Just When You Needed Good News on Catastrophe Insurance – It’s Here!

NAIC P/C Committee
Bradley Kading

August 2013

Summary

• Document role of reinsurance in cat events
• Document distribution of cat losses globally
  — and the benefits of that
• Document impact of new capital
• Focus on risk management opportunity
• Focus on public policy opportunity
Share of Losses Paid by Reinsurers, by Disaster*

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Share of Losses Paid by Reinsurers</th>
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<tr>
<td>Hurricane Hugo 1989</td>
<td>30%</td>
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<td>Hurricane Andrew 1992</td>
<td>25%</td>
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<td>Sept. 11 Terror Attack 2001</td>
<td>60%</td>
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<td>Hurricane Losses 2004</td>
<td>20%</td>
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<tr>
<td>Hurricane Losses 2005</td>
<td>45%</td>
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<td>Hurricane Ike 2008</td>
<td>40%</td>
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* Excludes losses paid by the Florida Hurricane Catastrophe Fund, a FL-only windstorm reinsurer, which was established in 1994 after Hurricane Andrew. FHCF payments to insurers are estimated at $3.85 billion for 2004 and $4.5 billion for 2005. Ike share is an estimate as of 2/9/09.

Sources: Wharton Risk Center, Disaster Insurance Project; Insurance Information Institute.

Regional Distribution of ‘05 Hurricane Payments: Wilma, Rita, and Katrina

U.S. 9/11 Losses as Reported by Reinsurer Headquarters

International insurers and reinsurers paid 64% of U.S. 9/11 claims.

By Co. Headquarters $,MM
- U.S. Reinsurers $4,109
- U.S. Primary $5,659
- Europe Reinsurers $5,506
- Europe Primary $3,865
- Bermuda $2,479
- Lloyd’s $2,844
- Japan $2,338
- Total Announced $26,799

Hurricane Sandy – Where the Money Comes From ($ Millions)

Bermuda’s $35b U.S. Contribution

From 2001 to 2012, Bermuda’s (re)insurers estimated contribution to U.S. catastrophe losses:

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<tr>
<th>Disaster</th>
<th>Estimated Contribution</th>
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<tr>
<td>2001, Terrorism 9/11</td>
<td>$ 2.5 B</td>
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<tr>
<td>2004, Florida Hurricane Quartet</td>
<td>$ 3.5 B</td>
</tr>
<tr>
<td>2005, Katrina, Rita and Wilma</td>
<td>$18.0 B</td>
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<tr>
<td>2008, Hurricanes Ike, Gustav</td>
<td>$ 4.0 B</td>
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<td>2010, BP Deepwater Horizon</td>
<td>$ 1.0 B</td>
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<tr>
<td>2012, Hurricane Sandy</td>
<td>$ 3.0 B</td>
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Source: Cummins IDC Study, Dowling, Insurance Insider, Trade Press

Reinsurance Capital at Record Levels

Reinsurance capacity available to take on natural catastrophe risk is at record levels (2012) – Supply Exceeds Demand!

Aon Benfield calculates reinsurance capital at $505 billion.
- The subset of 31 traditional reinsurers reported capital of $313 billion.
- Guy Carpenter (a unit of Marsh) reported overall capacity $312 billion (April 2013).

- Property catastrophe reinsurance is a subset of this reinsurance market.
  - Dowling and Partners, globally $240 billion of limit (coverage) was written in 2012
  - The US accounted for one third ($79 billion) of this limit.
## Benefits of Global Catastrophe Pooling

- **Increased capacity for insurers:**
  - Reinsurers can offer more coverage per client
- **Reduced credit risk for cedents:**
  - Fewer eggs in more baskets
- **Diversification of reinsurers’ risk:**
  - Uncorrelated risk by peril, geography and time
  - Capital supports more capacity at lower prices
- **External capital contribution to devastated local economy**

## Capital Markets 14% of Cat Capacity: Who Are They?

- Alternative markets supplied $44 billion in property cat limits while traditional reinsurance supplied $268 billion
- **Guy Carpenter:**
  - “In general terms, it is safe to say that capacity from alternative markets has never been more competitive and in some cases it is clearly priced below the traditional market.”
Growth of ART Cat Capacity

Source: Goldman Sachs, RAA presentation, May 2013

Goldman Sachs Non-Traditional Capacity Breakdown

Source: Goldman Sachs, RAA presentation, May 2013
Sources of Alternative Capital

Source: Goldman Sachs, RAA presentation, May 2013

Hedge Funds
Sovereign Wealth
Pension Funds
Family Funds
Other

Source Markets and Reinsurance Markets Converge: What Does it Mean?

- ECON 101: Supply outstrips demand, prices fall
- Florida catastrophe reinsurance prices drop 15 to 20%
- Reinsurance prices decline generally July 1 renewals
More Capacity is Available! Use it!

- Based on current excess supply:
  - Reinsurers have been reducing prices
  - Increasing dividends to shareholders
  - Buying back stock
- Why not put capital to work taking on more risk?

What Could Change this Dynamic?

- Are capital providers weak-kneed after loss?
  - Tested over 20 years, committed for the long haul
- Paradigm shifting events:
  - Unexpected events can change the equation; but trend is to more capital/capacity
- Increase in interest rates/recovery to the norm:
  - Impact if market rates move up to 5%?
- Obama reinsurance tax:
  - Oppose the affiliate reinsurance tax, reduces reinsurance supply by 20%
State Policy Makers: What this Means for You

- Coastal residual markets:
  - Buy more reinsurance, transfer the risk and prevent bond debt/cross state subsidies
- Flood Insurance (NFIP):
  - Support Biggert/Waters, transfer risk to reinsurance markets
- Earthquake insurance:
  - Secondary mortgage market EQ requirements? increase consumer take up of EQ cover

About ABIR

- 21 Companies
- Highly capitalized, distinct regulation
- $66.4 billion gross written premiums, $95.2 billion surplus
- Worldwide business enterprises
- Principal underwriting operations in Bermuda, Europe and the United States
ABIR Members

- ACE
- Allied World
- Alterra/Markel
- Arch
- Argo Group
- Aspen
- Assured Guaranty
- Axis
- Catlin
- Endurance
- Hiscox
- Lancashire
- Montpelier Re
- Partner Re
- Platinum Re
- Renaissance Re
- Third Point Re
- Tokio Millennium Re
- Torus
- Validus Re
- XL Group plc

ABIR Contacts

Bradley Kading, President and Executive Director
Bradley.Kading@ABIR.bm

Leila Madeiros, Senior Vice President, Deputy Director and Corporate Secretary
Leila.Madeiros@ABIR.bm

www.ABIR.bm
www.ReinsuranceBermuda.com
Climate Risk Analytics

Real-time Decision Making for the Public and Private Sectors

Pete Dailey, Ph.D.

Agenda

• Understanding long-term climate trends and impacts on CAT risk
• Applying knowledge of climate impacts to short- and medium-term decisions
• Leveraging the state-of-the-science in real-time decision making
IPCC “Emissions Scenarios” Provide Varying Perspectives on the Future

Climate Models Are Computer Representations of the Climate System

- Climate models are numerical/mathematical representations of physical properties and processes
- They are not used to simulate individual weather events, but provide information on the large scale environment
- For climate projections, an assumption is made that the models are "getting it right" based on their acceptable performance for simulating past and present climate and its variability
Catastrophe Modeling Has Greatly Reduced Reliance on Short-Term Averages

Long-term averages and 'expected' outcomes are of limited value to decision makers.

Catastrophe risk managers and P&C insurers are probabilistic by nature. Understanding climate variability is critical.

Decision Makers Deal with Full Temporal Spectrum from Real-Time to Seasonal to Long-Term Future

Decision Timeframe

ClimateCast®
Climate Conditioned Catalogs
Financial Risk Metrics using CAT Models
Impacts Based on Climate Model Projections
Qualitative Comparison of the State of Research on the Financial Impact of Climate Change on Atmospheric Perils

<table>
<thead>
<tr>
<th>Tropical Cyclones</th>
<th>Extratropical Cyclones</th>
<th>Flood</th>
<th>Severe Thunderstorm</th>
<th>Wildfires</th>
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- Decrease
- Increase

Challenges Posed to Climate Scientists and Climate Models Should Not Inhibit Actionable Research

- Uncertainties are large, but can be used to gauge relative confidence in results
- Global results cannot necessarily be applied to individual regions or locations, and uncertainty grows with finer scales
- Even amongst experienced climate scientists, opinions vary regarding the potential future impacts of climate change
- Despite wide range of plausible climate scenarios, all credible climate models show continued trend in globally increasing temperatures
- Climate model results become less robust with finer spatial and temporal scales, but regional or "mesoscale" models can fill the knowledge gap
**ABI Results Released after Extensive Peer Review Throughout the Project**

**ABI RESEARCH PAPER NO 19, 2009**

**THE FINANCIAL RISKS CLIMATE CHANGE**

Examining the financial implications of climate change using climate models and insurance catastrophe risk models

Report by AIR Worldwide Corp. and the Met Office
By Peter Daley, Matt Huddleston, Simon Brown and Dennis Feikin

Source: [http://www.abi.org.uk](http://www.abi.org.uk)

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**Experimental Framework is Used to Quantify the Impact of Projected Sea-Level Rise on U.S. Storm Surge Risk**

Baseline (Current Climate) Storm Surge Risk using AIR US Hurricane Model

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<th>LOW IMPACT</th>
<th>HIGH IMPACT</th>
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Regional Sensitivity of Storm Surge Risk to Projected Sea-Level Rise
Using North Atlantic SST Anomalies to Quantify Volatility in TC Activity

Air Models Already Account for Observed Trends which Affect Risk in the Current Climate

CUMULATIVE U.S. LOSS PRODUCING HURRICANES IN THE CURRENT WARM SST PERIOD FROM 1995-PRESENT
Volatility in Storm Counts

Atlantic Storm Counts (1970 to 2009)

- Basin Storms
- Hurricanes
- Hurricane LFs (US)

Mean Activity and Std Dev in Activity

Coefficient of Variation (COV)

- Basin Storms
- Hurricanes
- Hurricane LFs (US)

Atlantic Seasonal ACE

Tails of the Distribution are Important: Track Volatility is Influenced by Changing Ocean Conditions
Atlantic Hurricane Season Itself May Be Getting Longer, with More Notable Activity in the ‘Tails’ of the Season


Climate Can Impact Expected (Average) Conditions as Well as the Volatility (Deviation from Average)

- Key climate ingredients for hurricane development
- Global tropical storm activity
- Storm counts in the Atlantic basin
- Frequency of landfalling hurricanes
- Total accumulated damaging wind energy (e.g., ACE)
- Storm tracks
- Rapid intensification
- Length of season (annual distribution of activity)

With increased volatility by storm and by season, decision makers are turning to state-of-the-science climate analytics and real-time decision tools
Despite Persistence of Atlantic SSTs over Short Timescales, Multi-Year Predictions are Highly Uncertain

TIME SERIES OF ATLANTIC SEA SURFACE TEMPERATURE ANOMALIES


ClimateCast Provides Current View of Atlantic Hurricane Risk, Tuned to the Meteorologist or the Quants

Meteorologist Dashboard

Risk Manager (Insurer) Dashboard
Meteorological View of Risk

Insurance View of Risk (Industry or Portfolio)
Meteorological View of Risk During Tropical Storm Chantal (2013)

Insurance View of Risk During Tropical Storm Chantal (2013)
Insurance View of Risk During Hurricane Ike (2008)

ClimateCast Ensemble Forecast for Hurricane Ike (2008) Shows Potential for Significant Inland Damage
Ensemble Cone Scoring Adds Decision Value by Ranking the Confidence One Can Put in Each Forecast

ClimateCast Data Readily Translate to Visual Decision Aids for Risk and Emergency Managers
ClimateCast Data Readily Translate to Visual Decision Aids for Risk and Emergency Managers

Versatile Delivery Platform is Suited to Needs of Emergency Management

- Tree debris
- Displaced households
- Affected population
- Facility threshold wind speeds
- Storm surge height
- Potential for road closures
- Damage to public buildings/infrastructure
- Evacuation planning
Some Key Takeaways

• What aspects of climate change should insurers and risk managers be most aware of?
  – ‘Portfolio of Climate Risks’ is unique to each stakeholder
  – Using an ensemble approach, catastrophe modelers can provide expectations and quantify uncertainties by region and peril

• How can catastrophe modeling firms help risk managers make better more informed decisions?
  – Framework for quantification and standardized decision metrics
  – Make clear distinction between current and future climate risks

• How much weight can risk managers assign to future climate projections in light of high levels of uncertainty?
  – Uncertainties must be properly quantified and reconciled
  – *Future* is a relative term; *most practical information* in real-time
NAIC Summer 2013 National Meeting: Mitigating Distraction – Saving Lives

Roger C. Lanctot, Associate Director Global Automotive Practice Strategy Analytics (On behalf of Global Mobile Alert)

August 2013
The Problem

3,000 annual distracted driving fatalities
9,000 annual intersection fatalities
Exhibit 3.1: Daily Phone and SMS Usage while Driving (US, 2010-2013)

Phone Calls
- 2010: 44%
- 2012: 41%
- 2013: 32%

Read SMS
- 2010: 30%
- 2012: 25%
- 2013: 16%

Write SMS
- 2010: 29%
- 2012: 24%
- 2013: 16%
Exhibit 3.2: Daily Mobile Phone Use while Driving by Device Type

- Outgoing phone call:
  - All: 32%
  - Smartphone: 35%
  - Non-smartphone: 23%

- Answer a phone call:
  - All: 32%
  - Smartphone: 34%
  - Non-smartphone: 24%

- Write SMS:
  - All: 16%
  - Smartphone: 18%
  - Non-smartphone: 9%

- Read SMS:
  - All: 16%
  - Smartphone: 18%
  - Non-smartphone: 10%
Exhibit 3.4: Daily Mobile Phone Use while Driving by Age (US)
Exhibit 4.1: % Respondents who use Smartphone Applications While Driving (US)
Exhibit 4.2: Daily and Weekly Usage of Smartphone Apps while Driving (US)

- Mapping/Navigation: 9% Daily, 22% Weekly
- Local Search: 6% Daily, 19% Weekly
- Internet Radio: 9% Daily, 13% Weekly
- Social Networking: 10% Daily, 11% Weekly
- Weather: 8% Daily, 11% Weekly
- Traffic: 6% Daily, 11% Weekly
- News: 5% Daily, 7% Weekly
- Gaming: 4% Daily, 5% Weekly
The Solution

Laws/Mandates/Guidelines
Technology/Innovation
Laws/Mandates/Guidelines = Confusion
Map of hand-held cellphone bans (all driver)
(hover over map for more detail)
Map of bans specific to young drivers and all cellphones
(hover over map for more detail)
Map of bans specific to bus drivers and all cellphones
(hover over map for more detail)
What Are the Car Companies Doing?
### Connected Vehicle UX Comparison

Data from ACI user experience benchmark studies and heuristic evaluations of infotainment systems.

- **Features**: Indicated by green circles, with an asterisk (*) for additional notes.
- **Discoverability**: Indicated by red circles.
- **HMI**: Indicated by yellow circles.
- **Integration**: Indicated by orange circles.
- **Overall UX**: Indicated by green circles.

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<thead>
<tr>
<th>System</th>
<th>Features</th>
<th>Discoverability</th>
<th>HMI</th>
<th>Integration</th>
<th>Overall UX</th>
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<td>Toyota Touch &amp; Go</td>
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* When combined with Sirius Travel Link Services
** When combined with Sirius Travel Link Services and $50 BringGo navigation app
What Are the Carriers Doing?
What Could the Carriers and Car Companies Do Together?

Two Main Safety Use Cases

Smartphone as personal safety device

Smartphone as aftermarket device

SOURCE: Qualcomm
Use Cases at a Glance

- Pedestrian Safety (P2V)
- VRU and Infrastructure Interaction (P2I)
- Taxi Finder or Car Pool Finder (P2V)
- VAD: Here-I-Am device (V2V, V2I)
- ASD: Aftermarket OBU (V2V, V2I)
- In-Car Signage (V2I)
Engineering Overview of Enabling DSRC in Smartphones

- Implement DSRC Protocol to allow for composing and reading standard compliant DSMs – need capacity to add data-elements
- HMI for alerting users of safety concerns
- Process safety messages for potential collisions and warnings
- Context-Aware algorithm for power savings/congestion

- Update firmware to allow DSRC broadcast transmissions/receptions in DSRC band

- Characterize GPS accuracy
- Calibrate performance of context-aware modules

- Enable 5.9 GHz transmissions
- Calibrate RF capability
Terminate Confusion:

National Mandate: Do not touch the phone while driving
Market impact:

Simplified message for car makers, handset makers, wireless carriers, consumers
Easier for car makers to design toward
Clearcut enforcement proposition
Technology/Innovation
Contextual Awareness
Wireless Connectivity
Smartphone Integration
Leverage smartphone and apps to avoid accidents, save lives
GM Shares Qualcomm’s View: V2X Smartphone Integration

Advantages

- Leverages existing customer devices to provide services at a lower cost
- Integration with vehicle systems provides access to vehicle sensors, antennas and power
- Multi-function platform can host a variety of information services
- Upgradable hardware

SOURCE: GM
App would give 911 operators control of callers' smart phones

By William Jackson  |  Jun 12, 2013

A smartphone application to be publicly demonstrated next week could let emergency 911 operators take control of phones at the scene of an incident to gather medical data from victims.
Qualcomm’s Prototype Effort

- Main purpose: Demonstrate smartphones can be used for communications in DSRC band without adding new hardware
- Enabled DSRC (5.9GHz) band operation in both Qualcomm reference design phones and existing commercial phones
  - Currently doing extensive lab and field measurement and test
- Integrated with Qualcomm situational aware capabilities to gate the DSRC operation
- Added safety applications with HMI design to demonstrate the DSRC capability
  - HMI utilizes both visual and audio warnings
Connected Smartphones in Cars

Location awareness – alerts
Car controls phone – screen shut off
Contextual awareness
External connections – intersection signals
Vehicle connections – cams, sensors

Global Mobile Alert – Wireless communication with traffic lights for both presence of light and phase – Use of map data for intersection and other location alerts
Global Mobile Alert

Alert Mode
- Continuous
- During Phone Calls Only
- Deactivated

OPTIONS
Global Mobile Alert
Thank you!

Roger C. Lanctot
Associate Director
Global Automotive Practice
Strategy Analytics
rlanctot@strategyanalytics.com
+1 (617) 614-0714
Twitter: @rogermud
11-95.COM BRIEFING AGENDA

- Introduction
- Brief Overview
- 11-95 Quick Verification Software (QVS)
- Benefits of the 11-95 QVS
- Demonstration
- Question and Answer
11-95.COM LLC., DEVELOPS SOFTWARE TO DETECT AND PREVENT INSURANCE FRAUD.

11-95.COM CULTIVATES TECHNOLOGY TO FIGHT INSURANCE FRAUD IN A VARIETY OF AREAS INCLUDING: AUTOMOBILE, MEDICARE AND MEDICAID.

11-95.COM DEVELOPS SOFTWARE WHICH REMAINS RELEVANT AS TECHNOLOGY EVOLVES.

THE QVS FACILITATES COLLABORATION BETWEEN INSURANCE COMPANIES, LAW ENFORCEMENT AND DMV.

THE UTILITY OF THE QVS IS FUNCTIONAL ANYWHERE AUTOMOBILE INSURANCE IS COMPULSORY.
LINKING ELEMENT
The 11-95 QVS reduces opportunities and in some cases eliminates the ability to commit automotive insurance fraud. The QVS fraud prevention capabilities include:

- Verifies “in real time” proof of insurance, vehicle registration and validity of drivers license; Provides instant access via linking element to database.

- Delivers scan results immediately to device (Tablet, Smartphone, Laptop, or PC).

- QVS enables the tracking of fraud trends.

- QVS can be used to develop fraud resistant, prevention and mitigation strategies.

- The QVS is a scalable platform which incorporates user roles;

- Facilitates liaison functions between insurance regulators, federal, state, and local law enforcement and other specific anti-fraud organizations;

- Provides a technology solution for data collection, dissemination, and information sharing.

- 11-95 QVS software is provided at No Cost!
The 11-95 QVS uses a proprietary Security Stack (SAMSON) to resist compromise; this includes the standard SSL (HTTPS) 128 bit encryption.

The 11-95 QVS Does Not Collect or maintain any Personal Information, we route information to secured devices.

The 11-95 QVS Does Not Collect, Store, or Exchange proprietary insurance company customer lists.
Questions
THANK YOU