Confounding the forecasts

Weather risk management may not have become as ubiquitous as some predicted when the market was born in 1997, but the past five years have none the less seen dramatic growth. Mark Nicholls reports

By the time the first issue of Environmental Finance rolled off the presses in October 1999, the weather derivatives market, if not exactly mature, was certainly developing fast. Indeed, the first issue of the magazine covered the launch of the first exchange-traded weather futures contracts (see box 1), and reported that two Wall Street banks were marketing novel ‘weather-linked bonds’ (see box 2).

Such rapid development was unsurprising, given the weather risk market’s parentage. It was born in the creative crucible that was the rapidly deregulating US energy sector of the 1990s. The break-up of regulated, often state-run, monopolies in electricity and gas supply was bringing a whole new approach to risk – and radical new thinking as to how that risk could be managed.

This focus on risk, competition and shareholder value inevitably led to an examination of how weather affected demand and, by extension, profitability. Who transacted the first weather deal is unclear but, in 1996, Aquila entered into a transaction with New York-based Consolidated Edison that combined weather and energy risk, protecting the latter against a cool August, which would reduce its power sales.

And while other experimental trades were privately transacted, the first publicised deal was claimed by Enron and Kansas-based Koch Industries, in 1997. Lynda Clemmons, who set up Enron’s weather desk earlier that year, says that the company first began considering a traded market in weather risk when it was conducting due diligence on an Oregon-based utility that was highly exposed to fluctuations in the weather. A look across Enron’s books revealed enormous embedded weather risk there, as well. And, as a pioneer of, and expert in, traded markets, Enron – alongside a number of its fellow US energy companies – set about establishing a market in weather risk.

Weather trading is, in essence, unlike other financial and commodity markets. For a start, there is no tradable underlying instrument. Trades are referenced to notional indexes – typically of temperature, but potentially of any weather variable, in any location, over any time period.
allowed the hedging, and trading, of more normal, ‘close-to-the-mean’ weather risks.

The development of a traded market in weather coincided with growing interest among insurers and banks in the ‘convergence’ of their two businesses. Insurers were setting up derivatives arms to trade risk in the capital markets, while banks were creating insurance offshoots. As such, insurers were quick to enter the weather market, with AIG, American Re and Swiss Re all participating as the market began to take off in 1997–98.

Initially, the use of weather hedging products was confined to North American energy companies. But weather risk management clearly had applications in a wide range of industries. One of the most oft-quoted statistics – attributed to the US Treasury – is that 70% of US companies are impacted by the weather. A more sober statistic, from the US Department of Commerce, is that $1 trillion of the $9 trillion annual US GDP is weather sensitive. Both the energy companies and the insurers, with their wider client networks, were soon marketing to potential clients in industries ranging from agriculture to theme parks.

Equally, it was not long before companies in Europe and the Asia-Pacific began exploring weather hedging. By late 1998, the first trade had been transacted in Europe – a swap between Enron and Scottish Hydro Electric. French bank Société Générale (SG) became a major player in the weather markets, as did fellow French firms Barep Asset Management and insurer Axa. However, activity in both markets remained a fraction of that in North America.

The period to the end of 2000 was one of steady and substantial growth in the market, both in terms of volumes of trading, and participants. In this period, two of the leading trading houses – Enron and Koch Energy Trading (now part of Entergy-Koch) saw leading personnel leave to set up shop elsewhere. Clemmons and three colleagues formed Element Re, as a subsidiary to Bermuda-based insurer XL Capital, while four staff led by Jeff Porter left Koch to move to Hetco, the energy trading arm of Amerada Hess.

However, the market remained overwhelmingly North American, and overwhelmingly used by energy companies to hedge their exposure to mild winters. This imbalance – which, to a much lesser degree, persists – combined with three mild winters in a row in the US, led to a number of the insurers that entered the market nursing losses on their weather portfolios.

Indeed, while no one insurer attributed its departure to poor returns from weather trading, AIG, American Re, Partner Re and St Paul Re all pulled
and winter 2000–01.

But it was the collapse of Enron, and the subsequent implosion of the US energy trading sector, that had the most impact on the growth of the weather market. As in so many of the markets in which it was active, Enron was the 800-pound gorilla of weather derivatives. It traded aggressively, was often prepared to make a market when others wouldn’t, and spent heavily on promoting the new market – even running a series of ads on US television.

In retrospect, of course, this promotion was funded by concealed losses elsewhere in the company and corporate malfeasance. Its bankruptcy, the credit crisis that this precipitated in the US energy markets, and the discrediting of energy market deregulation undermined investor confidence in the energy sector as a whole. In response, a range of energy companies – such as Reliant, El Paso, TXU, Williams and Southern – pulled out of trading energy and, by extension, weather, or at least severely cut back on their activities.

The biggest victim in the weather market, after Enron itself, was Aquila’s weather team, which had created a successful business model.

It offered insurers and banks – namely Hiscox in the UK, Japan’s Mitsui Sumitomo, Chicago-based Kemper and Macquarie in Australia – a stake in its weather portfolio, in exchange for risk capital and help in marketing weather hedges.

However, for all the short-term disruption, notional volumes held up, despite the Enron debacle and its repercussions (although it’s an open question as to what volume growth might have looked like had Enron not failed). Moreover, Enron’s collapse did see highly experienced personnel spread throughout the market.

Swiss Re benefited from the hire of Mark Tawney, the head of Enron’s weather desk. The rump of Aquila’s weather team went to form GuaranteedWeather, backed by Ramsey Quantitative Systems, while desk head Ravi Nathan joined insurer ACE. Goldman Sachs, ABN Amro and Element Re all enhanced existing weather teams with former Enron employees.

Another beneficiary was the Chicago Mercantile Exchange (CME). The sudden collapse in the credit quality of US energy traders enhanced the appeal of the CME’s clearing house – which guarantees that trades will be honoured in the event of counterparty default – and breathed new life into the exchange’s stalled weather contracts. This move did not immediately increase overall activity in the weather market – instead simply shifting over-the-counter business on to the CME – but certainly increased the transparency of trading, and has since attracted new speculative players into the market.

Meanwhile, the European and Japanese markets were developing along somewhat different lines. With energy market deregulation far behind that of the US – apart from in the UK and Scandinavia – weather hedging has been considerably less dominated by the utility sector.

The Japanese market, particularly, has been characterised by a large number of small trades, transacted across a wide range of industries, with tourism and leisure companies particularly prominent. Several Japanese insurers have teamed up with
reap the benefits of globally diversified books of weather risk. That said, this may be about to change as the deregulating Japanese energy sector begins to embrace weather hedging.

In Europe, as in the US, energy companies account for the majority of trades, but there has been more success marketing to companies in the retail, agriculture and leisure industries. Part of this can be attributed to the dominance of banks – such as SG, ABN Amro, Deutsche Bank and Credit Lyonnais (now part of Calyon) – and insurers including Axa and Swiss Re, with client bases that tend to be far broader than those of energy companies.

One of the market’s headline transactions saw a Dutch construction workers’ union and employers’ federation buy hundreds of millions of euros of cover to provide compensation if cold weather halts building work. They first hedged themselves, via Dutch bank ABN Amro, in 2001, and have re-entered the market since.

However, despite steadily growing notional volumes – the latest survey by the Weather Risk Management Association showed a 10% increase to $4.6 billion for April 2003–March 2004 – most participants would agree that weather hedging has not been embraced as widely, or as quickly, as expected.

For many companies, especially those outside the energy sector, it is too difficult to isolate exactly what effect weather has on earnings. For others, hedging weather incurs a cost that they have not had to bear before – which was especially unappealing during the global economic downturn that followed the bursting of the dot.com bubble. Some still see weather as a convenient excuse on which to blame poor performance – and few equity analysts find fault with those that do.

Nonetheless, there are compelling reasons to manage weather risk, and there is an increasingly mature and sophisticated market in which to do so. While the growth in the market may not have matched the hype and expectations of its early years, it cannot be denied that weather hedging now falls firmly within the corporate risk management pantheon. EF

**BOX 1 – Exchanging weather**

On the whole, the experience of the world’s derivatives exchanges with the weather market has not been a happy one. The Chicago Mercantile Exchange led the pack, with the launch in September 1999 of futures contracts based on temperatures in four US cities. Despite some early support from market participants, the contracts had ceased trading by the following March.

European exchanges fared no better. The London International Financial Futures and Options Exchange listed contracts referenced to London, Paris and Berlin in 2001. They traded just once, before being delisted in October last year. The Helsinki Exchange’s Finnish contract similarly failed to generate any interest, and tentative plans by the Deutsche Börse and Paris-based Powernext to develop contracts have come to naught.

Atlanta-based Intercontinental Exchange (ICE), however, saw some success with its contracts, on average temperatures in five US cities, launched in 2001. But the exchange lacked a clearing house – which eliminates credit risk from most exchanges
customers following Enron’s demise therefore precipitated a similar collapse in trading in its weather contracts.

The CME, in contrast, does boast clearing services, and it was the post-Enron credit crunch that revived the fortunes of its moribund contracts. By late 2001, they were seeing respectable volumes. Since then, trading activity – while nowhere near that of its interest rate or equity products – has climbed to more than 8,000 contracts traded in August, and the exchange now accounts for more than a third of all trading activity by notional value, according to the latest Weather Risk Management Association market survey. It has also extended its product range, listing European contracts last year, and Japanese ones in July.

Indeed, the CME’s belated success is encouraging other exchanges to revisit the market. The New York Mercantile Exchange (Nymex) has canvassed market opinion as to whether it might have a role in offering contracts, or clearing services and, while nothing concrete has been heard from Nymex since, it says it is still considering some kind of weather product.

And in Japan, both the Tokyo International Financial Futures and Options Exchange and the Tokyo Commodity Exchange are planning contracts. It remains to be seen, however, if any European exchanges feel the time is right to look once more at the weather market.

**BOX 2 – Investing in the weather**

As an asset class, weather risk has a strong selling point – it is completely independent of movements in equity, bond or credit markets. For investors seeking an uncorrelated investment with which to increase portfolio diversification, weather would seem to provide a perfect answer.

Indeed, in our first issue, we reported that two banks were marketing the first ‘weather bonds’ – bonds whose payouts are linked to the performance of a portfolio of weather derivatives. As it happened, Merrill Lynch pulled the planned $105 million bond it was selling for Enron, and Goldman Sachs only managed to place $50 million of the planned $200 million Kelvin’ offering it had structured on behalf of Koch Industries.

Many potential investors felt the bonds were too complex to understand the risk involved. But, although no other weather bonds have since been publicly issued, other dealers have successfully structured private placements, or offered fund products to investors.

The most successful has been SG, which ran a series of funds combining weather derivatives risk alongside investments in catastrophe bonds, whose payouts are linked to the occurrence – or otherwise – of particular natural catastrophes. In 2002, the SG weather team – lead by Diego Wauters – bought out the funds business and Coriolis
left to set up Systeia Capital Management, a global hedge fund. The following year it launched a similar fund, which now has $34 million under management.

Apart from the Kelvin bond, a number of privately negotiated weather deals have been placed with investors by, among others, Goldman Sachs, Germany’s Hypovereinsbank and XL Weather and Energy, as Element Re became known at the start of 2003.

But, over the past 12 months or so, the market has begun to attract interest from a new breed of participant. Hedge funds, particularly those who are active in those commodity markets with close correlations to weather, such as natural gas, are becoming an increasingly significant force in the market. As well as trading in the secondary over-the-counter market, many use the increasingly liquid contracts on the Chicago Mercantile Exchange to translate their view of the weather into returns for their investors.

SUBSCRIBE for the full story each month  Updated Thu, 06 November 2014