

Teach Yourself: Economic Evaluation:

10: Discount Rate, Hurdle Rate & Country Risk

The purpose of this module is to ...

Level 3: Decision making

Level 2: Evaluation



touch upon discount rate,
hurdle rate and country risk

Level 1: Hands-on economic modelling

Discount Rate and Hurdle Rate

Discount rate is well defined in recent texts on financial theory.

This website does not pretend to be expert

In the mining/minerals industry it has evolved in different ways:

1. Some companies have a sophisticated approach that uses classical **financial theory**
2. Some companies have an unsophisticated **WACC** approach – for good reason or through being uneducated
3. Some companies find out what others are using and adopt a similar rate
4. Other companies have morphed it into a '**hurdle rate**' to filter out low return investment and decisions.

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

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 not a WACC calculation of the existing company.
- ▶ I understand that it needs to be computed for the particular industry of the target investment, 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 in base metals in South Africa.
 - I recall an enthusiastic senior executive in a major miner working secretly for months to sell off the coal processing plants to an infrastructure company using the incorrect argument 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.
- ▶ 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 major.
- ▶ Normally we shortcut to using just one discount rate for the final net cash flow.

WACC

Some companies and managers 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 believe that the sophisticated computation of financial theory can be approximated by a simpler WACC computation. If needs be it can be adjusted by best estimate to fit the target industry, its country and debt.
- ▶ Or sometimes the senior managers and Board do not know of the theory behind discount rates and leave it up to an in-house 'specialist' or a self-confident consultant to generate a WACC.

Copy Others

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

Hurdle Rate or Payback

Some companies have one discount rate when valuing assets, then have another rate when deciding whether to proceed with an investment.

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. As an illustration some companies have adopted 15% real as a hurdle.

A similar method, that is some ways is more clear cut, would be to require a short payback.

As an illustration 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 & 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 a WACC calculation, all of which are uncertain (ie. a range of possibly valid assumptions) to make any calculated WACC a very imprecise approximation. 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 or 10% 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.
- Method 2:** If financial theory is the basis for the discount rate then it should already have allowance for the country of location.
- Method 3:** A company can include country risk factors when computing the expected cash flows 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 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.
- 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.
- 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 makes the point 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