



Development Finance Appraisal Models

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Financial and Economic Appraisal of Investment Projects

South Africa is a country facing many difficulties, unemployment being one of the key issues. Statistics show that 1 in 4 people in South Africa are currently unemployed. The role of development finance institutions in South Africa will play a key role in improving unemployment and ultimately achieving the government's 2020 target of creating five million new jobs.

With the above in mind, we present to you our research and conclusions on the financial and economic appraisal tools used by development finance institutions to evaluate the investment decision.

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Background



Development finance can be defined as the provision of finance to projects or sectors of the economy that are not sufficiently serviced by the traditional financial system (Gumede, et al., 2011). With this in mind, it is important to make a distinction between development finance and public finance. Public finance may invest funds in non-revenue generating projects for the public good, where development finance focuses on projects that are financially sustainable and will have acceptable financial returns. Moreover, the projects in which development finance institutions (DFI's) invest, should seek to address financial market failures to ensure the development of the economy.

According to a paper by the Development Bank of Southern Africa, DFI's play a crucial role in addressing financial market failures such as:

- The correct appraisal of economic and social impacts of investing in projects that require financing;
- Assisting entrepreneurs who may not qualify for funding through traditional channels, such as banks, with the provision of long-term financing as well as business support;
- Identifying sectors that are crucial for stimulating economic growth and providing them with technical assistance;
- Facilitating the financing of projects, thereby attracting further investment; and
- Providing liquidity during economic downturns and cyclical slumps by offering financing to projects in order to assist in mitigating the negative economic effects of the above.

DFI's use the same appraisal models that would be used in any normal business environment, facing an investment decision. The appraisal models use a systematic approach, to ensure consistent application of financial and economic principals.

Therefore the aim of this paper is to briefly outline the financial and economic appraisal models used internationally to evaluate the investment decision of projects that are funded by DFI's and how it can be implemented in the South African development finance sector.

Key considerations

2

Before an appraisal methodology is adopted, it is crucial to consider the following concepts that may impact how various DFI's invest in projects:

Discount rate

An appropriate discount rate to be used in the models should be calculated. However, this paper does not deal with the calculation of this rate and, the discount rate referred to in this paper is stated as "a suitable discount rate."

Mutually exclusive versus independent projects

Mutually exclusive projects are projects where only one out of several alternatives can be chosen (Skae, 2012) whereas independent projects are those where the acceptance of one project has no impact on the ability to invest in another project.

The effects of capital rationing

This becomes applicable when a DFI does not have sufficient funds to invest in all the projects it has identified as viable and therefore has to ration its capital between projects. The effects of capital rationing may affect a DFI for a single financial period or over multiple periods. The implementation and duration of capital rationing may affect the level of funding provided to projects (Skae, 2012).

Divisible versus indivisible projects

Divisible projects are those where it is possible to fund only a portion of the project allowing projects to be increased or decreased in size (Skae, 2012). Conversely, indivisible projects need to be funded in full before the project is possible.

In addition to the above, when developing an appraisal methodology, it is vital to test the reasonability of the value arrived at by a specific model. This may be done by using two additional models in conjunction with the main model. If the value of the main model falls between the

values produced by the alternative models, the appraisal can be considered to be reasonable.

Alternatively, if it falls outside the range of the values produced by the main model, the assumptions and inputs of the main model should be reassessed for reasonability. The reason for assessing the reasonability of an appraisal methodology is to avoid instances where positive factors lead to the overestimation of value and vice versa.

A matter often forgotten in the appraisal process is the consideration of qualitative factors impacting the quantitative factors. That said the following models are explored in more detail:

Financial

Discounted payback period, discounted cash flow, internal rate of return and modified internal rate of return and multiples.

Economic

Cost benefit and option appraisal.

Financial appraisal models

Discounted payback period

The discount payback period is one of the most basic methods of appraising an investment as it gives the investor the “gut – feel” (Skae, 2012) for risk associated with the project. The longer the project payback period, the greater the risk involved. This method makes provision for the time value of money in the appraisal methodology by discounting the cash flows of the project at a suitable rate to arrive at a present value. Moreover, this method is mainly used at the beginning of the investment decision by using it as a screening method.

The application of this model to development finance is especially important since the length of a payback periods will affect how rapidly new projects can be invested in, the shorter the payback period the faster new projects can be financed.

Discounted cash flow

In its simplest form, the discounted cash flow (DCF) valuation model requires that future cash flows be estimated and then discounted back at a suitable discount rate, in order to determine the net present value of a project. The net present value (NPV) calculated by the model is then used to evaluate the attractiveness and potential of the project. If the NPV of the project is greater than the financing required, then the project is accepted, if not it is rejected.

The model is made attractive in that it provides an actual monetary figure that is easily comparable to the initial investment amount or the NPV of another project. Further, adding to the attractiveness of this model is that it provides insights into the key drivers of value for a specific project such as expected revenue, the cost of financing equity and debt, the major expenses, capital outlays and working capital requirements. This model therefore depicts a thorough image of all the factors affecting the success of the project.

Nevertheless the DCF is a mechanical valuation tool which makes it subject to the principle that if inaccurate, insufficient data is entered into the model then an inaccurate value will be produced by the model (Investopedia , 2016).





Internal rate of return (IRR) and modified internal rate of return (MIRR)

The internal rate of return is a model that calculates the discount rate where the NPV of the project would be zero. Therefore if the calculated IRR is greater than the weighted average cost of capital (WACC) the project is accepted. There are, however, shortcomings with this model, primarily in that it assumes cash inflows are reinvested at the IRR.

To overcome this problem the MIRR model was developed. MIRR assumes that all cash outflows take place at inception of the project (T0) and all cash inflows at the last period of the project (Tn). This then requires that all outflows be discounted to a present value at the WACC and all inflows be discounted to a future value using the WACC. Internal rate of return is then calculated as usual to give the MIRR. (Skae, 2012).

Multiples

Valuation multiples are an expression of market value relative to a key statistic that is assumed to relate to the value of the company (Suozzo, et al., 2011). Further, multiples based valuations are one of the fastest ways to appraise a project and are very useful when it comes to comparing projects that are similar.

It should be noted that appraising a project using a multiple approach has many drawbacks (discussed below) and should rather be used as a proxy to test the reasonability of the outcome of another model such as the DCF model.

The major disadvantages of multiples are:

- The model is simplistic and aggregates large amounts of data into a single metric that may skew the results of an appraisal;
- The model is static and only provides a value at a point in time;
- McKinsey states that in their experience, multiples can be misleading indicators as they ask whether companies are truly comparable, different multiples may have conflicting conclusions and multiples may be meaningful in different contexts (Goedhart, et al., 1996-2016); and
- Lastly, multiples can only be used for appraising projects that already have established cash flows and market prices, as a market price is required to determine the multiple.

Economic appraisal models

4

Cost benefit analysis (CBA)

Cost benefit analysis is defined as an analytical method used for judging economic advantages and disadvantages of an investment decision by assessing its costs and benefits in order to assess the welfare change attributable to it (Sartori, et al., 2015).

CBA is performed by determining all the positive (benefits) and negative (costs) welfare effects of the project under evaluation as well as assigning a monetary value to all these benefits and costs. These values are discounted to a present value using a suitable rate and totalled to obtain a total net benefit.

CBA only considers the direct welfare effects of the project. An example would be the direct number of people employed by the project or the direct environmental issues raised by the project. Indirect factors, such as regional growth or regional employment, should be ignored as it is difficult to quantify these costs and benefits and there is also inconsistent practice on how to incorporate this into a robust appraisal technique.

Option appraisal model

Option appraisal is a technique for reviewing the options available and analysing the positives and negatives of each option. It assists in ensuring that informed decision making takes place by following a process requiring:

- That the main objectives of a project be identified;
- That all available options with which to achieve these objectives are explored; and
- That the positives and negatives, financial and non financial of each of these options are considered in terms of the benefits they derive (Local Partnerships, 2012).

International best practice

5

International best practice based on regulations set by the European Union suggests that the DCF model is the most appropriate for financial appraisal and CBA for economic appraisal. The European Commission (EC) published a paper, Guide to Cost-Benefit Analysis of Investment Projects, in which it outlined the key principles that should be followed when performing a DCF appraisal (Sartori, et al., 2015), namely:

Only include cash flow items

It is important that only physical cash flows be included in the application of the DCF. Items such as impairments, depreciation, provisions, fair value adjustments, deferred income/expenses and changes directly in equity should therefore be excluded. Financing costs should be excluded from the cash flows used. Further, financing costs relates to the financing decision and is evaluated separately.

Cash flows resulting from working capital changes and capital expenditure should be calculated separately.

Discounting period

Cash flow forecasts should be aligned with the economic useful life of the project. Standardised periods should be developed on "project type" basis. Refer to table 1.1 in Appendix A for suitable periods used by the EC.

Discount rates

An important factor to consider when choosing a suitable discount rate is whether the discount rate is in real terms or in nominal terms. Real terms excludes the effect of inflation and nominal terms include the effect on inflation. Whichever one is chosen should be matched with the cash flows included in the calculation. For example, if cash flows include the effect of inflation, the discount rate applied should be in nominal terms. Generally, projects in infrastructure and mining will be evaluated on a real basis because of the long term nature of the project.

Impact on tax

The effect of tax should also be included in the calculation of the present value since tax will be paid to SARS every year. It is recommended that a separate calculation be done for tax, since taxable income is calculated in accordance with ruling tax legislation as opposed to accounting rules. The tax implication of interest should be excluded as this relates to the financing decision and is evaluated separately.

The following guidance and principles on the execution of CBA is provided in the EC paper. The starting point should be the financial appraisal model used, i.e. the DCF calculation for the specific project and adjusting the calculation to incorporate non-market information affecting the project as well as shadow prices instead of market prices. Shadow prices reflect the true opportunity cost, since market prices are susceptible to market distortions resulting from the following:

- Inefficient markets where the public sector exercises their power;
- Taxes such as VAT, income tax on wages/salaries and import duties; and
- Administered tariffs such as employment equity debt.

Conclusion

6

It is our view that it is suitable for South African DFI's to adopt the appraisal models based on international best practice. These models have been thoroughly tested internationally and have stood the test of time, making them useful in the South African context. However, it is crucial that a standardised appraisal methodology be developed and adopted, clearly stating the following:

- The appraisal model that is to be used as the primary model;
- Which model will act as the reasonability test and what will be an acceptable variance;
- What process is to be followed when variances are outside the acceptable levels;
- The process that should be followed when determining a suitable discount rate for the project; and
- The appropriate discounting periods.

This methodology should be approved by the relevant governing bodies and be reviewed on a rolling basis to supplement areas where there are short comings.



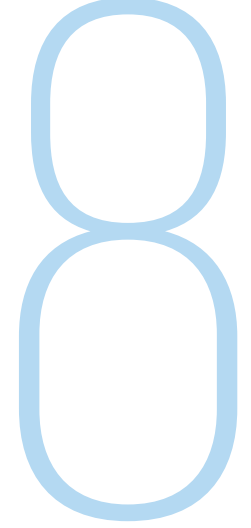
Appendix

Table 1.1

Project Type	Reference period (years)
Railways	30
Roads	25-30
Ports and airports	25
Urban transport	25-30
Water supply/sanitation	30
Waste management	25-30
Energy	15-25
Broadband	15-20
Research and Innovation	15-25
Business infrastructure	10-15
Other sectors	10-15

(David Sartori, 2015)

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