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Optimization of a Portfolio of Exploration-Production (E&P) Projects

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SUMMARY

The purpose of all companies is to create wealth; they are held to ensure a profitability at least equal to the average cost of their capital to be enough with refunding to the loans and remuneration to the shareholders. Those are sometimes faced to a whole of profitable projects where the decision to invest or give up depends closely on the limitation of the financial availabilities.

According to their resources, these companies seek to constitute a portfolio of projects which maximizes their incomes.

In order to avoid the disadvantages relating to the traditional methods, we apply the modern theory of the wallet. This theory, developed by Harry Mr. Markowitz and intended initially for the financial markets, propose to the company an optimal portfolio ensuring a good combination “value –risk” (maximal value – minimal risk) under specified constraints. This new approach takes account of the risk.

As application, we used this theory to constitute an optimal portfolio of 16 E&P projects. And we propose the use of this technique to the projects of exploration of Sonatrach, and in particular to the gas projects of the South-west of Algeria considering their characteristic.

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According to their resources, these companies seek to constitute a portfolio of projects which maximizes their incomes. That is generally carried out by the economic evaluation of all opportunities available then by the selection of a whole of projects on the basis of criterion like: NPV, IRR, ROC, POT... etc. Actually, these latters appear unsuited for several reasons:

- the difficulty in comparing investments being spread out over different durations of time,
- the absence of the notion of the risk, a typical feature of oil industry, during the analysis,
- the omission of the interactions between the various projects,
- the absence of means to check if the portfolio constructed is the best available one.

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