rate. Lodging investments are the most long term of the threee divisions since this involves building and renovating structures.
b) For Restaurants, I used 10 year T bond rates since building restaurants are a little more shorter term than building hotels.
c) For Contract Services, I used the 1 year T bill rate since these investments are short term such as catering and airline services.

5) I measured cost of debt, by adding the debt premium above government rate (Table A) to the risk free rate calculated for each division. To get the overall cost of debt for Marriott, I weighted each division cost of debt by the percentage contribution of that division to overall profits. I took the sum of the three weighted cost of debt calculations to get the overall cost of debt for Marriott.

6) I used the geometric mean for the longer term investments, lodging and restaurant divisions. The geometric mean takes into account the effect of compounding which is important when using when using historical returns over a long time period (in this example, Treasure bond rates from 1926-1998 were used as the risk free rate). Compounding makes a significant different in the calculation over longer time periods.

The arithmetic mean was used for calculating risk free rate for the shorter term project, contract services. Since the service division projects are less than a year, I used 1 year Treasury bill rates. Because of this short time horizon, the arithmetic mean can be used.

7) Marriott's WACC is appropriate to use when determining the value of an investment that affects the firm's capital structure. It takes into account the effect of debt and equity. So WACC should be used for projects that involve optimizing the use of debt and equity.

8) It would not be appropriate to use a single hurdle rate for the entire company. Marriott has different lines of business and is practically, three separate companies under one umbrella. Using one hurdle rate for all projects could potentially lead to overvaluing or undervaluing particular projects. It is not an accurate representation of the cost of capital since that one rate may be weighted more heavily towards one line of business.

9) I calculated a WACC for the lodging as 6.22%. I calculated a WACC of 8.62% for restaurants.

10) I used the same risk free rate that I calculated for each division as described above. I also used the geometric mean of stock returns from 1926-2003 as the market return. Using these components and the equity Beta's, I determined the cost of equity of 11.1% for Lodging and 11.7 % for Restaurants.

11) The process to calculate the cost of debt was described earlier. Essentially, I determined a risk free rate for each division and added a debt premium (table A) to that. The risk free rate was a mix of rates for floating and fixed debt.

12) The cost of debt should be different for each division since the debt financing used is different for each. Lodging uses the longest term debt since the investments have a longer horizon. Using long term T bond rates yields a lower cost of debt than for contract services for which I used 1-year T bill rates as the basis of debt. The longer term notes have a higher interest rate thus leading to a higher cost of debt.

Also each division has a different debt percentage in capital as shown on Table A. Lodging has D/A of 74%, Contract services 40%, and Restaurants 42%.

13) To get the equity Beta for Lodging, I unlevered the equity Beta's for the hotel chains, Hilton, Holiday, La Quinta, and Ramada to get the Asset Beta (see spreadsheet). I took the average of these Asset Betas and used that average to relever to equity Beta for lodging. I calculated an equity Beta of 1.422.

Similarly, for Restaurants, I unlevered the equity betas for several restaurants including Church's Fried Chicken, Collin's Food International, Luby's, and 3 others to get the asset betas for each restaurant. I took the average of these asset betas as an estimate of the Marriott Restaurant asset beta. I used this asset beta to get the equity beta of 1.415.

14) I calculated a WACC of 6.29% for contract services. Since there are no comparable companies to use for contract services, I estimated the equity beta for services using the overall equity beta for Marriott and betas for Lodging and restaurants.

The Marriott overall equity beta is 1.11.
By taking the sum of the weighted division equity betas, we can derive the contract service beta equity. The weight is percentage of total assets for that division. For example, from Exhibit 1, we find that total assets are 4582M. Exhibit 2 gives the assets for each division, 2777M, 1237M, and 467M for Lodging, Contract Services, and Restaurants respectively. This gives weights of .606, .1019, and .2699. So equating the overall Marriott equity beta to the weighted betas of each division, we get:
1.11=.606*1.095 + 1.35*.26996 + Be(services)*.1237

Solving for Be (services) yields .383. Using this Beta, the WACC for contract services is 6.29%.

Thoughts about Case

My WACC numbers seem very low when compared to the typical hurdle rates shown in Figure 1. One reason is that I used historical averages over a longer time frame and these averages are lower than the averages for the actual time period. Also there is a big difference between using arithmetic and geometric means. There is almost a 2% difference between these means for the 1926-2003 time period. As described earlier, I believe it is more appropriate to use a geometric mean for longer term investments because of the compounding effect.

Lodging appears to be the best investment generating 41% of sales but over 50% of the profits and thus the highest profit margin. It also has the lowest hurdle rate. So Marriott, should continue to focus most of their business in the lodging segment. Contract Services comes next.

Restaurants have the highest hurdle rate of the three divisions. This division also contributed the least to overall profits (16%). This may indicate that investments in this division have been riskier and have not had exceptional returns.