Teach yourself how to build a Business Case for any industry including mining

10 Hands On Modelling – Discount Rate & Country Risk

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This website may contain errors so always check your own work and have it audited by a competent person.

This module has personal opinions!

The purpose of this module is to touch on **Discount Rate**, Hurdle Rate & Country Risk **#1: Revenue** Level 3: Decision making #2: Capex 0 0 8 8 8 8 80 25 831 via million Level 2: Evaluating the business/project Contraction and Contraction and Contraction and Contractions and Contractions and Contractions and Contractions and I II Ph N M 104 61 55 5 5 5 II 101 50 50 5 5 5 III 101 50 50 50 50 5 IIII 5 5 50 50 50 5 5 IIII 5 5 50 50 50 5 5 IIII 5 5 50 50 5 Level 1: Hands-on economic modelling #3 Opex #4: Taxes Cashflow (incl NP

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Discount Rate – Precision & Accuracy

Methods for Country Risk

Discount Rate: -

Discount rate is well defined in publications on financial theory. This website does not pretend to be expert.

Methods of Selecting a 'Discount Rate': -

In many industries the selection of discount rate has evolved in different ways:
Some companies have a sophisticated approach that uses classical financial theory
Some companies have an unsophisticated approach that uses WACC
Some companies find out what others are using and adopt a similar rate
Other companies have morphed it into a 'hurdle rate'
Other companies use 'payback' instead of discounting.

So your first task is to find out what your company means by 'discount rate'!



Method #1: Using Classical Financial Theory

I have learned over the years that computing discount rate correctly is a special skill of people expert in financial theory.

• It is definitely not a WACC calculation of the existing company!

I understand that it needs to be computed for the <u>particular industry of the target investment</u>, in its country, and then adjusted for the debt level of the company.

- If a base metals company based in South Africa is assessing an investment in a gold mine in Canada then it needs to compute the discount rate for the gold industry in Canada and not use its own discount rate for base metals in South Africa.
- I recall an enthusiastic very senior executive in a major miner working secretively for months to sell off the coal processing plants to an infrastructure company. He argued that an infrastructure company has a lower discount rate than a mining company and so can pay more for the same asset. I understand he was completely wrong. He later departed. Both companies should use the discount rate of the coal processing industry in Australia for any investment in those plants.

So discount rate needs people who can research the **beta** for companies in that industry in that country, then make adjustments for the company's future debt levels. This is a special skill.

To compute NPV absolutely properly, there is not just one discount rate for the final net cash flow (as we nearly always do employ) but we should be using a separate discount rate for every line item within each of the four cashstreams.

- Each line item would need to be assessed for its individual risk, then be separately discounted. The hundreds of results would be aggregated for an NPV. This is possible, but might double the size of the workbook and be open to hundreds of challenges. This is generally regarded as impractical.
- There is a half-way method that may be worth testing for major long-life investments. Get a financial theory expert (who is practical) to help you estimate a discount rate for each of the four cash streams and perhaps another for closure costs. Some streams will be more certain than others and so perhaps have a lesser discount rate. See how much the NPV changes and discuss with decision makers if material.

Normally we shortcut to using just one discount rate for the final net cash flow

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Method #2: Computing a WACC

Some companies and mangers adopt an unsophisticated computation of WACC.

They make their own best calculation of the WACC for their investment or decision without going into all the detail required by financial theory.

- Either they do not understand that there is difference between 'WACC' and 'discount rate derived from Classical Financial Theory'.
- Or they believe the WACC is a close approximation.

Method #3: Copying other companies

Quite a few companies seem to look around to what others are using for a discount rate and use a similar figure.



Method #4: Using a Hurdle Rate

Some companies value their existing assets using a discount rate derived from one of the above methods.

Then when deciding whether to proceed with a capital investment or an acquisition, use a 'hurdle rate'. This 'hurdle rate' would be set above the discount rate so as to ration capital expenditure or cash for investment.

- It is a clear cut and effective way of controlling expenditure, identifying the best investments and hopefully lifting the overall performance of the company.
- Managers must be careful not to encourage cheating and overly optimistic assessments by project teams to get funding for their pet projects.
- Hurdle rate seems to be more frequently used as a filter when the market turns down and cash is short.

Method #5: Using Payback

A similar method, that is in some ways is more clear cut, would be to require a short payback; instead of using discounted cashflows.

- Mathematically payback can be in Nominal Terms are in Real Terms and payback can be measured from the start of the project or from the commissioning of the project.
- I have heard of paybacks needing to be less than three or even two years when money is tight.

Keep in mind "If an investment looks too good to be true then it probably is!" .

Discount Rate: Precision versus Accuracy

As always keep a helicopter view of the business!

- The computation of discount rate requires the estimation of several key parameters, each of which is uncertain. Each of these estimates is an opinion and so the discount rate is nothing more than the mathematical treatment of these opinions.
- Like NPV, it is not an absolute truth.

A highly experienced and respected colleague estimates that " ... there are so many assumptions in the calculation of discount rate, all of which are uncertain (ie. a range of possibly valid assumptions) to make any calculated discount rate a very imprecise computation. People don't seem to want to recognise this. My guess is that +/- 1% would be conservative. So we should look at the impact on NPV of +/-1% in the discount rate!"

His reflection on discount rate emphasises yet again, that in economic evaluation we always have to be careful not to be sucked down into using a huge amount of minute detail in an intellectually interesting area if its impact on NPV is insignificant.

It would be self-delusion to separately discount each of the hundreds of rows in your model if the precision of each individual discount rate was +/-1%.

Country Risk

A common issue is how to include country risk.

Again this website does not claim to be expert - but it can make some observations

Method 1: A very common method is to have a standard discount rate for the company across all investments (of say 8% real) and then to **add a margin** if the asset is in a risky country. To illustrate it might add 1% for marginally risky countries, or add 3% for moderate risk countries or add 5% or more for extremely risky countries. Many people believe this is fundamentally flawed logic, especially if sovereign bonds are the base.

2. Method 2: If financial theory is the basis for the discount rate then it should already have allowance for the country of location.

3. Method 3: A company can include **country risk factors** when computing the expected cash flows in each segment inside the evaluation model. For example it may reduce the sales revenue by a percentage in each year, that progressively increases. The variable operating costs and taxes would reduce correspondingly. It would not also apply a margin to the discount rate as in Method 1, as this would be double counting. If performed with a range of possible factors this method can be quite revealing and bring country risk into perspective.

4. Method 4: Some companies use their standard discount rate without any country risk adjustment then look at the **payback** to decide if they will, at least, get their money back in a reasonable time.

5. Method 5: Other companies do the economic evaluation without any country risk factors and make a **completely separate decision** on whether they want to invest or further invest in that country.

You can select any of these approaches. I am open to ideas but lean toward the practicalities of 3, 4 or 5.

Again my colleague stresses that it is important that decision makers are made aware of the method chosen and that they independently assess whether the evaluation results are sufficiently attractive for them to want to take on the country risk.

END OF MODULE