

Mine Project Evaluations in the Rising of Uncertainty: Real Options Analysis

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Abstract : The major concern in evaluating the value of mining projects related to the deficiency of the traditional discounted cash flow (DCF) method. This method does not take uncertainties into account and, hence it does not allow for an economic assessment of managerial flexibility and operational adaptability, which are increasingly determining long-term corporate success. Such an assessment can be performed with the real options valuation (ROV) approach, since it allows for a comparative evaluation of unforeseen uncertainties in a project life cycle. This paper presents an economic evaluation model for open pit mining projects based on real options valuation approach. Uncertainties in the model are caused by metal prices and cost uncertainties and the system dynamics (SD) modeling method is used to structure and solve the real options model. The model is applied to a case study. It can be shown that that managerial flexibility reacting to uncertainties may create additional value to a mining project in comparison to the outcomes of a DCF method. One important insight for management dealing with uncertainty is seen in choosing the optimal time to exercise strategic options.

Keywords : DCF methods, ROV approach, system dynamics modeling methods, uncertainty

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