

# Competition demands correlation

Contrary to what you might think, market and credit risk are not different species. They are intimately related, and only a system that correlates the two can paint a realistic picture of today's U.S. electricity business

BY TOM SEVERANCE

**D**oes it make sense for an energy company to have separate groups assessing its market risk and credit risk? It would seem so, because such groups have different focuses: market risk managers and analysts on price movement and liquidity, and credit risk managers and analysts on credit quality and concentration. But as it turns out, deregulation has underscored the fact that the seemingly independent issues of market and credit risk have much in common, especially when there's a crisis.

The risks to which an energy company are exposed—market, credit, volumetric, and liquidity—are highly complex and, as electricity price spikes in U.S. markets have clearly demonstrated, tightly interwoven. High market volatility and price spikes mean that the risk profile of a counterparty can change dramatically from day to day. Its changing exposure affects the credit risk of any company with which

it does business. Consequently, it is impossible to assess credit risk accurately without considering the interaction between market volatility and credit exposure. Some examples of the consequences of failing to do so:

- A heat wave in the Midwest caused Cinergy Corp. to default on its wholesale contracts, driving its P/E ratio down from 19 to 10.

- Another default, by Power Company of America, caused claims of more than \$250 million.

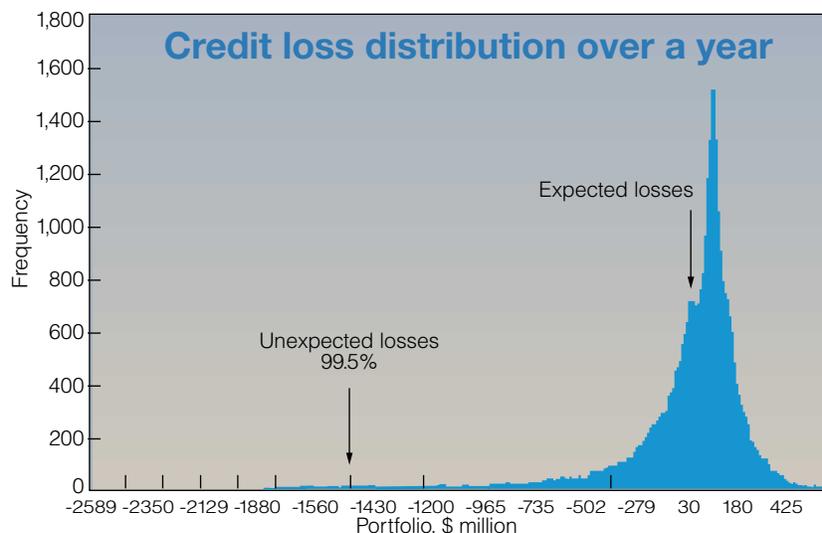
- Price spikes in California nearly caused Southern California Edison Co. (SCE) and PG&E Corp. to default on several contracts.

Enron's declining profits in bandwidth, water, and power trading put it in a situation where it could not make debt payments. The downgrading of its credit rating for lack of cash accelerated its collapse.

## How risks are assessed

To explore how companies deal—or fail to deal—with the relationship between market and credit risk, imagine first that you're a credit risk manager at a company that does business with the utility SCE. There's much to consider and do to vet such a counterparty. Although the company has a strong credit rating, it also has a

complex parent—Edison International—with several subsidiaries. So you put your best credit analysts to look at the parent's 10k to make sure its balance sheet is sound. Next, you look at SCE's debt structure and find that the company has fairly reasonable debt relative to its historical earnings. Now feeling surer about the credit rating agencies' assessments,



### Could correlation of market and credit risk have helped the firms that lost millions doing business with Enron? The answer is yes

you decide to assign SCE an internal credit rating similar to that of Standard & Poor's or Moody's.

However, being a diligent credit analyst, you also decide to look at the utility's trading business to make sure it is being run reasonably well. After several phone calls, discussions with your own traders, and due diligence from other sources, you recognize that SCE's trading levels are consistent with its business activity. In fact, you feel even more confident that it's a company that knows how to manage and hedge its risks. Further inquiries reveal that because SCE has most of its eggs in one basket—California's retail and wholesale electricity markets—it may have a bit more of what analysts call concentration risk than is desirable. However, given the utility's big distribution customer base and what seems to be a reasonable amount of generation backing it, you remain comfortable with the rating, your exposure, and the credit line you have set. Most credit managers would sleep well knowing the level of due diligence that went into this recommendation.

Next imagine that you work for the same firm, but in the market risk group. Your major weapon is information from your company's gas and oil desks; with it, you can attempt to predict whether power prices in the region will trend up or down. When it is predicted that power prices could rise significantly, you develop a strategy for taking advantage of the potential increase and pass it on to your trading desk.

One tactic for implementing such a strategy would be to increase the level of trading with SCE—a logical move, given the company's generally sound reputation. Knowing that your counterparts in the credit risk group will be concerned about increasing the company's exposure with one

company, you decide that diversification will address their concerns. PG&E, another reputable organization, is an obvious second choice. By adding a counterparty, you spread your risk and position your company to make huge profits if power prices indeed rise. But to hedge your risks in case this bet is wrong, you execute stress tests on price changes, running them on the portfolio to see the outcome of both price rises and falls. Such a hedge could be created in this case by giving some of your increased trading business to Calpine, a third counterparty. At the end of the day, you can feel you've done your job well. You've diversified your trading partners and hedged against any market movements whose impact might foil your corporate strategy.

#### What can go wrong

In our hypothetical example, both the market risk manager and the credit risk manager performed the proper due diligence and applied sound judgment to its findings. Each took every possible step to protect the firm against market moves and credit events.

Unfortunately, that may not always be enough. What happened two summers ago in California was something risk managers never foresaw—the spiking of power price resulting from extremely hot weather. Normally utilities cheer a jump in consumption, but in 2000 demand was generally so high that SCE and PG&E could not generate enough power on their own to meet it.

Both companies then had to turn to the wholesale market for power. But that only made an existing supply shortage worse and caused prices to spike. The cost of meeting customers' demand quickly drained both companies' coffers to the brink of bank-

ruptcy. SCE ended up defaulting on its debt payments, which they only managed to pay back—with interest charges tacked on—a year later. But worse, SCE also had to cede much of its control over the California market to the state government.

#### A better way

Why did the risk managers fail to foresee this scenario and its effects? After all, the market risk manager ran stress tests on the portfolios, and the credit risk manager verified the strength of the counterparties' balance sheets. But what the two risk groups failed to do was correlate the models and scenarios they developed independently. If they had, they would have been able to predict that both SCE and PG&E would find themselves in trouble if wholesale prices were to spike while retail prices remained regulated. A correlated set of scenarios reflecting the reality that market and credit risk are related would probably have helped our make-believe firm avoid possibly going to bankruptcy court itself—as a creditor.

Something else correlation would have revealed—and is often overlooked—is the “combined portfolio” effect of dealing with similar counterparties. The correlations among the market risks of SCE, PG&E, and Calpine were extremely high. To determine whether such an effect exists, you must understand what the exposures of all counterparties would be under various scenarios and at all credit states. That's where correlated market and credit risk scenarios can help. They can provide a variety of risk-management tools, such as charts showing the distribution of expected and unexpected losses across many scenarios (figure). A confidence level can be applied to these losses and tracked over time against market moves, credit migrations, and changes in correlated credit scenarios.

#### Houston, we had a problem

Could correlation of market and credit risk have helped the firms that lost millions doing business with Enron? The answer is yes. In fact, some com-

panies actually predicted the fall of Enron and had no credit exposure to it by August 2001.

How did they know what would happen? What these wise and fortunate few had in place was a strong system for correlating market and credit risk under several scenarios. The Enron case is notable for its complexity and number of contributing factors. To start, the company's losses in trading and some core businesses dried up cash flow, making paying off debt difficult. Enron's balance sheet was heavy with debt so cash and trading profits were extremely important to its stability. But it was very difficult—if not impossible, given the company's financial shenanigans—for any of its counterparties to understand the profound impact that trading losses would have on Enron's overall business.

For example, a credit risk manager might not have realized that Enron was overstating its profits from trading to pump up its stock price. Had the manager known that, he or she would have been able to run correlated market and credit risk scenarios, and they would have predicted the losses resulting from a credit rating downgrade.

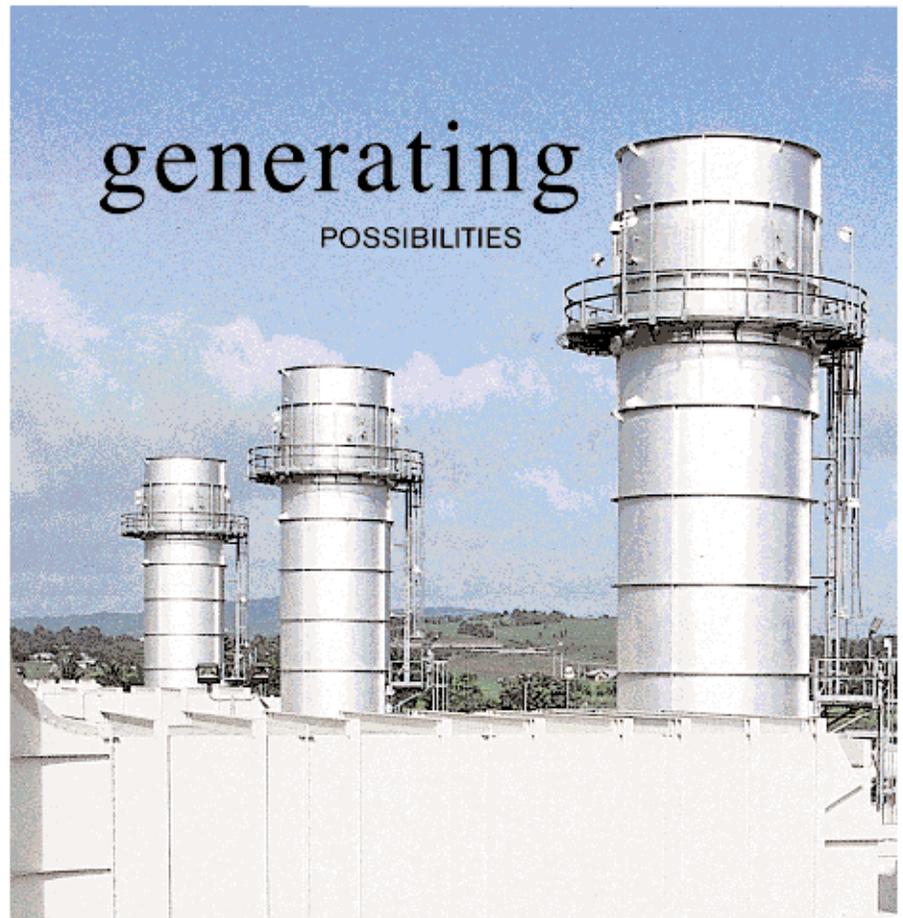
Of course, there's still plenty we still don't know about Enron—especially on the operations side. But even in the absence of these details, applying a joint market/credit risk model to the company yields some interesting results. When using such models, it is important to understand how a company structures its debt and what happens to that structure when its credit rating is downgraded. At Enron, triggers were in place that forced the company to accelerate its debt repayments if it became less creditworthy. A correlating risk-analysis system that uses a "joint distribution of losses" model would have revealed the consequences of pulling those triggers, because they model a counterparty's debt structure along with its trading business lines.

Appearances can be deceiving. In the two cases discussed in this article, the balance sheets of the companies involved looked fairly strong. However, in the California case, an extreme

market event caused a credit risk event that affected several big companies. In the Enron case, a slow decline in trading profits caused a rapid credit risk event. Because crises in competitive markets and companies can have such different and unpredictable causes, the industry needs a new framework for predicting and quantifying risk that reflects industry practice. By cor-

relating market and credit risk, an energy company can better control fluctuations in its earnings, allocate its capital more effectively, protect its credit rating, and increase shareholder value to boot. ■

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