Information Note

Default values for the expected return on equity

I. Background

1. This note provides an explanation on the "Default values for the expected return on equity", as contained in Appendix A of "Draft revision to the guidelines on the assessment of investment analysis" recommended by the forty-ninth Meth Panel meeting.

II. Objective of the Appendix

2. An important component of additionality assessment is the determination of the profitability of CDM projects, by comparing the expected return of the CDM projects with that of the baseline (investment comparison analysis) or a particular benchmark (benchmark analysis). If the expected return is lower than the benchmark, then the project may be considered additional.

3. The expected return of the project is in many cases expressed as an Internal Rate of Return (IRR). There is sufficient CDM Executive Board guidance on how to calculate the IRR. However, how to establish the benchmark is subject to different interpretations. Benchmark analysis requires a reference rate of return against which investments are measured (hurdle rate). If the return of a project exceeds the hurdle rate, the project is deemed worthy of investment (and therefore can be interpreted as the baseline). The hurdle rate can be calculated as the weighted average cost of capital (WACC), which is the weighted average cost of obtaining finance in the form of equity and debt. Mathematically, this is denoted as follows:

$$WACC = k_e \times r_e + k_d \times r_d \times (1 - T)$$

4. Where T is the applicable tax rate, k_e and k_d are respectively the proportion of equity and debt, and r_e and r_d are the cost of equity and debt respectively. r_d is based on weighted average cost of debt financing (e.g. lending rate). This leaves r_e, the cost of equity, which is the minimum expected return an investor expects when providing equity. Therefore the cost of equity is identical to the expected return on equity.

5. While most companies have a clear internal benchmark, justifying why it has been set at a certain level is often complex and has resulted in complicating validation and registration of CDM projects. To help address this, a set of default values are provided in Appendix A of the draft revised "Guidelines on the assessment of investment analysis".

III. Structure of cost of equity

6. Cost of equity is a summation of the following:

(a) Risk-free rate of return;

(b) Risk premium;

(c) Sovereign risk;

(d) Sector risk.

7. Each are described as follows:

(a) Risk free rate of return:

A risk free rate provides the foundation of the return on equity, where a certain return is more or less assured. Returns on investment must be higher than this, otherwise investing itself becomes pointless.

Strictly speaking, no investment is risk free, but as a proxy, the return on an asset with a minimal risk of default is used as a risk free rate. Sovereign bonds are usually the least risky investment in a given country, and are frequently used as a proxy for risk free rate. However, this does not apply to a country with a risk of default. The US Treasury bond has a long history of data, is a global liquid asset, and its risk of default is minimal (since the US dollar is the world's reserve currency). The long-term average return is 3.0%,[1] which is used in the draft revised guidelines as a risk free rate.

(b) Risk premium

Risk premium is a premium for putting an asset at risk. For this purpose, the actual returns earned on stocks over a long time period, in comparison to the risk free rate, can be interpreted as a proxy for economy-wide risk premium. The risk premium can be calculated using a Capital Asset Pricing Model (CAPM), taking into account volatility of the shares of the company and of the stockmarket as a whole. While this is frequently used in companies in mature markets, it is not suited in many developing countries (CDM host countries) where stockmarkets are small and do not have a history to derive a reliable figure. Again, the US stock return over a long term provides the most ideal figure since this is by far the largest and most liquid market and one which provides data over the longest term. The figure of 6.5% is deemed suitable.[2]

(c) Sovereign risk

Since both the risk free rate and the risk premium are based on US figures, the remaining task is to extrapolate to other countries. It follows that investing in developing countries (as CDM requires) entails more risk, which should be reflected in expected returns on investment in these countries. This is mostly reflected in the sovereign risk of default, which is shown in sovereign default swaps issued by rating agencies. For countries where such indices are not available (the index was available for 29 developing countries), this data was extrapolated by their per capita Gross National Product (GNP), which is known to be well correlated (negatively) with sovereign default swaps. In this way, sovereign risk for all countries can be calculated.

(d) Sector risk

The summation of the above figures represents the market-wide risk premium, and does not represent risks innate in given sectors. This is calculated as follows:

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[1] Based on real returns on US long-term compounded average returns of US treasury bonds over the period 1954 to 2007 (3.02%).

[2] Annualized equity premium of US stocks relative to bonds 1990 – 2005, 6.5%.

Group	Figures	Rationale
Utility sector and waste industries	Equal to market-wide risk premium	The sector is typically regulated and guaranteed by a regulatory body
Manufacturing Industries	market-wide risk premium +1.0%	
Agriculture and reforestation	market-wide risk premium – 0.5%	Based on past study: risk is deemed lower since the sector is often subject to subsidy

IV. Impact assessment of the use of default values for the cost of equity

8. An analysis of 50 CDM projects in 27 countries (of which only 24 projects use the IRR to demonstrate additionality) was carried out, substituting their stated equity returns for each of these projects with those obtained with the approach described above. When the default values for the cost of equity were applied instead of the values stated in the PDDs, only one out of 24 projects would have been affected (i.e. conclusions with respect to additionality would have been reversed).

V. Conclusion

9. From the above, it can be concluded that the default values are based on current economic theory and offer consistent methods of assessment while not changing the outcome in the assessment of additionality in a fundamental way. From the view of project participants, default values are beneficial as they will spare cumbersome and sensitive verification procedures of investment analysis. Road-testing with various CDM projects indicates that this is unlikely to give a drastically different outcome with respect to additionality.

10. Much of public comments concerns that the default values are lower than what is commonly observed. This is not surprising, because for the type of investment where any person can invest, the project participant with the lowest hurdle rate will be the first to invest (e.g. companies who can borrow at a lower rate or whose investors are satisfied with a lower return can win over companies who are otherwise). Also, comments pointing out to high risk free rates in some host countries should be cautiously regarded as they include other risks, most notably risk of default and currency risk.

11. However, the remaining task is to establish a framework on revising the values. Risk free rate and risk premium figures are based on long-term research, and are likely to remain stable. However, sovereign risk figures fluctuate, and therefore need periodic revision. Overly frequent revision, however, would burden the secretariat and add confusion to the validation process, so an annual revision is suggested.

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History of the document

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