

Thoughts on Climate Change and Financial Risk

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PRELIMINARIES

- 1) Climate is the long-term pattern of weather in a particular region or area. Climate change on the other hand is a shift in that long-term, or average, pattern of weather. Weather itself (the day-to-day pattern within climate parameters) is inherently variable or unpredictable, so if the weather one year seems extreme, that, by itself, does not necessarily betoken a change in climate. To detect a change in climate requires observing a series of such extremes.
- 2) Then, as any good statistician will tell us, to be certain that there has indeed been a shift in the long-term average pattern of weather, requires a large number of observations to be, say, 95% confident of your conclusions. A string of 5 heads from a tossed coin would not necessarily lead to you to say the coin was biased; but a succession of 100 heads might. What number would cause you to change your mind 12? 25? 50? And opinions/beliefs can differ with different standards of confidence 99% vs 95% for example. Vigorous debates will ensue even in the case of a simple two outcome uncertainty like the toss of a coin.
- 3) How much more difficulty then when the pattern is more complex – weather is a multi-attribute coin. Weather can involve temperature in summer or winter, rainfall in one month or another and in the annual aggregate. It can involve windstorm or hurricane, local or regional cyclonic activity. Each of these metrics can exhibit extremes. Does the shift in long term pattern have to show in all metrics at once, or just some? How many is enough?
- 4) If the concern is with “Climate Change” as opposed to “Climate” it is necessary to be clear eyed to begin with. The two will be difficult to disentangle. Protecting against the former may be different from protecting against the latter. Ditto assessing the costs of one versus the other. Then again, we are used to protecting against climate extremes, whether they be flood, wind or fire. Is protecting against climate change simply a question about how much more we need to do, or is it qualitatively and quantitatively different?
- 5) These are fundamental questions that need clarification before one can opine intelligently in the invited public forum of the CFTC (Release number 8541-22) where comment is sought on “climate-related financial risk” to better inform its oversight and understanding of pertinent derivative markets.

- 6) Notwithstanding, the following comments are intended to draw attention to the efforts that have already been made in derivative and primarily in security markets to deal with climate extremes while remaining agnostic on whether such extremes result from Climate or Climate Change. The comments are also offered in general terms and some may be more pertinent to the SEC than the CFTC or indeed Insurance Regulators.

OVERVIEW OF THE CLIMATE-RELATED FINANCIAL PROTECTION INSTRUMENTS

- 7) When extreme climate events occur - Hurricane, Storm, Tornado, Flood or Fire – they cause, aside from humanitarian distress, financial distress from destruction of property and/or business opportunity. Economic entities normally profitable in average weather conditions are devastated when extreme events occur. These events are referred to as catastrophes and the insurance and reinsurance industry have existed to offer financial protection for more than a century.
- 8) In August 1992 Hurricane Andrew caused devastating loss to Florida which the reinsurance industry partly underwrote. But more important for the long term, the industry itself woke up to the fact that it also suffered a loss, because its underwriting standards were poor and inadequate. It began to introspectively examine its own concentration of exposure. Was it providing good protection? Was it charging at the right price?
- 9) Stepping into the debate the Chicago Board of Trade [CBoT] introduced, late in 1992, Catastrophe futures and options. After a sputtering start, those options traded quite successfully for the next 4 or so years. Users included insurers, reinsurers, speculators and institutional and individual investors, all eager to experiment in this new market. It was a new source of risk-taking capital for insurers. However, while the Cat options opened the door to, and the concept of, complimenting the reinsurance business with derivatives, the derivative business model was not sustainable¹. Instead, the thirst for this new source of risk capital migrated from the derivatives market to the securities market.
- 10) Simultaneously with the CBoT developments the traditional reinsurance industry went through a transformation. Specialist Catastrophe reinsurers popped up – notably Renaissance Re, Partner Re, Mid-Ocean Re etc. separate from multiline reinsurers like Swiss Re, Munich Re and General Re which had previously provided Cat protection.

¹ The CBoT platform was dedicated to high frequency trading, which catastrophes were decidedly not. They were low frequency events. It should be noted however, that among the first traders in Cat options were the founders of Nephila Capital, today one of the largest specialist managers of alternative hedge fund risk capital. Ditto the principals at Fermat Capital and Elementum cut their teeth with the CBoT Cat Options.

- 11) Also, the interest and excitement that had been generated by the CBoT's Cat Options (derivatives) morphed into Cat Bonds (securities), now more generally labelled Insurance Linked Securities [ILS]. The first small experimental deals were introduced in 1996/7. And the experiments were affirmed by the first large issuance by USAA in 1999.
- 12) The ILS market is now a major feature of the reinsurance market. Aon Securities in its regular review of the Reinsurance industry estimates that (in rounded terms) while some \$500 billion² of capital is devoted to the traditional (conventional) coverage of Catastrophes, an additional \$100 billion now comes from the "alternative" market, a major component of which is the ILS market.
- 13) Care should be taken not to add those figures together – they are apples and oranges. The traditional capital is leveraged capital; the alternative market is wholly collateralized. The sum of limits in the traditional market is much greater than the capital deployed. Thus, if every covered catastrophe was to occur at the same time to their maximum extent – a very, very unlikely event – there would not be enough capital to pay all claims. However, in the alternative market, full collateralization means the sum of limits equals the capital. All alternative claims will be met.
- 14) Within the alternative market roughly the 40% of the coverage is provided by the ILS market, 40% by the "collateralized re" market and the remaining 20% by an assortment of sidecars, industry loss warrantees, capped quota shares and other swap like instruments. Collateralized re transactions are the private club equivalent of the ILS market. They are not syndicated and therefore do not enjoy the same liquidity as the ILS market but are, for the most part, collateralized similarly. However, while secondary market transactions are possible in the ILS market, it would be a mistake label the ILS market as truly "liquid". It is, only in the sense that hailing a taxi in a suburb is liquid – you may get one – but only if the taxi happens to be cruising that part of town.
- 15) The purpose of this brief overview of catastrophe protection prior to some comments/ observations is to give context. Much has been done in the last 30 years, since Hurricane Andrew in 1992, itself a canary-like event, that has changed the traditional market. Much more could be done, whether or not, there is climate change. However, the noteworthy feature of the history is that from a regulatory point of view, future actions involve the CFTC, SEC and various Insurance Regulators. This is not the exclusive preserve of the CFTC, as the history shows, our comments are equally relevant to the SEC, not to mention the various insurance regulators worldwide.

² Exact figures from their most recent 2021 survey were \$508 billion and \$102 billion respectively.

RELEVANCE OF THE (RE)INSURANCE INDUSTRY TO CLIMATE DISCUSSIONS

- 16) Our Comments are based on observing the “alternative market” and the (re)insurance³ market during the past thirty years. We think that they, the insurers, are well placed to observe on climate or climate change. They after all have provided financial protection against catastrophes for a very long time.
- 17) However, we should not lose sight of the fact that they are experts on only one side of the balance sheet of climate – the downside. Often lost to the debate is the fact that there are some benefits to changes in climate. To cite just one example, passage through the Northwest Passage cuts shipping and freight costs considerably. Ditto passages around Northern Russia.
- 18) Caveat that side of the Balance Sheet then, the industry has experience and data that should be crucial to exposing the costs of climate or climate change. They recognized and acted on the potential shift in climate as far back as 2006, some 16 years ago. (See next paragraph). The point here is to recognize that insurers and the alternative markets have already paved the way, but much more could be done to make them bigger and more beneficial to those seeking financial protection from climate and climate change.
- 19) It had been observed in the latter half of the twentieth century that the mid-Atlantic sea surface temperatures oscillated in a somewhat predictable pattern and that pattern was loosely related to hurricane activity. Towards the end of the century the pattern seemed to shift. Higher than usual temperatures were observed. And the question arose – “Was this temporary or more long lasting?”. Catastrophe modeling companies were loath to adjudicate the answer. But their estimates of what expected losses will accrue to ILS or traditional underwritings depended on what the correct assumption was. Starting with the issue of a security called Calabash Class A-1, RMS (a Catastrophe Modeling company) gave two risk assessments in the prospectus. The investor could choose which scenario they believed was accurate in their due diligence. The two competitor modeling companies AIR Worldwide (now titled Verisk, and the largest provider of ILS risk analyses) and EQECAT quickly followed suit. That practice has been adopted ever since.
- 20) So, there is a rich, 16-year, history of the expected cost of climate change (in the view of the modelers) and with respect to a) the exposures that they are evaluating and b) the influence of mid-Atlantic temperatures. I have used that to estimate the expected cost of climate change (at least from this one source) in a 2018 paper SSRN 3260722 or available at www.lanefinancialllc.com and which is presently being updated. The effort

³ This note uses the labels “insurance” and “reinsurance” somewhat interchangeably. It is well to remember that users of the ILS and alternative markets are both insurers and reinsurers. However, the insurance industry is regulated while the reinsurance market is arguably not. This is a state that should persist. The value of an unregulated market to obtain undistorted prices for transferring risk is essential and incalculable.

requires some large assumptions and simplifications, but suggests that the “climate change” component is still relatively small compared to the underlying climate risk

- 21) The very presence of such two-scenario models does reinforce the perception that climate change is reflected in both frequency (number) and severity (intensity) of the “change” part of climate change, with the larger factor being frequency.
- 22) The up dated exercise is not available in time for these comments. However, industry is tackling climate change and the spirit of the next two broad comments suggest ways in which the existing instruments could be enhanced to do more.

PUBLIC MARKET TRANSPARENCY

- 23) The traditional reinsurance market is opaque. Prices, risks and performance are not readily available to observers outside the industry. Without doubt the insurance industry is complex, comparing like with like would be difficult, but as the ILS market has shown it is not impossible. A larger, more liquid, ILS market would make (re) insurance more transparent and competitive. It should lead to lower prices.
- 24) The ILS market brought some transparency to the traditional market because that was necessary once the risk was “securitized” and a Placement Memorandum was required. However much more needs to be done.
- 25) It took until 2013 before FINRA required ILS transactions to be recorded on the Trade and Compliance Engine [TRACE]. This was a big first step (arguably two decades into the start of the market) to ensure there was at least some “transaction” transparency. Even so, it is “clunky” and not up to the standard set by the research capabilities afforded by the part of TRACE dedicated to corporate or government bonds, for example.
- 26) Perhaps this is because ILS are usually only simple 144A securities i.e., private placements. And we would suggest that making such bonds “public” rather than “private” securities would go a long way to helping more transparency.
- 27) Details about 144A securities investment is restricted to “qualified investors”. Documentation about the risks, prices and performance of ILS investments is confined to an unnecessarily narrow investor class. This inhibits research and stifles adoption and innovation.
- 28) Not to put too fine a point on it, protecting the public investor from catastrophe risk but allowing him to participate in weekly(?) daily(?) options markets (where you decidedly can lose everything), SPACS and High Tech IPOs is misguided. Sort of like “You can

use any sharp knife in the drawer full of sharp knives except the ones with white handles.” Is some public good being served by that?

PROMOTING OR REQUIRING STANDARDIZATION AND DISCLOSURE OF PRACTICE

- 29) The ILS market itself is shifting back to becoming opaque, or at least not quite so clear.
- 30) Most observers of the ILS market know that the investment vehicle “form” used by the ILS market is a floating rate note [FRN]. In fact, they are less and less conventional FRNs which usually have a fixed rate and a floating rate component. Many ILS no longer have a fixed rate. They can best be described as adjustable FRNs or perhaps more appropriately “resettable” FRNs. Thus, in many ILS, especially indemnity-based ones, the underlying risk is reassessed by the designated modeler periodically, usually annually, during the life of the bond. If there is shift in the underlying book of business the deal can be adjusted by a) shifting trigger points, or b) adjusting the fixed rate or c) some combination thereof. The reset can be up or down and may affect one or more deals if there are adjacent structures.
- 31) There is nothing inherently wrong with resettable FRNs and the procedure is fully disclosed in the initial prospectus. However, some ambiguity exists where choices are available and disclosure beyond of the reset is not always made available to non-involved participants. This lack of transparency inhibits secondary market trading and research.
- 32) A second area requiring further disclosure and standardization of practice is the disclosure of loss payments. It is often the case where losses are concerned that the loss payment to the cedant may be made through one or more partial payments prior to final accounting and closure of the transaction. This is not always visible to observers and can lead to confusion.
- 33) Indeed, after a partial payment, the ILS will still have some remaining limit that is tradeable in the secondary market. However, if dealers give price indication sheets are they quoting prices on a) the original limit or b) the remaining limit? And, if they switch from a) to b) at what point is that done? Standardization of practice by the dealers themselves would be best, but it could be reinforced by a standardized and recognized timetable.
- 34) There may also be other instances of disclosure that become necessary as the market grows and evolves to accommodate other kinds of risks etc.
- 35) What would help transparency and disclosure is the development of a Central ILS Document Depository [CIDD] . Prospectuses, Price Indication Sheets, Announcements of Loss Payments, and Changes of Quotation Practice could all be filed and be available to

all interested parties. This would parallel the requirements that the SEC requires of users of the US securities markets. The “Electronic Data Gathering, and Retrieval system known as EDGAR is available to the public. Remember our first recommendation is to make ILS market a public rather than private market. Failing that there is no reason why a CIDD for ILS could be a second-best solution to promote transparency.

36) Presently none of these documents is available to researchers or commercial participants because of rules about “qualified buyers”. Participants in the market do not disseminate information and interested parties get only a patchwork of data. For the markets to grow disclosure and transparency is essential. And to be clear, our objective is to promote growth of the ILS market, not to add burdensome expense to ILS Issuance. These reports are provided to investors anyway. Now they will be available to a wider audience.

FOSTERING LIQUIDITY

37) Another important aspect of promoting the ILS market is fostering liquidity.

38) I acknowledge this is easier said than done. However, one aspect of a vibrant market is that new ideas spring up and their utility is demonstrated by market acceptance, or lack thereof. It is not determined by whether regulators think it is a good idea or not. In that sense I am pleased by the spirit of Release number 8541-22. It invites the public to opine on how the CFTC can help foster ideas in this case, in the context of “climate-related financial risk”. Our response has been to suggest ways to enhance how the CFTC and/or the SEC can improve existing instruments - ILS - that have already provided protection against climate catastrophes.

39) Consider another idea. Promoting the concept of an ILS Swap. This would involve wrapping a swap around an existing ILS. It would be a Total Return swap that mimics/emulates the performance of the ILS itself. And just as the ILS market transforms an insurance risk into a capital market security risk, an ILS Swap further transforms it into a derivative. The same risk has different “forms” but the same substance. It widens the market participants and hopefully deepens the market.

40) This is not a brand-new idea.

41) It has been tried before experimentally by dealers (the swaps were referred to as replicants, they replicate the underlying ILS) and it has been used by cedants/issuers. The very successful World Bank Pandemic Bond [WBPD] of 2017 (successful because it created a claim for the Bank when the Coronavirus hit in 2020) used both the securities and the swap market to get the coverage it needed. Remember also that the swap entered into was fully collateralized.

- 42) Suppose that swap was entered on a public exchange – with all details available for inspection (mostly it was all in the Prospectus anyway). Then other entities or even speculators could post bids and offers on the WBPD Swap at prices acceptable to them. They might find another point of view (counterparty) and enter into a transaction. The buyer and the seller of the swap would effectively be “piggybacking” on the World Bank’s structure. For example, the US or EU governments could create a hedge for their own Pandemic risk, if they thought it mimicked what they were exposed to. Next time perhaps.
- 43) Plenty of critics thought the WBPD over-priced. They could have bought the bonds or the swap or, even an option on the swap. Those actions would not have affected the World Bank, but they would have revealed price to others in the market. And that would be a good thing.
- 44) Of course, leveraging the swap would also be possible. After all an indemnity ILS swap has an expected conditional loss of only 75% on average. If only 75% had to be put up that is some leverage. If the swap wrapped a portfolio of ILS, then may be a 50 % leverage would be possible – like stocks. That would surely make for tighter markets.
- 45) None of this would be possible without the disclosure and transparency improvements suggested above. But if we want to foster innovation let’s start with what’s in front of us. We may end up with a tradeable Catastrophe Index like the S&P or Dow Jones.