Estimating the Discount Rate for Mining Projects of Gol-E-Gohar Mining Complex

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ABSTRACT

Both the methods of mining project evaluation i.e. NPV and IRR require the definition of an appropriate discount rate to establish investment criteria. The conventional method to estimate the discount rate is calculating the company's cost of capital or WACC. But if a project does not have the same risk as its existing company, this approach may get a company in trouble. Calculating WACC involves determining cost of equity and cost of debt. However, the problem is mostly determining cost of equity which is estimated by some methods like CAPM, E/P and dividend growth models. To contribute the riskiness of the project, two adjustments are applied: the first for the stage of the project and the second for the category of the project. These adjustments are applied in the form of premium or discount. Using this methodology the discount rate for projects No.1 to 4 of Gol-E-Gohar are estimated 47%, 49%, 46% and 52% respectively.

INTRODUCTION

A project's cost of capital or discount rate is the minimum expected rate of return needed to attract the required capital, generally, is different from company cost of capital. The project cost of capital depends on the use to which that capital is put. Therefore, it depends on the risk of the project and not on the risk of the company (Brealey et al. 2001, p. 422) .Since the cost of anything can be defined as the price one must pay to get it, the cost of capital is the return a company must promise in order to get capital from the market, either debt or equity. The company cost of capital is usually calculated as a weighted average of the after-tax cost of debt financing and the cost of equity, simply said Weighted Average Cost of Capital (WACC). The weights are the fractions of debt and equity in the company's capital structure (Brealey et al., 2001).

$$Company\ cost\ of\ capital = \frac{debt}{debt+equity}r_{debt} + \frac{equity}{debt+equity}r_{equity}$$

Note that the values of debt and equity add up to the firm value ($D = E + V$). As the after-tax cost of debt is $r_{debt}(1 - T_c)$, where T_c is the marginal company tax rate:

$$WACC = r_{debt}(1-T_c)\frac{D}{V} + r_{equity}\frac{E}{V} \tag{1}$$

The cost of debt is the firm's borrowing rate and measures the current cost to the firm of borrowing funds to finance projects. But the cost of equity is difficult to estimate because we can't directly observe it in the market. Several models for estimating the cost of equity are presented; some of them are more popular. For estimating the cost of equity, Gordon model, P/E model and the Capital Asset Pricing Model are generally accepted.

To take into account the level of risk of the project, two adjustments are applied. These adjustments are applied in the form of premium or discount, i.e., discount rate = WACC + premium (or WACC − discount). However, in practice this method cannot always be applied. To overcome this difficulty, some alternative methods are also available.

MODELS FOR CALCULATAING THE COST OF EQUITY

There are three generally accepted models for calculating the cost of equity: the Capital Asset Pricing Model, Gordon (dividend growth) model and P/E models.

Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is perhaps the most widely used method of assessing the cost of equity capital. The basis of this method is that the return on an individual