

Capital asset pricing model and bond yield essay sample



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Main issues:

Evaluation of two possible products:

1. NPV of two possible products

2. WACC analysis

-CPAM

-Bond yield plus

Recommendation:

Product B (aircraft) will be suggested due to the situation of the company. —If there are enough funds for the company, product A is also acceptable

Analysis

Summary:

High Mountain as a technology company, now has two possible business opportunities. Product A: GPS transmitter which can be placed to children's shoes and expensive personal belongings SWOT analysis:

* Strength: 1. Quick producing process

2. no additional equipment required

3. High demand

* Weakness: 1. no salvage value

2. high competition

* Opportunity: 1. big potential market about children daily care 2. acceptable to high-end important personal belongings

* Threat: 1. Information availability legality issues against personal privacy 2. fast development and update requirements.

Product B: unmanned surveillance aircraft for military or government use

SWOT analysis:

* Strength: 1. Low risk(government and military involved) 2. Low competition

3. High demand

* Weakness: 1. High capital required

2. Slow product process

* Opportunity: 1. Highly required in military

2. Increase goodwill of the company

* Threat: 1. Limited business area

2. High product quality required(high responsibility for products) 3. Legal issues

Weighted Average Cost of Capital Analysis (WACC):

In this case, we use WACC as the required rate of return to calculate the company's net present value. The CAPM theory is being used here to find the cost of equity and yield to maturity to be its cost of debt. Cost Of Equity by Capital Asset Pricing Model (CAPM model):

Formula:

The risk free rate is 4%(20-year Government of Canada spot rate), the marker risk premium is 5%, the Beta is 1. 388 which we use regression to get it. (yellow highlight)

Then, we get the cost of equity is $0.04 + 1.388 * 0.05 = 0.1094$

Cost Of Debt:

The maturity of bond is 10 years, the coupon rate is 6.77 cent per and

current price is \$98.56. Based on those, we get the yield to maturity is 6.98%, which also means the cost of debt is 6.98% WACC:

formula: tax: 30%

The weight of debt is 40% and the weight of equity is 60%. The WACC = 0.

$0.0698 \times (1 - 0.3) \times 0.4 + 0.1094 \times 0.6 = 0.085184$ The advantage and

disadvantage of cost of equity by using CAPM: The primary advantage is this model relates return to the risk which is a general behavior of all the investors. We better choose this CAPM also because there are no extra financial reports to provide for us, which means we cannot forecast its earning per share or dividend. For the other side, the Beta are hard to get in because there are host of calculation here. Also, the market's sensitive which brings a lot of problems to the situation. The most important part is all the calculations based on the past data, so the result seem to be change frequently.

Bond yield plus analysis:

We use bond yield plus risk premium approach as our second method of evaluating our cost of equity. Since cost of debt calculation did not change we still use 6.98% as our rate. The formula of calculating cost of equity is:

$r_e = r_d + \text{Risk premium}$

It means the return on equity equal the spread between company's bond and stock plus current bond yield. Base on the data we can find, r_c is the current bond yield (6.98%); the geometric mean of the stock return for past five years is 8.27%. the trickiest part was the 5-year bond yield of the company. There are no available data for that. But we find the five-year

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Treasury bond rate was 3% at that time. The current spread between treasury and company bond was 2.98% ($6.98\% - 4\% = 2.98\%$). We assume that the risk between the company and market did not change so the spread will remain 2.98%. So the company bond yield at for past five years will be 5.98% ($2.98\% + 3\% = 5.98\%$). As the data showing above the risk premium equals 2.29% ($8.27\% - 5.98\% = 2.29\%$). Put all the data in the formula, re is equal to 9.27% ($6.98\% + 2.29\% = 9.27\%$) By putting all the data in the formula, we get our WACC= 7.5% Use our WACC in our projection, we find the negative NPV for the GPS transmitter but positive NPV on aircraft. The company should do the second project instead of first one. Even the calculation on WACC is estimate, we still believe the aircraft project is much better than first one.