
Evaluating and Managing Energy Portfolios: Overcoming the Challenges

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In today's energy markets, portfolio valuation, risk measurement and management can be daunting tasks, as reflected by a GARP Webcast on November 18, 2010.

The Webcast, sponsored by Bloomberg, a global data, news and analytics provider who delivers the most comprehensive view of the global commodities markets available in a single source, included Alessandro Mauro, Director of Risk Management at Litasco SA; Glen Swindle, Managing Director and head of power trading at Credit Suisse; and Morgan Downey, head of commodities at Bloomberg. Eric Kavanagh, CEO of the Bloor Group, and GARP ERP Program Manager Michael Sell moderated.

A Shifting Environment

What kind of challenges do financial institutions face in evaluating and managing energy portfolios, and how can they be overcome? It's a timely question, said Downey, given the movement of commodity markets toward around-the-clock electronic trading over the last few years and the recent push from regulators for transparency of commodity transactions.

"If you looked down at the New York Mercantile Exchange five, six years ago, you would have seen a place with people shouting across the pit. But nowadays if you go down there, it's screens with ones and zeros flashing by," he said.

The combination of electronic markets and growing regulatory scrutiny has made it difficult to evaluate energy portfolios and to quantify and manage the commodity risk within them. Downey cited several specific issues that firms have to address, such as how to mark books independently without giving away information to the market, and how to mark arbitrage positions between market centers that settle at different times of the day.

Standard Valuation Techniques Fall Short

"In terms of standard valuation techniques, forward prices are critical for valuation and the risk management process," explained Mauro. Forward prices are instrumental in determining the Value-at-Risk of a portfolio, he added. "In order to calculate portfolio value volatility and correlation, you need forward prices."

One tool for evaluating those forward prices is derivatives pricing, considered a proxy for evaluating physical and derivatives positions, which are based on the same underlying assets. Taking a market-based approach to valuation, said Mauro, requires a liquidation value based on current market value, which can be sourced from exchanges like CME or the IntercontinentalExchange, clearinghouses or brokers.

Standard valuation methodologies can break down because of unpredictable liquidity and unhedgeable or quasi-hedgeable risks. When price discovery is dependent on market information from exchanges and brokers, pointed out Mauro, illiquidity can cause problems. And liquidity is not absolute, varying instead on the types of financial instruments and markets and the time at which the valuation is being performed, as well as the tenor.

Balance-of-month contracts are a good example of instruments with inconsistent liquidity, he added, because liquidity in those contracts diminishes as you get closer to the end of the



month. Similarly, said Mauro, the back-end of the curve is problematic: “Distant maturities normally exhibit limited number of contracts exchanged. The farther I go on the forward curve, the less liquidity I can find.”

Mauro noted that a lack of granularity also causes issues. Evaluating an oil swap position for September 2011, compared to the entire year, is challenging given that finding a contract party willing to make that trade would be much harder. A value would have to be assigned to the position without a broker’s call.

Further problems are posed by basis differences. Mauro cited an example in the oil markets in which a contract has to be evaluated under Mediterranean Sea prices, as opposed to the more liquid Northwest Europe contracts. “Normally, I will trade with premium discounts versus the Northwest Europe index. But this makes evaluation difficult because these premium discounts will not be reported by traders. We use a liquid quote, which is the Northwest Europe quote, but the premium discounts I use to price my Mediterranean contracts are not so liquid.”

Filling the Gaps

How do you fill the gaps in liquid markets when you have problems with valuations? When the instruments in question are balance-of-the-month contracts, interpolating between the

date of the contract and the first full month can give you estimated daily prices, starting from monthly forward curves, said Mauro.

Another useful technique is extrapolation, according to Mauro. When you’re evaluating contracts on the back-end of the curve, extrapolating from internals, or disparities not listed by brokers, can be effective. However, “this exercise also has to be done carefully,” he warned. “You should take into consideration seasonality. If the curve is rising... if you have seasonality, you cannot assume that it will be increasing and increasing forever in the future.”

In the case of basis differences, said Mauro, you can also proxy with alternative liquid curves. And although they are normally more volatile than forward prices, spot prices can also be used as a last resort, he said.

Not All Operations Equal

There are two essential questions that all commercial operations must answer, said Swindle: What is the risk of your portfolio, and what is your portfolio worth? “When you start talking about energy trading operations, the way you approach those questions and try to answer them depends heavily on the incarnation or the type of operation you’re talking about,” he said.

Commodity trading advisors, for one, deal with portfolios that are

largely low-dimensional and liquid, meaning that most of the holdings are cleared and easily unwound within days, at most, said Swindle. Then there are enterprises with significant risk management concerns—portfolios with numerous exposures, tenors ranging from the present to 10 years from now, and trade attributes that are non-standard and unlikely to have much price transparency.

According to Swindle, the latter category includes natural market participants like utilities or energy producers—whose positions are inevitably non-standard—and dealers who are functioning as risk transfer agents, moving illiquid risk from one side of the market to the other. For this group of firms, price inference is a necessity for portfolio valuation risk metrics.

Unmentioned Inference

“Inference can be viewed as a taboo word in a manner of speaking, but it is quite relevant and always there in some fashion in these portfolios,” said Swindle. The goal of inference, he said, is to construct a useful indication of portfolio valuation and risk metrics at the illiquid locations and tenors derived from liquid tradables. The “trader’s mark” is the most common of these inferences, he noted, and it is also the most commonly unacknowledged.

“You will have the trading desk marking a litany of locations, and beneath are the marks that you see in your system, or spreadsheets or statistical inferences, that basically constitute an inference being made by the trader,” said Swindle, who added, “If you’re talking to control groups and

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to product control or risk management groups, often it's just, 'that's the trader's mark,' and it's not acknowledged that there's a lurking model underneath it of some sort, often out of sight from the standard model control process."

Another type of inference is the use of regression models, he said, in which "the historical price-feed regression engines are basically designed to interpolate between liquid prices, or strip marks into monthly or daily prices or, more importantly, to extrapolate the nearby locations."

Enormous Regression Engines

Beyond regression models there are fundamental models, which can be hard to define, said Swindle, though he described them as huge, non-linear regression engines designed to incorporate the real physical attributes of a market. "If it's a power market," he said, "you'll be trying to replicate the transmission and generation and demand and everything else that's associated with it. If it's gas, you may be looking at pipeline models and storage models all coupled together."

In the case of power markets, there are legions of fundamental models in use. In such models, he said, fuel prices, generation load, transmission attributes and operational protocols are layered on top of a regression model. Swindle recounted how someone had recently described to him how the staging of various transmission lines and whether one would be brought down or not, depending upon completion of another, yielded a battery of scenarios related to what congestion would look like in power. "Fundamental models inevitably try to incorporate some assessment of what future changes will actually impart to the system," he said.

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But no model is perfect, cautioned Swindle. "Some of the basic inputs to any regression model or any fundamental model are themselves extraordinarily difficult to predict."

Conclusion

"It's very easy to adopt a puritanical approach from the perspective of a risk manager or any control function," said Swindle. "And that is to simply say, 'The trader marks the mark and we vet it via consensus and look at market surveys to validate the approach.' But in doing so, you're basically caving in. You're not really acknowledging the fact that there's an awful lot of inference occurring underneath the hood in the marking operation."

"What it really boils down to is people use multiple approaches to look at the scenarios about what may actually transpire in the lifetime of their transaction," said Swindle. Hopefully, he added, they use those to craft "not just sensible transactions, but sensible reserve and controls around the operation based upon those."

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