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**ECONOMIC ANALYSIS OF AN INVESTMENT DECISION
UNDERTAKEN BY A PURE SUPPLIER :
AN APPROACH BASED ON THE MODERN THEORY OF PORTFOLIO**

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Overview

Created in may 2002, Poweo is a new entrant on the supply side of the French electricity market. As a pure supplier the company is exposed to the market risk to satisfy her consumers needs. In 2006, the company has decided to modify its strategy and invest in some capacity production.

This investment decision raises an interesting question. As a pure supplier, the company is believed to hedge itself from the risk it may face, notably the risk on the residual position of the electricity portfolio. To achieve its hedging position the company may either negotiate some contracts on the market, more specifically on the peak hours (peak products) or it may invest in generation capacity. One thus may have expected that such supplier will try to invest in a peaking technology. Nevertheless the company has decided to invest in a CCGT plant, a technology which is more appropriate for base load generation. We have thus decided to examine the incentive of a small supplier with respect to such a decision. The paper does not investigate the investment opportunity but analyses the economic incentives which support the investment decisions.

Methods

To examine this question we carried out an investigation on the analyses of different risks which needs to be born by a pure supplier. Moreover the modern theory of the portfolio, which explains the choice of an investor through the trade-off between risk and return, helps us to understand the investment decision.

In fact, we develop a simple model which analyses the risk and the return of two technologies, a peaking technology (TAC) and a base-load technology (CCGT). In a first step of the model, we evaluate the return of the technologies as a function of the marginal cost of production, as we assume that plant schedules are optimized with respect to the market spot prices. In a second step, we determine and estimate the risk -measured as the variance of the returns- related to the technologies given their marginal cost of production. The model is evaluated for different scenarios of prices.

Results

After analysing the different risks which force the pure supplier to undertake an investment in a CCGT plant, we draw out from this paper, the conditions underwhich the return of a base-load investment (CCGT) can be potentially higher than a peaking-technology (TAC). The second major result is that the risk inherent to a CCGT investment decision is lower than the one which is inherent to a TAC given actual market conditions, as shown on the graph below. The graph plots the risk inherent to the two technologies given different level of marginal costs, and given a log-normal function of market prices.