

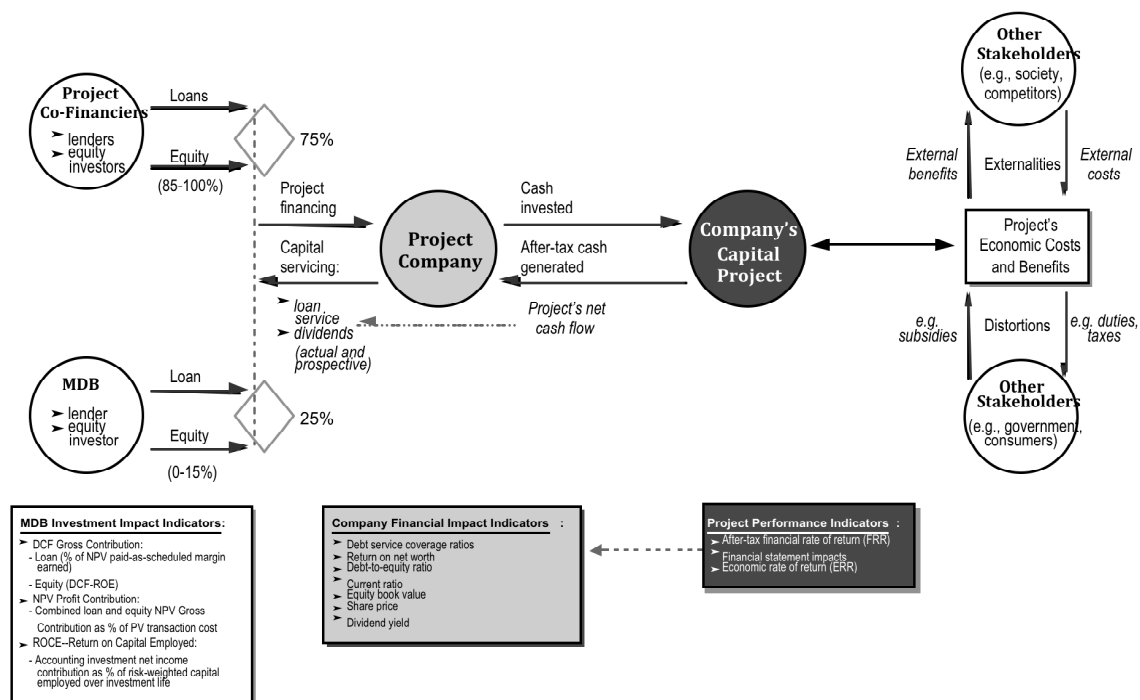
Using the FRR to rate Project Business Success

The purpose of this note is to explain the calculation of the financial rate of return (FRR), with a view, firstly to clarify the FRR concept and its determination, and secondly to apply it within the evaluation framework to rate project business success.

Background

A capital project's financial rate of return (FRR) is its yield to the company on the capital invested in it, and as such is the most informative single indicator of a project's commercial sustainability potential. It measures a project's direct contribution to: (i) the company financiers' investment returns; (ii) the company's ability to service its financing in line with its investors' expectations, and thereby serve as a pathfinder for catalyzing other investments, leading to a multiplier effect on (iii) growth of the country's private sector, economy and living standards. Well-structured projects with sufficient financial and economic robustness, while never immune to business risk and potential failure, have the best prospects for delivering satisfactory returns and becoming pioneering role models for attracting follow-on private investments and accelerating development. Figure 1 summarizes the interdependencies of the project funds flows and related performance measures for the financier, company and economy-wide results. The project's after-tax cash flow accrues entirely as returns for the account of the company's financiers.

Figure 1: Key financial flows in a typical investment project



The FRR is a common metric to measure the actual or expected rate of return to all the financiers, including both debt and equity investors, of an investment project. It is computed as the discount rate which equalizes the present value of the net cash flows from the project accruing to the financiers and the present value of the total investment by the financiers during the timeframe under consideration.

The FRR is an absolute measure of overall profitability from the viewpoint of the project as a whole, rather than from the viewpoint of a particular type of financier. An appropriate

assessment of the relative attractiveness of an investment should consider the FRR in relation to the cost of the capital being deployed by the financiers. The Weighted Average Cost of Capital (WACC) is the commonly accepted measure to compute the overall cost of capital. In general, the higher the FRR compared to the WACC, the more attractive is the investment to the financiers.¹

Cash Flow Components

The FRR computation involves assessing the amount and timing of cash income (losses) that can be claimed by the financiers, and the amount and timing of investment outlays by the financiers during the timeframe under consideration. The timeframe under consideration to calculate the FRR generally extends to multiple years (e.g., 5, 7, 10 or 15 years) based on considerations such as the commercial life of the assets, expected investment holding period for the financiers, and the ability to make reasonable forecasts.

The cash income to the financiers consists of:

- the Cash Flow Stream during the timeframe under consideration, and
- the Terminal Value of the project at the end of the timeframe under consideration.

Cash Flow Stream

Cash flow stream to the financiers includes the cash income stream that the enterprise generates, net of the cash expense stream that the enterprise incurs to operate, sustain and grow the business during the timeframe under consideration. In other words, the cash flow to the financiers during a specified period includes the sum of all cash payments that the business makes to its financiers from income that it generates from its ordinary course operating and investing activities during the specified period. Such cash payments to financiers can be in the form of interest and principal repayment to lenders, and regular dividends to preferred or common shareholders. Shareholders also receive cash proceeds in the form of special dividends or through share repurchases when the enterprise generates excess cash that it deems best to return to its shareholders. Hence, one way to calculate the cash flow stream to financiers would be to add up the various payments to financiers for each period within the timeframe under consideration.

Where project financial projections are available, the net cash flows to the financiers in a specified time period can also be computed by adjusting the accounting net income (profit) to common shareholders in that period:

- add back depreciation & amortization, and other non-cash components of the income statement which are above the net income line;
- add back interest expense and preferred dividends which are payments to the financiers; and
- deduct capital expenditures and increases in working capital which are cash outlays of the project.

Working capital is defined as current assets minus current liabilities, and refers to the cash needs of an enterprise to operate the business on an everyday basis. An increase in operating working capital indicates an increase in cash requirement (for example, due to inventory build-up) and hence is a deduction when computing the cash flow to financiers. Conversely, a decrease in operating working capital indicates a decrease in cash requirement (for example, lower accounts receivables) and hence is an addition to the cash flow to financiers.

¹ In most cases where the FRR exceeds the WACC, the net present value (NPV) of the investment is positive. However, in certain cases this might not be true. A good check is to compute the NPV of the investment using the WACC as the discount rate to see whether the NPV is positive or negative. In cases where the NPV is negative, even if the FRR exceeds the WACC, the project should be considered unattractive.

A profitable enterprise will generate excess cash (cash in excess of the operating and investing needs of the enterprise). Shareholders typically are averse to accumulating cash on the company's balance sheet and would prefer harvesting the cash. While calculating the cash flow stream to financiers, it is important to make the assumption that excess cash, where legally feasible and financially prudent, will be returned to shareholders.

Terminal Value

The investment return to the financiers is derived from both the cash flow stream during the timeframe under consideration and the terminal value at the end of such a timeframe. In calculating the expected FRR, it is critical to ensure that most of the contribution to returns is being derived from the cash flow stream during the timeframe under consideration and not the terminal value. The underlying rationale is that normal investors would expect to derive most of the returns to their investment during the investment period under consideration rather than rely heavily on value to be derived at some exit date in the future.

The terminal value at the end of the timeframe under consideration is either the realized or expected terminal market value of the business assuming a sale of the enterprise or the terminal salvage value of the enterprise's assets assuming sale of the assets. The terminal market value is defined as the expected present value of all the cash proceeds to the financiers from the end of the FRR timeframe into perpetuity. However, given the difficulty of projecting cash flows into perpetuity, general industry practice involves either assuming a constant cash flow growth rate into perpetuity from the terminal date or an estimation of the market value based on a multiple of the expected operating profit for the final (terminal) period of the FRR timeframe. For the sake of conservatism and simplicity, the recommended alternative to calculating the terminal value for a going-concern business is to assume the expected book asset value from the balance sheet at the end of the terminal period as the terminal market value of the enterprise. For capital projects where the assumption is that in the terminal year, the property, plant and equipment (PP&E) of the project is going to be sold, the salvage proceeds to the financiers of the project can be estimated as the book asset value of the PP&E. The terminal value is a residual value concept and should only play a marginal role in the overall returns proposition to the financiers.

Computing the FRR Based on Investment Typology

There exists a wide spectrum in terms of the financiers' ability to identify, allocate and measure the cash flow stream and the terminal value associated with their investment program. For some investment programs, the project can be easily identified and the cash flow associated with the project measured easily on a standalone basis. However, for corporate investments, it might be rather challenging to disentangle the financial results of the project associated with the new investment from the financial performance of the entire company.

Clearly Identifiable, Standalone Investment

Where the investment program and the cash flows from the resulting project are easily identifiable and measurable, the FRR calculation will not be hindered by attribution issues. The cash flow stream for such a project is simply the stream of cash profits (losses) the project yields during the timeframe under consideration. Such cash profits can be calculated by deducting from cash income during the period all the cash expenses in that period, including capital expenditures but excluding any payments to the financiers such as interest expense, dividends and principal repayments. Alternatively, as explained previously, the cash profits can be calculated by making adjustments to the project net income. The terminal value can be estimated based on the book asset value as described earlier under the terminal value section.

Investment Program Impacting Corporate Results

Where the financial results of the investment project alone cannot be easily identified and separated from the corporate financial results, it might be possible to compare the "with and

without project” scenarios to determine the cash flows associated with the investment program. The “without project” scenario captures the corporate status quo without the investment program. The “with project” scenario will encompass the financial results of the company inclusive of the new investment program. The cash flow streams and the terminal value to the financiers could then be computed for both with and without scenarios. Deducting the cash flow stream for the “without” scenario from the “with” scenario will provide the cash flow stream for the project. Similarly, deducting the terminal value for the “without” scenario from the “with” scenario will provide the terminal value of the project.

Non-Identifiable Investment Program

The ability to perform a “with and without project” analysis hinges on knowledge of the investment program and its significance to the company. In some cases the investment program is not clearly defined or the program might constitute a small proportion of the company’s “with project” operations, making it challenging to create “with and without project” scenarios. Under such circumstances, it would not be possible to apply the methodologies in the previous examples to compute the FRR for the investment program. Since the investment program and its effects can neither be well-articulated nor enumerated, an alternative solution is to consider the new investment as part of the overall corporate investment program and thus instead of attempting to analyze the FRR for the particular investment program, compute the return on invested capital (ROIC) for the entire company. The corporate ROIC is the proxy for the investment FRR. The corporate cash flow stream can be obtained through adjustments to net income and the terminal value estimated from the book asset value, as previously described.

Nominal versus real returns

The calculation of FRR (or ROIC) in real terms rather than nominal terms is the preferred measure as it avoids the artificial impact of inflation on returns from the investment, and makes comparison of returns over time and across countries more meaningful. To compute real FRR, financial projections should be based on prices on a “base year” (usually the appraisal year). In making investment decisions, management should compare the real FRR to the real WACC. In evaluating results, the cash flows should be adjusted for inflation to make them comparable with original projections.

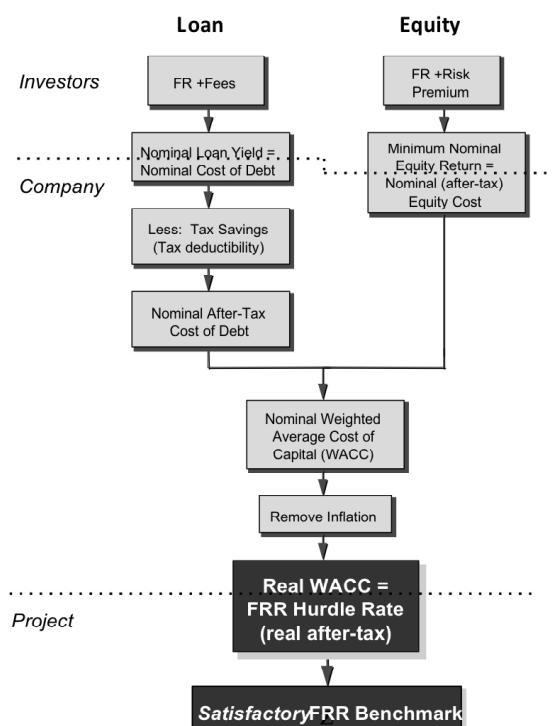
Rating Project Business Success using the FRR

The Project Business Success of a non-financial markets project is rated according to the level of its financial rate of return to the project company, measured from after-tax net cash flows in constant US\$. The first issue is where to set the lower benchmark for a satisfactory rating. Conceptually, that should be the FRR that a project company’s financiers are likely to view as minimally satisfactory in rewarding them for their country, company “with project”, and instrument risk-weighted opportunity costs, both prospectively (allowing for risk), during their investment’s life (allowing for still-to-go risk), and at exit (ex post). By contrast, the lower benchmark of the partly unsatisfactory FRR range is the rate below which the equity investors as a group are almost certainly likely to regret having made their investment, taking into account their risk-weighted opportunity costs and their own weighted average costs of capital. Defining the upper boundary of the satisfactory rating range is the benchmark for an excellent FRR. That should be where a project’s contribution to its company’s profitability is sufficient to provide its equity investors with returns that are clearly well above their varying risk-weighted opportunity costs and costs of capital.

Figure 2 illustrates the equivalence and coherence among the project financiers’ (including the MDB’s) minimum return expectations, the company’s project “hurdle rate” (minimally acceptable) FRR, and the Project Business Success satisfactory rating benchmark. Financial and economic theory holds that a firm must expect an FRR on the funds it invests in its capital projects that is at least sufficient to induce investors to purchase and/or hold the firm’s debt and equity. It follows that the threshold satisfactory project FRR must be sufficient to meet the

company financiers' (inflation-adjusted) risk-weighted² minimum (satisfactory benchmark) return requirements. The financiers' weighted average minimum return requirement, after adjustment for inflation and the company's tax savings from deductible loan interest, is in turn the project company's weighted average cost of capital (WACC). The average minimum real return requirement is the blended after-tax cost to the company of the lenders' loan yield and the project equity investors' minimally acceptable return on equity (ROE)³, adjusted for inflation. The ROE must be high enough to compensate the investors for the cost of their own funding, and also for their equity investment's higher risk relative to the company's debt (subordination in timing and liquidation, compounded by currency conversion risk in the case of cross-border investors). The FRR is a key project profitability indicator used in corporate capital budget decision-making. Most project financiers and corporate investors use it to evaluate whether a project proposal is sufficiently profitable (allowing for risk) when considered against the company's WACC. The minimum acceptable return to investors that is reflected in the company's WACC, thus defines the project FRR "hurdle rate" and the minimum FRR for a satisfactory Project Business Success rating.

Figure 2: Deriving an appropriate benchmark from investors' return requirements



² "Risk" in the first instance refers to the company credit risk as reflected in lenders' loan spreads. For simplicity, company credit risk is loosely equated with project risk, but they are not synonymous. Company credit risk is, narrowly defined, the risk that a company will not meet a scheduled debt service payment, or that in liquidation, the value of its liabilities will exceed the value of its assets. Project risk, by contrast, refers to the risk of a negative variance from the projected FRR, and to negative variances in projected period cash flows (and resulting impairment of company debt service capacity). Higher project risk increases company insolvency (and bankruptcy) risk, and it follows that in the case of greenfield projects undertaken by start-up companies, the correlation is generally higher than for an existing company diversifying its operations through an expansion project. Finally, where the project financing plan includes a higher proportion of debt, or where the project debt tenor is materially shorter than the project's life, the financial (insolvency) risk of the company increases for the same level of company credit and project risk.

³ The prospective ROE to any given shareholder is a function of that shareholder's purchase price, expectations for the company's business performance including dividend payments and their timing, the shareholder's expected exit price(s) and timing (partly a function of share market liquidity prospects), and, if a foreign investor, the exchange rates prevailing or projected to prevail at each equity cash flow date. Dividends reduce a company's net worth pro rata. The company investors' assumed exit prices reflect their capitalization (discounted cash flow present value at the purchase date) of all expected future dividends, taking into account their amounts, timing, and riskiness, including the liquidity of the market for the shares. It follows that the minimum satisfactory after-tax FRR is equal to the company's tax-, inflation- and risk-adjusted weighted average cost of capital raised from all investors, without regard to a given investor's planned holding horizon.