

The Value at Risk approach

Energy utilities are among the most active and sophisticated users of financial instruments, therefore, like many other companies, they are in the business of managing risk. Loosely speaking, "risk" can be defined as the volatility of unexpected outcomes (e.g. the value of assets, or earnings). Firms are exposed to both business and financial risk. Business risk is associated to the business decisions of the company (e.g. the marketing strategy, investment decisions) and the business environment in which it operates (e.g. competition and macroeconomic risks). Financial risk is related to the activity of the company in the financial markets. Companies can either accept to bear risks passively, or attempt to create a competitive advantage by judicious exposure to risks. Financial risk management is a way of achieving the last goal and refers to the design and implementation of procedures for identifying, measuring and managing financial risks. Among many existing methodologies Value-at-Risk (VaR), is surely the one that over the years has attracted more interest among companies, institutions and researchers. Value-at-Risk measures the worst expected loss under normal market conditions, over a specific time interval, at a given confidence level; in other words, VaR estimates market risk, that is the uncertainty of future earnings due to the changes in market conditions. For instance, let us suppose that a portfolio manager has a daily VaR equal to \$1 million at 1 percent; this means that there is only one chance out of 100 that he will face a daily loss bigger than \$1 million. From a statistical point of view, the VaR is the lowest quantile of potential losses of a portfolio during a specified time period. The time period and the confidence level (the quantile) are very important parameters, that should be chosen in a way appropriate to the overall goal of risk measurement. The time horizon can differ from a few hours, for an active trading desk, to a year, for a pension fund. When the primary goal is to satisfy external regulatory requirements, such as bank capital requirements, the quantile is typically very small, say 1 percent. However, for an internal risk management model used by a company to control the risk exposure the typical number is around 5 percent.

While the natural field of application is the price of energy companies' equities it is not difficult to imagine an extension of this framework to the price of their products. In this case the relevant stakeholders are not the companies (and their equity holders) but the consumers of energy products, and the "worst expected loss under normal market conditions" derives in this case from the maximum upward increase in the energy price under scrutiny that the consumers can reasonably expect; higher prices can then be regarded as raising an affordability issue.