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Wholesale prices reflect production costs, and this theory certainly substantiates the volatility of the electricity market. Deregulation has made making market predictions difficult, but price development simulation provides a helping hand.

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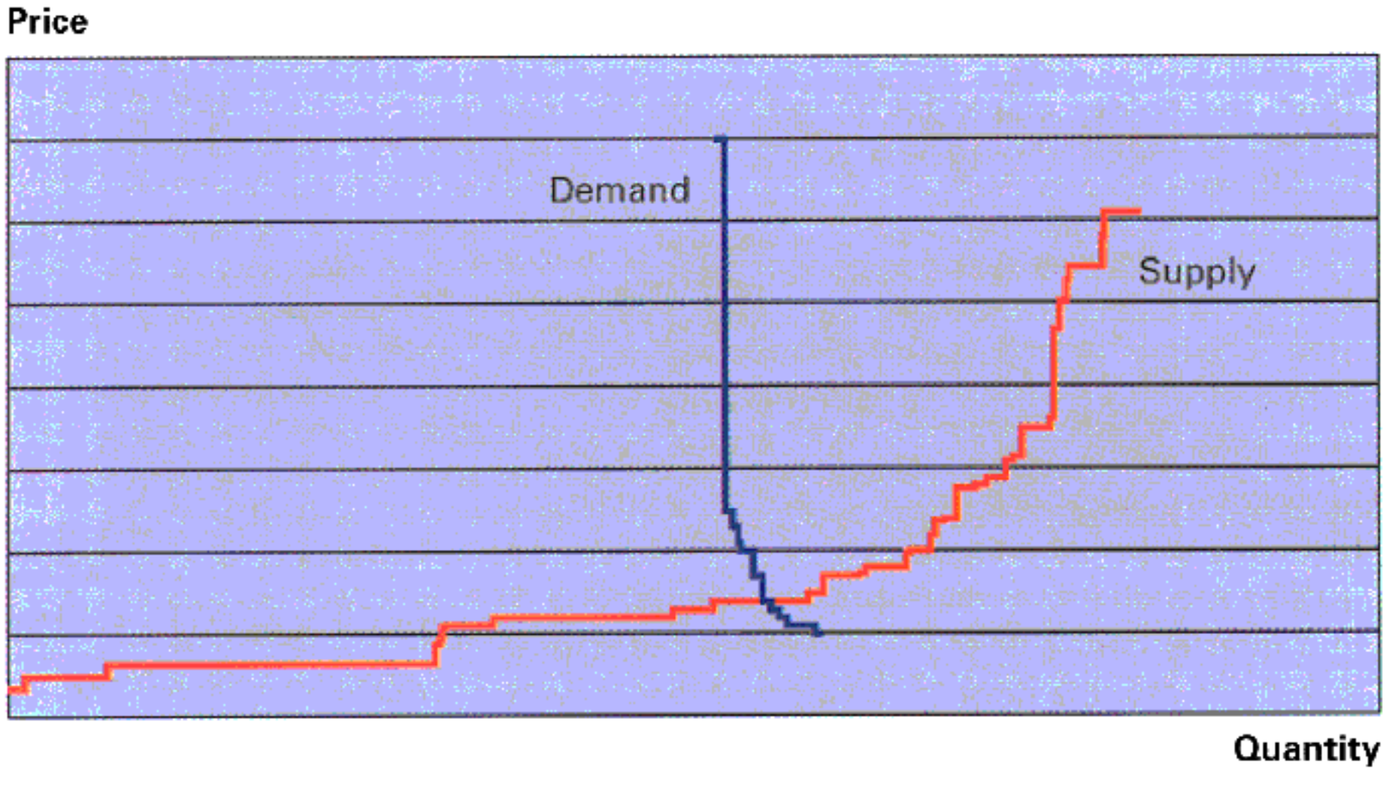
The growing European power market

THE EUROPEAN POWER MARKET IS BEING TRANSFORMED INTO a competitive market where producers, consumers and traders must carefully analyse the risks involved. Wholesale prices (as referred to at exchange price level) will reflect the short-term marginal costs of production. In the short run, the electricity consumption will only be influenced by price changes (inelastic demand) to a limited extent. The production system is based on low-cost, base-load production, but production costs can be several times higher than base-load costs to meet peak demand. Increased demand and reduced supply will, therefore, give sharp price increases over time.



Typical supply and demand curves in the electricity market today.

Supply and demand curves

Markets in which the supply and demand curves are steep will often result in high price volatility. Experience shows that price levels during tight supply and demand periods can increase by several hundred per cent over a short time. Other elements that may lead to considerable price swings are changes in petroleum prices, the weather and transportation bottlenecks. Compared to other markets, the electricity market is regarded as extremely volatile.

One of the main challenges for traders in such a market is to get a picture of the price risk involved in trading. To achieve this, historical observations of power volatility are invaluable. The problem with the newly deregulated market is that such information is scarce and usually based on a short observation period. To meet this challenge, the simulation of market-price development under certain assumptions on supply and demand will give valuable additional information.

Experiences from both the Nordic market and the emerging markets in Europe and the USA clearly demonstrate the risks involved in power trading. A major challenge is to develop a risk management system that takes the complex nature of electricity supply and demand into account. Several methods have been introduced, including value-at-risk, Monte Carlo simulations and various stress tests, amongst others.

One fact common to most of these systems is that they tend to be far too complicated, yet at the same time are not capable of presenting the user with the relevant risk. SKM (Skandinavisk Kraftmegling AS), a leading electricity broker and consultant in the Scandinavian and European market, has found that the key to successful risk management in the power market is to develop an easily accessible and comprehensible reporting system, thus making it simple for management to evaluate the risk position. The main challenges will be:

- Understanding what causes the risk
- Measuring the risk
- Introducing risk limits to the traders
- Implementing and organising risk management

The future European market

The production and consumption of electricity in the European power market is 2000–3000TWh, or 6–8 times that of the Scandinavian market. It is difficult to estimate the size and volume that will be traded in the future, but based on experiences from the Nordic power market and other commodity markets, the volume of financial derivatives is likely to grow to 2–3 times the underlying production and consumption in three or four years. This means that there will be a European market with a volume of futures and forward contracts and options of 5000–10,000TWh per year. The value of such a market will be 200–300bn euros annually. ■

AUTHOR

Ragnar Ottosen helped to found SKM Energy Consulting and has been its president and CEO since 1996. Mr Ottosen was a graduate from the University of Bergen and has worked within the utilities industry since 1984.