***Midland Energy***

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The cost of capital is a centrally important calculation for Midland Energy because it is used to compare a new venture to Midland’s general operations. It can be thought of as the opportunity cost of Midland’s capital, or the return that could be generated by investing elsewhere in the company. As a senior analyst reporting to the CFO, your cost of capital will be referenced by upper management when deciding which projects Midland should pursue, ignore, or divest. Currently, your estimates are being used in the decision-making process for accounting, capital budgeting, mergers and acquisitions, performance reviews, and stock repurchase agreements. Since your calculation is widely used throughout the entire organization, your inputs should be as inclusive as possible to include all facets of operation. This way, your cost of capital calculation can be used in any division of Midland Energy without fear that a niche operation isn’t included.

To calculate the corporate WACC for Midland Energy we first had to find various calculations to input into the formula. The first step was calculating the company’s average tax rate by dividing the taxes paid by income before taxes for the 3 years listed and finding the average rate for those 3 years. Next, we used the current beta, average tax rate, and current debt-to-equity ratio to unlever the beta. We then re-levered the beta using the company’s target capital structure to find a new beta of 1.33. The next step in the process was finding the cost of debt by taking the 10-year U.S. T-bill rate of 4.66% and adding the consolidated spread to treasury rate of 1.62% given in Table 1. We then found the cost of equity by using the same T-bill rate, the new levered beta of 1.33, and an EMRP of 5%. Plugging all of these components into the WACC formula leads to a corporate WACC of 8.12% for Midland Energy Resources. The company’s choice of 5% EMRP is appropriate for the current market conditions but looking at historical EMRPs it would be wiser to use a number closer to 6% as the period from 1987-2006 has averaged an EMRP of 6.4%.

If Midland were to use the same hurdle rate for all divisions, it would not give an accurate picture of the different risks associated with each division. The exploration and production division has much smaller revenues but on larger margins. The division also requires a lot of more capital expenditures than their other divisions. E&P is expected to continue growth and has an A+ credit rating leading one to believe it would be less risky than the other divisions. Refining and marketing brings in high revenues but also operates on small margins relative to the other divisions. R&M has a BBB credit rating signifying a riskier investment. The petrochemicals division operates on low revenues but good margins while requiring few capital expenditures. All these differences show that there is a significant separation in risk for each division of the company and should each be discounted using individual hurdle rates calculated for each division.

Calculating the cost of capital for Midland Energy divisions E&P and Refining was a similar process to finding the overall corporate WACC. The spread to treasury was given to us for each division and the 10-year T-Bill rate was also given. We used these number to calculate an Rd of 6.26% for E&P and an Rd of 6.46% for refining. Then, to find Re, we had to start by calculating the new levered beta for both Refining and E&P. We unlevered the industry average beta for each division (using the formula) and then found the target D/E ratio for each division (D/V divided by E/V). With that information, we calculated the new levered beta as 1.403 for E&P and 1.26 for refining. With those numbers calculated, using the EMRP and the 10-year T-bill rate, we calculated an Re of 11.67% for E&P and an Re of 11.46% for refining. We then used all the given and calculated variables (including the average corporate tax rate) to calculate a WACC of 8.04% for E&P and 9.11% for refining. The WACCs differ from one another due to the risk of each division. If a certain division (such as refining) has higher risk involved, the WACC will be higher to adjust for the risk. You cannot use an overall WACC to evaluate other projects or company divisions if their risk is not consistent.

To calculate the cost of capital for the Petrochemical division we had to find its levered beta and weight. We could then input them into the WACC formula to calculate an individual cost of capital for that division alone. Since we are given each divisions asset in millions of dollars in exhibit 3, we can calculate each divisions weight. Using the most recent data from 2006, we find a weight for the Petrochemical division of 10.84%. Since we are already given estimated levered betas from the other two divisions and Midland Energy overall, we can solve for each division’s unlevered beta. Once we have unlevered betas for the E&P, R&M, and the general company, we multiplied all known betas by their division weights and solved for the unknown, which is Petrochemicals unlevered beta. We assumed a tax rate of 39.72%, which was the average over the previous three years. At this point, we were able to calculate the Petrochemical division’s levered beta using D/E of 66.67%, derived from the target D/V value of 40% in Table 1. The levered beta was calculated as .561, and we know had all the pieces ready for the WACC equation. We received a Petrochemical WACC of 5.93%, and now have a consistent benchmark which can be used to evaluate projects inside the division.

Grade 38/40

Comments:

Report: - Missing summary table(s) with main findings. - Format is not professional. Justify paragraphs. Separate into sections. All calculations seem OK.

Roberto Stein , Feb 18 at 2:49pm