

12 Weather trading in London

Distinguishing finance from gambling

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In the 2005 film *Enron: The Smartest Guys in the Room*, weather derivatives trading is introduced as an innovation that had people wondering whether it was ‘good science or science fiction’. Enron had become famous as an organisation that promoted innovative financial products. The company’s tagline to become ‘the world’s leading company’ rather than just an energy company highlighted its primary ambition to create new markets in a wide variety of products and sell financial services to clients. As Clover (2003: 30) puts it: ‘Suddenly the business was running on a platform of intellectual capital’ rather than things like gas pipelines and power stations. Financial products emerged in broadband, energy services, bankruptcy risk and weather.

Jeff Skilling, Enron’s chief operating officer and later chief economic officer, is asked in a conversation shown in the film whether the traders get punished for getting the weather forecast wrong. He responds by grinning and asking a trader whether they have ‘whip marks on their back’. The trader responds that they’d been ‘fortunate with some good calls’. The aura of incredulity about trading weather as a financial product is one that has challenged the emergence of a weather market in the United States (US) and internationally. Regulators, corporate boards, financial intermediaries and many others have pondered whether this is simply a new form of gambling. Indeed, the use of words like ‘fortunate’ and ‘science fiction’ to describe weather trading in this short passage in the film illustrate the concern that this may be a disguised form of gambling. These discussions open up the historically carefully articulated boundary between investment and gambling.

In this chapter, I explore the development of the weather derivatives market, with a particular focus on London, to illustrate the ways in which finance is discursively separated from gambling to enable weather derivatives to emerge as an acceptable financial product with a *bona fide* commercial rationale. The chapter highlights the labour involved in establishing a new risk product as being central to rational financial management, including the effort put into disassociating the innovation from conceptions of chance and gambling. Empirically, the chapter illustrates the ways in which weather derivatives become normalised, in particular places in particular ways, as part of prudent corporate activity. Weather derivatives become legitimate investment rather than gambling through three

discourses: first, through the use of corporate advertising that presents weather risk as manageable financial risk; second, through networks of financial intermediaries including banks and credit rating agencies that establish a new product as essential to stable financial performance; and third, through the legal rationalisation of weather derivatives as contracts with a prudent commercial basis. The chapter emphasises that the demarcation of investment from gambling is consciously monitored and maintained to retain the acceptability of careful speculation in financial markets.

This chapter is based on in-depth qualitative interviews with 26 weather market participants from financial traders through to meteorologists working in banks, insurance companies, brokerages and energy companies in the United Kingdom (UK) and US between 2002 and 2006 (with updates in subsequent years). Significant collation of secondary sources (including newspapers, legal documents and conference proceedings) and personal observations at industry conferences also form part of the research materials. Before proceeding to the empirical material that emerged through this research, it is valuable to set out the academic debates about new financial products as they emerge and become established.

Establishing new financial products

As de Goede (2005) has illustrated, distinctions between terms like gambling, finance and speculation are fluid and unstable. The invention of new financial products challenges these demarcations (see Loussouarn, Chapter 15 in this volume, about the case of spread betting). Formal and informal regulatory practices, laws, and culture are recoded as new products are seen as and become legitimate (or not), fair (or not), transparent (or not) and encouraging prudent behaviour (or not). These debates have been pertinent historically, and it is valuable to review the past arguments used to legitimate or condemn new products to draw out some central features that explain the policing of the investment-gambling distinction in the present.

Life insurance is an instructive example of how changes in law and culture are necessary to enable businesses offering these policies to prosper. Placing a wager on one's life was both a fashionable practice and frequently deemed an immoral activity in England in the eighteenth century (Clark 1999). Arguments that it was prudent, public-spirited and equitable to insure one's life were displaced by concerns, initially about criminality, but also by the 1770s a much greater public moral condemnation of life insurance trading in general (Clark 1999; de Goede 2005). Indeed the Gambling Act of 1774 emerges precisely to restrict life insurance to cases where there is a direct insurable interest, marking a regulatory space between legitimate and illegitimate gambling. An insurable interest meant that the purchaser of a contract must have a personal benefit from the insured object and thus would experience personal cost in the event of its loss or damage. Likewise hail insurance policies, which first emerged in Britain in 1842 (Stead 2004), were specified by type of crop and field size such that a clear, nonexchangeable insurable interest could be identified. With fire insurance, which was available

for farmers from the early eighteenth century onwards (Stead 2004), not only must there be an insurable interest, but policyholders were exhorted to be careful and responsible, for example, in their domestic or industrial heating arrangements (Abbot Jr 1910). Insurance is therefore formally legitimated as a permissible activity with the existence of an insurable interest and the prudent care and moral duty of the policyholder.

Likewise, divisions were made between different forms of speculation. Derivatives products received particular notoriety in the tulip mania and crash in the Netherlands in the 1630s. For commentators, the bubble had created an immoral association of reward without effort that had inspired a focus on hope and hype rather than careful expectations (Chancellor 2000). Financial speculation operated in an ambiguous space, with law courts and publics frequently conflicted about whether this was gambling or not (de Goede 2005). In the nineteenth and early twentieth centuries, speculation in commodity markets in the US was justified on the basis of four arguments: first, that it enabled trading flows in markets that brought prosperity to the country; second, that speculation merely derived from the natural desire in humans to trade; third, that speculation was morally distinct from gambling because it was not wholly based on chance; and finally, that speculators were careful while gamblers were rather more reckless (de Goede 2005). These distinctions are important because they suggest both calculative rational considerations *and* affective considerations in determining the acceptability of speculative activities. Speculators were to be sensible and prudent, and needed to maintain this image in spite of cycles of hype and contraction if they were to be considered morally astute.

The acceptability of particular financial products is always geographically and temporally contingent: the spaces they are traded in, the ways they are traded and the attitude of the traders are questioned. For example, responses to rain gambling in late nineteenth century India reflected a question of the legitimacy of particular kinds of financial products in particular spaces. Legislatively, rain gambling was outlawed in public spaces but allowed to continue in private spaces (Birla 2009). Government acceptance is recorded in terms of public and private activity. Likewise for individuals engaged in financial trading in the Anglo American world, the question of acceptability may be reformulated as one of self-discipline: in a common discourse, those who manage risks 'responsibly' are differentiated from those who are 'irresponsible' (Langley 2009). But 'responsibility' might mean something different in Germany (traditionally associated as being more risk-averse) than in the UK (where financial speculation has been normalised). Innovations challenge pre-existing lines of demarcation and the legitimacy and acceptability of financial practices are continually reworked.

The acceptance of new financial products also depends on establishing the value and importance of adoption over nonadoption. As noted earlier, some advocates of life insurance argued that it was one's duty to protect one's family. This much stronger argument suggests that it is the absence of an activity or product that is inappropriate or, worse, immoral. In contemporary financial terms this can be illustrated in the way that credit rating agencies and banks would take a very dim view of an energy company failing to manage the gas price risk or

an international corporation overlooking foreign exchange transaction costs. To quote de Goede (2004: 199), 'The successful marketing of risk management products requires cultural parameters that see it as morally and economically compulsory to be insured against the risk in question.' Financial products are marketed as being necessary for the conduct of good business and thereby *become* legitimate (and potentially mark the nonadoption of these products as illegitimate). This process can be observed in contemporary arguments which suggest that responsible citizens should establish private pension schemes rather than depend upon familial or government support networks. Likewise, national lotteries create a social incentive to bet, both as a chance to escape poverty and as a form of charitable activity to replace the withdrawal of state funding from the arts and social welfare (Neary and Taylor 2006). The moral landscapes of risk are reshaped and legitimate some arguments and products over others.

While some risks require management, others are productive (Zaloom 2004). Enron liked risk, precisely because it was profitable (*Enron: The Smartest Guys in the Room*). Risk management, therefore, is not just the reduction of the costs of the occurrence of specific events (a form of actuarial knowledge), but equally an opportunity for speculation if sensitively managed (Zaloom 2004). This often depends on complex calculative apparatuses and models that predict possible consequences of trading strategies. In this sense the calculation of risks becomes central to the age of chance (Reith 1999), but as Reith points out, gambling and speculation are also about affective qualities such as play and enjoyment. Even within technologically driven financial trading, individuals build relationships with other traders, have fun and feel violated, internalising a day's trading within their embodied experiences (Knorr Cetina and Bruegger 2002). Weather traders knew each other well and would regularly drink with each other, exchange gossip and attend each other's weddings. This affords a liveliness to financial trading that goes beyond rational economic management. Risk is not just about numbers, but about moral relationships and arguments: the acceptability of behaviour to other traders, the developing of interpersonal relationships with trustworthy people who may be willing to take a loss to help out, the persuasion of others that their interests can be realised through a particular deal and so on. Establishing new financial products and maintaining older ones requires significant interpersonal connections and social ties. The demarcation of acceptable risk is mediated through these social networks.

Weather derivatives

Before exploring the ways in which traders worked hard to make weather derivatives a morally acceptable and necessary product, it is useful to present a quick overview of the topic. Weather derivatives emerged in the US energy sector in the mid-1990s when Enron and other companies (Aquila and Koch Industries) invented new financial products to manage the nonextreme weather risks that affected their businesses, in particular the volume of gas being sold. The nascent market soon expanded into Europe and Japan, with the first UK deal occurring in 1998 between Enron and Scottish Hydropower. The listing of weather derivatives

on the Chicago Mercantile Exchange in 1999 established a stable trading platform, yet it took several years to realise growth. This can be explained at least partly by Enron's bankruptcy, the relatively low liquidity in the market and the arrival of few new end-users. In 2004, the weather derivatives market was worth a notional \$4.6 billion, though this rose rapidly to \$45.2 billion by 2006 as a result of hedge fund activity and growing market optimism, before sinking back to \$30 billion in 2008 (Randalls 2010).

Derivatives are contracts based upon the value of the changes in performance of indexes, commodities or underlying instruments. In the case of weather derivatives the underlying commodity is a weather index, based on temperature or precipitation or more bespoke products like wind, snowfall and ice. Like other index-based derivatives developed since the 1970s there is no 'physical underlying', which means that trades have to be cash settled (one cannot physically give someone a sunny day). Meteorological data are generally received from national meteorological agencies and converted into standardised indices for trading in the weather derivatives market. In their simplest form, weather derivatives are contracts that a company will buy to mitigate the cost of the weather on their business. Weather derivatives were originally designed to hedge volume risks in the energy sector. For an energy company, a warmer-than-average winter costs money in terms of lost revenues as gas sales decline. A weather derivative would be purchased to compensate the company in the event of the warmer-than-average winter and thus smooth profit and loss accounts from year to year, which has some significant advantages in terms of business planning. In many cases a bank might be the counterparty on this contract, but it is also plausible that a company that economically benefits from warm winters could be the counterparty (in what is referred to as a 'swaps' deal). The most prominent example was the Dutch construction company that had a contract that would pay out if there were too many cold days in the winter when they were unable to make and set cement.

Companies (except in the case of rarer swap deals) pay a premium to buy the contract and receive compensation if the weather parameter is reached, a not dissimilar process to insurance. There are significant regulatory differences between insurance and derivatives markets, however, of which the most important is that derivatives must have no insurable interest or proof of loss. Weather derivatives pay out when a particular strike point on a weather index is reached regardless of whether a company actually lost money because of the weather. This makes weather derivatives more flexible and cheaper than insurance. The primary risk-hedging business helps drive a secondary set of market trading as companies look to spread risk and traders use weather forecasts to take calculated risks in speculative trading of weather derivatives. For instance, a trader might spot a contract price that is lower than their weather forecasts suggest it should be and buy in expectation of deriving a profit from a future change in index value. Weather derivatives are therefore similar to other derivatives products. Despite this, the notion of trading weather as a legitimate commercial activity has proven difficult to stabilise.


Making weather markets

In this section, I examine the ways in which weather derivatives were established as a new variety of financial product and explore three overarching types of argument used to garner support from companies and regulators: advertising, economic persuasion and legal issues. In each case, cultures of morality, legitimacy and acceptability are invoked.

Weather adverts

Weather derivatives organisations and companies have promoted their products through diverse marketing schemes in business journals (such as *Environmental Finance*) and other corporate networks. The aim is to turn weather risk management through financial products into a normalised, prudent, everyday business activity rather than something exotic, unusual or potentially risky. Adverts had a dual role and aimed to enhance the reputation of the industry as well as the advertiser's own business. For example, adverts by the German bank HVB used the tagline 'We care about the weather,' while ABN Amro offered a partnership that would offer full protection 'come rain or shine', and specialist company Guaranteed Weather led with 'Weather risk management that endures'. I focus on Swiss Re, a large reinsurance company that has significant presence in the weather derivatives market. Swiss Re has regularly run adverts in *Environmental Finance*, and the advert shown in Figure 12.1 ran discontinuously, from autumn 2004 to autumn 2005. It shows a giant fan on the top of a building in Manhattan with other skyscrapers in the background and the then head of weather derivatives at Swiss Re, Mark Tawney, looking up towards the sky. Or more correctly to where the sky should be, as the sky is actually absent from this advert. All that can be seen are rays of sunshine glinting off Manhattan glass and highlighting the weather trader.

The weather trader is depicted as, literally and figuratively, enlightened. He is part of a modernist project to control the effects of nature, ensuring that society can escape the vagaries of the weather. He is also authoritative: he can see the light and direct other businesses to enlightenment. As an expert on weather risk management, the weather trader can translate corporate concerns about profitability and stability into a need for weather derivatives. Weather changes from being an uncontrollable object of providence to something ordered and managed by the financial system. Next to Tawney in the advert is a large industrial fan, larger than Tawney himself, but not so large that he cannot see the light over it. The conception of the atmosphere as a giant fan, chaotic and disorderly, is not new (Golinski 2003). In the picture, the fan is encased and stopped. Weather is no longer an external problem, or potential disruption, as it can be contained within financial markets. Indeed, in the advert it is represented as small compared to the glittering skyscrapers of Manhattan. No weather event can now exceed the ability of Manhattan to manage it. The environmental risk, weather, has been displaced; it has become a financial risk, one that will, like all financial risks, ultimately be controlled by the safeguards surrounding the financial system (de Goede 2004).



New York, US

Mark Tawney, Weather Risk Expert, Swiss Re, Phone +1 212-407-7316

Assuming "normal" weather for your financial forecasts is risky business. "Whether you are a property manager in the United States, a grain farmer in Japan or a ski resort operator in Switzerland, your profits can be profoundly affected by unexpected fluctuations in the weather over time," says Mark Tawney. At Swiss Re, we have the risk management tools to help you mitigate these risks. With our global experience and financial strength, we can help you effectively protect your company against weather-related losses, come rain or shine. www.swissre.com

Environmental Finance MAGAZINE Swiss Re is proud to be chosen "Best Weather Dealer - North America and Europe" by the Environmental Finance Market Survey, 2004

Expertise you can build on. **Swiss Re**




Figure 12.1 Swiss Re weather derivatives advert.

The text at the bottom of the advert proclaims that 'assuming "normal" weather for your financial forecasts is risky business.' The word 'normal' is placed in scare quotes, suggesting that climate change has removed the possibility of normal weather. The advert suggests that weather derivatives may be useful at any

time, but that they are essential now because the weather is no longer normal. It must therefore be normalised through the power of the financial markets. Within this advert, the argument that weather trading is both legitimate and necessary can be seen. According to the advert, it would be irresponsible not to manage weather risk given climate change and the existence of the facility to enfold weather within financial markets. This cultural argument is compelling, but adverts alone have been insufficient in generating interest in weather trading. Traders have relied as much on the persuasiveness of economic arguments.

Financial networks

Within corporate circles, weather traders make three important discursive moves: first, that weather derivatives are labelled as weather hedges rather than futures to disassociate them from the perceived riskiness of financial speculation. Second, weather derivatives are promoted as a necessary product to achieve broader financial stability both within the company and as others might perceive them. Third, traders are nonetheless encouraged to self-govern behaviour in ways that reduce possible external criticisms of weather trading as a reckless, immoral activity.

To enable the development of a weather derivatives market, traders would often use alternative language to engage people's interests. The term 'derivatives' is seen as sparking consternation in some people's minds, especially given the historical connection of the weather market to Enron and the immediate strangeness of the concept of trading on weather. Traders described how as a new market 'it's a scary thing to enter.' This fear of weather derivatives has been at the core of the problem that weather traders have had in persuading people in organisations to embrace these new products. This fear is deemed to be both general and also geographically specific, such that weather traders would choose their language carefully and mention 'hedges' or 'protection' rather than 'derivatives' in certain contexts. For example, as one London-based banker revealed in an interview:

Most people are scared of the word derivatives . . . so you have to talk about weather cover or weather protection until you go a bit further down the line, otherwise they just go 'oh derivatives' and run away, especially in Germany for example where they've just got an absolute fear of the word. They're so risk adverse, they think they're gambling, whereas in fact they're gambling if they don't use a weather derivative.

Achieving this inversion of risk and gambling is critical to establishing the necessity of weather derivatives trading for a responsible institution. 'It is riskier not to use weather derivatives than to use them' is the message that weather traders are taking to corporations and analysts.

Traders have pursued this argument through appeals to credit rating agencies and shareholders. It is not acceptable, they say, for companies to blame losses on weather when there are financial products available to mitigate that risk. Some weather traders believed that financial institutions would look favourably on the

company for using weather derivatives, but that the argument would be considerably strengthened if credit rating agencies started to threaten to downgrade weather-sensitive companies that ignored the risks of weather to their profit margins (Randalls and Pollard, draft). Thus the use of weather derivatives could be enforced through financial intermediaries, ensuring both an increase in business and establishing the importance of weather risk management in the economic departments of major corporations worldwide. As one weather trader suggested in an interview:

More and more as these people have started to hear about weather derivatives, they're not some sort of crazy backward product, they do get mentioned in the papers, that sort of thing, the equity analysts are realising well this isn't a valid excuse.

There are no recorded instances of companies being warned about weather risk by credit rating agencies, so in many ways this has been a failed enrolment, but it highlights the perceived importance of intermediaries in establishing the status of financial products.

Credit rating agencies are, however, an indirect tool for growing the market, and for those companies with significant networks of corporate clients, these networks provide a much more direct method of selling the product. Given the dominance of energy companies in the weather market, one London-based banker described how he leveraged corporate relationships and contracts 'rather than sticking ourselves out in the market fighting . . . those big energy companies who have been playing this game for many years'. The rhetoric of gaming is used to infer the riskiness of being involved with the dominant temperature deals in the weather markets, to alternatively establish client networks as a better opportunity to develop weather profits within the bank. It is not that the weather market is inherently dangerous, for that could undermine the overall credibility of the market, but rather that organisations need to find unique strategies that ensure *prudent* market development. In the case of banks, the client network provided a market pool for banks to draw on to enforce the use of weather derivatives as a necessary risk management strategy.

For banks and other financial institutions, unlike weather traders in other companies, it is relatively straightforward to translate arguments about economic sustainability into a formal requirement, particularly if a client is applying for other financial products. Banks in particular offer a range of financial services to clients that manage various elements of risk in the interest of ensuring financial stability within that company, especially if they are making loan repayments to that bank. As Kalthoff (2005) has demonstrated, loans are not just about lending money but rather enable the bank to intervene in the calculations of the company to achieve certain objectives. Establishing good interpersonal relationships with clients is therefore at the core of a bank's activities. Selling weather derivatives to businesses that were not clients was much harder as not all firms were convinced of the necessity of weather trading and bankers had few direct regulatory options

to enforce it. For clients, once an economic justification could be made about the impacts of weather risk on a business, then it would enable a moral necessity argument to be rapidly deployed. Traders could insist that it would be ‘gambling’ not to protect one’s business against weather risk. As one London-based banker described it to me:

Once you can get a slight bit of interest you can then sort of prove it with numbers and then you’ve got them, and then it’s just a case of haggling about how much they want to spend on it.

Weather derivatives become necessary because the moral economic argument enforces weather risk management as a means of ensuring other forms of capital flow. Thus building the market for new financial products is dependent on not only developing a cultural basis for the product but also actively deploying this through already existing economic channels as a necessity for prudent financial management.

Establishing good self-governance is also central to ensuring the reasonability of an individual’s weather trades. Weather traders would discuss the ‘fun’ of arranging complicated or ‘funky’ derivative structures and would chuckle about taking advantage of other companies’ perceived mispricing of contracts. At the same time they were aware that their actions must be viewed as acceptable by the company directors should a deal go sour. As one weather trader in a UK energy company put it in an interview:

Imagine if I said to my board of directors: We fixed a weather hedge in Australia and the correlation broke down this year and I know it’s been really warm here, but it’s been really cold there and our swaps have paid out the wrong way, sorry. I mean can you imagine how long I’d last?

Traders self-govern their behaviour to ensure that their strategy cannot be seen as too risky or too much like an unwarranted gamble based on flaky correlations. By ensuring that the majority of trades appear justifiable, even if they eventually lose money, the rigorous, predictable and fair nature of financial trading is established and corporate self-governance is shown to be effective. This is of course why it is vital for financial organisations to portray specific individuals as ‘rogue traders’ operating outside company rules when they come under scrutiny. Traders reflect on the commercial rationale of their trades should they be closely examined. They learn self-governance through networks and mentoring and through other kinds of risk taking, including, very commonly, spread-betting, a financial product which successfully combines gambling and investment (Loussouarn, Chapter 15 in this volume), or betting.

There is some uncertainty over the emergence and decline of a retail market for weather spread-betting offered by companies in London. Cantor Index planned to introduce weather spread-betting in 2003, but there is no evidence of

widespread development or adoption by other companies. Spread-betting institutions enable traders to use their own money to take a personal stake in the kinds of indices they are trading at work, a practice described to me as part of the ‘mentality of the City’s traders.’ Spread-betting both trains and self-governs individual traders to conceptualise the trading of risk as something fun, but financially real. Weather products, however, made little impact in this retail spread-betting market and remain primarily in the province of the commercial financial markets. Bookmakers, such as William Hill, on the other hand, have introduced weather bets in both temperature and precipitation monthly or seasonal totals as well as for specific events such as snow at Christmas. Piers Corbyn, an astrophysicist who predicts weather up to a year in advance based on solar patterns, claims considerable success in winning bets (Standage 1999). The public, however, have generally not engaged in weather betting to any great extent, let alone more complex strategies like cross-hedging horse race risk (where the condition of the ground has a material effect on the outcome). The lack of enthusiasm for weather betting equally reinforces the relative dearth of media or public attention paid to weather derivatives, which have become established primarily through the moral economic persuasion of companies that are, or feel compelled to, trade weather as part of a prudent management strategy.

Moral law

In order to be recognised as *bona fide* financial products, weather derivatives must be captured by current legal frameworks. Law is not just a regulatory apparatus; it is continually remade in relation to changing cultural attitudes and practical experience. It is often only in test cases that laws are affirmed. Financial derivatives are regulated under a suite of European and national regulations, but these only define established areas of activity, and the pace of financial innovation often outstrips that of the legal environment. When companies write weather contracts, they *become* insurance, derivatives or gambling by virtue of their similarity or difference from insurance, derivatives or gambling rules. The Weather Risk Management Association (WRMA) wrote a draft derivatives contract for general use by traders to prevent problems. More broadly, however, weather traders pushed for confirmation that weather derivatives were not insurance or gambling. Here I illustrate the social work involved in establishing the legislative landscape for weather derivatives as ‘not-gambling’.

The fear of weather traders in the early years of the market was that some (or all) weather derivative contracts might not be classified as derivative products with a genuine commercial aim, which would transport them into the realms of ‘contingent risk’ or gambling regulation. As one lawyer described the legal definition of a commercial contract to me:

It’s a contract whose purpose or intended purpose is to secure a profit or avoid loss by reference to fluctuations in an index or property . . . if you

didn't take those steps you would be moving outside into, you hope, contingent commercial contracts, but you could be on the slippery slope down to gambling.

The term 'contingent risk' is not a standard, formal term but was used by legal experts in the weather derivatives market to describe the grey area between derivatives regulation and gambling regulation, an area where neither set of regulations automatically applied. It neatly encapsulates the complexities within derivatives regulation showing that the best way of thinking about these different forms of contracts may not be as separate entities (derivatives or gambling) but rather as a continuum. It is not a gambling contract or derivative *tout court*. This is why WRMA and European weather traders spent a lot of time in 2003–2004 ensuring that the emerging European Union Directive on Financial Instruments Markets would cover weather derivatives contracts.

The argument about regulation has both an economic and a moral component. Economically, derivative products can be netted for tax purposes and have less stringent rules than gambling contracts. Contingent risk or gambling contracts are seen as largely unenforceable in the event of a breach of contract between corporations, because the courts generally will not have the time or desire to extract the money from the counterparty. Gambling institutions (and insurers) are more regulated than derivatives traders, with betting shops being forced to keep up to 90 per cent of the total payout value in reserve in case that contract pays out. With derivatives contracts, however, a company need only reserve capital against that contract paying out in proportion to the likely probability of a payout. If, for example, weather forecasts show that next month will be cold and the contract pays out if it is warm, it makes little sense to reserve money against that contract. The capital can be better utilised. For the moral argument, too, it is beneficial to have weather derivatives recognised as genuine financial products. Being recognised as a commodity derivative provides protection and a sense of belonging in financial markets. It distances weather derivatives from their roots in Enron, and gives them the credibility of a *bona fide* financial product that is definitively not gambling. This is particularly important in southern Europe and Germany, where there is seemingly less enthusiasm for trading weather than has been seen in the UK.

Building the weather derivatives market requires the enrolment of strong allies (Latour 1987). Asserting the legal recognition of weather as a commodity derivative helps with the enrolment of credit rating agencies who, as discussed, could become vital allies for the weather derivatives traders. This legal status can be legally assured only by proving the genuine commercial purpose of weather derivatives. Law, economy and culture interact here. Building the case that weather derivatives are a legitimate product involves entwining changes in cultural attitudes towards weather risks, exploiting financial networks to grow the market and establishing the economic rationale to stabilise the regulatory framework. Each stream strengthens the case. Weather traders might say: 'Even the EU

consider(s) weather derivatives to be a genuine commercial contract; there is no reason for companies to blame losses on weather anymore when there is a genuine risk management strategy available.’ Equally they might add: ‘Your shareholders deem weather risk to be ultimately manageable, so not using weather derivatives will reduce your share price.’ The enculturation of weather risk management is central to establishing weather finance as a prudent, rather than far-fetched or risky, strategy.

Conclusion

In this chapter, I have shown how weather derivatives markets emerged through cultural discourses and economic networks that established these new financial products as legitimate and essential parts of corporate risk management. Characterising weather derivatives as more than science fiction, a *bona fide* commercial product, has been central to ensuring the growth of and legal support for the market. At the same time it is precisely through economic practices of persuasion, making weather derivatives a compulsory act for risk-attuned companies, that this acceptability is supported and enhanced. In other words, there is a lot of cultural work that goes into supporting a new product in terms of establishing borders of acceptability. Weather derivatives traders use language like ‘hedges’ rather than ‘derivatives’; they self-govern to ensure the credibility of their trading practices. Nevertheless, there is still considerable moral angst about the connections to Enron, and trading weather still appears incongruous and incredible in many business circles. The legitimacy of weather trading is continually maintained by traders who emphasise the product’s value and behave as prudent risk takers. This is essential to both supporting the growth of the market and also ensuring the stability of the financial system more broadly. Traders in other markets would not wish weather derivatives to contaminate legal or cultural perceptions of other financial products.

Research on gambling, speculation and finance highlights the historical and geographical specificity of the various debates in legal, public and economic settings, which characterise certain activities as acceptable and others as unacceptable. Birla’s (2009) study of the emergence of commercial laws in late colonial India provides an important conclusion. In the development of new products, laws and procedures, it is not just a case of one group entering the market and changing the rules. Rather all parties are affected because the rules and products then read differently through the new conceptions available. Weather derivatives challenge and are challenged by financial, legal and cultural associations in a continual dialogical relationship. While weather traders have normalised weather through financial markets, they have made less headway than might have been expected in overturning the idea that weather trading is ‘crazy’. At the same time, they have made other forms of environmental finance appear ordinary (like carbon finance and catastrophe bonds). Weather, like life, has been turned from providential control to calculated risk. As such, what is considered acceptable

risk management is not just determined by the object of that trade, but that object is figuratively reshaped through these actions. Given the emergence of climate finance, a chaotic atmosphere might yet play a telling card in reshaping financial networks too.

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References

- Abbot Jr., E. H. 1910. 'The Meaning of Fire in an Insurance Policy against Loss or Damage by Fire'. *Harvard Law Review* 24: 119–136.
- Birla, R. 2009. *Stages of Capital: Law, Culture, and Market Governance in Late Colonial India*. Durham, NC: Duke University Press.
- Chancellor, E. 2000. *Devil Take the Hindmost: A History of Financial Speculation*. New York: Plume.
- Clark, G. 1999. *Betting on Lives: The Culture of Life Insurance in England, 1695–1775*. Manchester: Manchester University Press.
- Clover, B. 2003. *Enron: Anatomy of Greed: The Unshredded Truth from an Enron Insider*. London: Arrow Books.
- De Goede, M. 2004. 'Repoliticizing Financial Risk'. *Economy and Society* 33: 197–217.
- De Goede, M. 2005. *Virtue, Fortune, and Faith: A Genealogy of Finance*. Minneapolis: University of Minnesota Press.
- Golinski, J. 2003. 'The Weather in Eighteenth-Century Britain'. In *Weather, Climate, Culture*, edited by S. Strauss and B. Orlove. Oxford: Berg, 17–38.
- Kalthoff, G. 2005. 'Practices of Calculation: Economic Representations and Risk Management'. *Theory, Culture and Society* 22: 69–97.
- Knorr Cetina, K., and U. Bruegger. 2002. 'Inhabiting Technology: The Global Lifeform of Financial Markets'. *Current Sociology* 50: 389–405.
- Langley, P. 2009. 'Consumer Credit, Self-Discipline, and Risk Management'. In *Managing Financial Risks: From Global to Local*, edited by G. L. Clark, A. D. Dixon and A. H. B. Monk. Oxford: Oxford University Press, 280–300.
- Latour, B. 1987. *Science in Action*. Cambridge: Harvard University Press.
- Neary, M., and G. Taylor. 2006. 'From the Law of Insurance to the Law of Lottery: An Exploration of the Changing Composition of the British State'. In *The Sociology of Risk and Gambling Reader*, edited by J.F. Cosgrave. Abingdon: Routledge, 339–354.
- Randalls, S. 2010. 'Weather Profits: Weather Derivatives and the Commercialization of Meteorology'. *Social Studies of Science* 40: 705–730.
- Randalls, S., and J.S. Pollard. (draft) 'Economic Geographies of Market Making: Financializing Weather Risk Management in the UK Energy Sector.'
- Reith, G. 1999. *The Age of Chance: Gambling in Western Culture*. Abingdon: Routledge.
- Standage, T. 1999. 'Everyone Complains about the Weather... Piers Corbyn is Doing Something about it'. *Wired*, 7 February. Available at <http://www.wired.com/wired/archive/7.02/weather.html>. Accessed 16 February 2013.

- Stead, D. 2004. 'Risk and Risk Management in English Agriculture, c. 1750–1850'. *Economic History Review* 57: 334–361.
- Zaloom, C. 2004. 'The Productive Life of Risk'. *Cultural Anthropology* 19(3): 365–391.

Filmography

- Enron: The Smartest Guys in the Room*. 2005. Dir: A. Gibney. 2929 Entertainment and HDNet Films.