WSIA WHOLESALE & SPECIALTY INSURANCE ASSOCIATION

FALL 2024

White Paper Contest Winners

1st Place:
Jo Ismail
California State University – Fullerton

Rocky Waters: Navigating Changing Weather Patterns and Their Impacts on the Excess & Surplus Sector

2nd Place:
Peyton Holly
Arizona State University

Weathering the Risks: Innovations and Challenges in the E&S Insurance Market

3rd Place
William DeBord
Eastern Kentucky University

Generative AI's Effect on the Market for Excess and Surplus Insurance

Rocky Waters: Navigating Changing Weather Patterns and Their Impacts on the Excess & Surplus Sector

Jo Ismail

California State University, Fullerton

December 9th, 2024

Table of Contents

Introduction

Insurance has historically been a steady industry that people can rely on. Unlike more volatile industries such as technology or entertainment, insurance holds strong even during economic instability. Part of this strength is due to the foundation of data that insurance builds its predictions on; everything from auto accident rates to cybercrime incidents is recorded. And with the noticeable increase in destructive storms falling this year, that data will be more vital than ever. The insurance industry is intimately acquainted with natural disasters and their results. Decades of documented information have led the insurance industry to create various policies and predictors to handle these inevitable events, and these disasters are only getting more and more expensive. A study discussing the financial aftermath of Hurricane Andrew found that "The property-liability insurance industry estimates that Andrew caused more than $20 billion in property damage. This dwarfs the $7 billion in claims paid after Hurricane Hugo (the previous costliest natural disaster) struck North Carolina and South Carolina in September 1989." (Lamb, 1995, pg. 112). $20 billion in damages was an unthinkable number when it came to damages in 1992; Hurricane Milton, the latest storm to sweep through America, is already at an anticipated $34 billion. With the rising number of named natural disasters hitting the country, this is no longer something that the insurance industry can put off as a priority. The excess & surplus sector needs to analyze the various risks that it currently faces and start to build the foundations of solutions that will save the industry from drowning in these rocky waters.

Risks Facing the Industry

With the repeated natural disasters that have occurred over this year alone, various excess & surplus insurance companies are struggling to keep up with it all. A study by the Swiss Re Group

analyzing severe storms states, “A high frequency of small to medium events resulted in global insured losses from natural catastrophes of USD 60 billion in the first half of 2024” (Zurich, 2024). That 60 billion is already 62% above the ten-year average which is unsurprisingly putting a significant strain on insurance companies and customers alike. The two most recent hurricanes to sweep through the American southeast, Hurricane Helene and Hurricane Milton, will only compound this issue as this year wraps up.

Impacts on Data and Actuarial Predictions

The industry predictions are wrong, and there’s a fairly simple reason for that: the climate is rapidly changing from what it once was. An article discussing the future of home insurance says, “These simulations are typically built on historical severe weather patterns, but because average temperatures are rising, the past is no longer prologue.” (Irfan, 2024). The unfortunate nature of our current reality is that the long-term effects of climate change are finally showing in a major way. The number of storms that are doing significant damage is rising each year.

Figure 1

U.S. Hurricane Strikes by Decade

Decade	Saffir-Simpson Category					All	Major
	1	2	3	4	5	1, 2, 3, 4, 5	3, 4, 5
1961 – 1970	0	6	2	3	1	12	6
1971 – 1980	6	2	4	0	0	12	4
1981 – 1990	9	1	4	1	0	15	5
1991 – 2000	3	6	4	0	1	14	5
2001 – 2010	8	4	6	1	0	18	7
2011 – 2020	11	4	1	2	1	19	4

Note. Data by the National Hurricane Center.

There were three major named storms in this year alone and everyone resulted in massive amounts of damages that needed coverage payout. The simulations that the insurance industry

relies on need to be adjusted to account for these increasing effects of climate change. These natural disasters are only getting more expensive for the insurance industry as well. Every year, more and more people move to coastal areas with high hurricane risks. A study examining rising hurricane damages found that "Increasing societal vulnerability, that is, more people and wealth along hurricane-prone coasts, seems to explain increasing hurricane damages." (Sadowski and Sutter, 2005, pg. 423). No matter the risk, people will not stop living in high-risk areas. From vacation homes to generational dwellings, people have historically lived along coastlines. Several major population hubs are located in these areas and as businesses continue to thrive there, damages will rack up with every single disaster. Now there is a theoretical cost that covers even the most precarious of property. Still, the reality is that most people will not be able to afford that premium, especially from the private insurance sector. Companies are at risk of bankruptcy if they even attempt to enter flood insurance. Ifran states that "After Hurricane Andrew rammed into the tip of Florida at Category 5 strength in 1992, causing $25 billion in insured losses (1992 dollars), at least 16 insurance companies became insolvent." (Ifran, 2024). Unfortunately, this is not an uncommon sight after such a large natural disaster. The increasing costs are putting more companies out of business every year.

How Federal Legislation Affects Insurance

The failure in insurance coverage can also be assigned to another source outside of the private insurance sector. Specifically, the National Flood Insurance Program is the federal insurance plan that millions of Americans rely on for flood insurance. However, this program has been ignored and has been underfunded for quite some time. Short-term funding for the program cycles through Congress every few months, with the next vote coming up soon. The Vox article explains that "The next funding deadline is December 20, 2024. If authorization lapses, the NFIP

would stop selling and renewing flood insurance for millions of people." (Irfan, 2024). With how risky many companies in the private sector find flood insurance, people have no choice but to lean on this program for any modicum of protection. But these people may never receive their coverage that they are so desperately relying on. When discussing the payout of home insurance after Hurricane Helene and Hurricane Milton, an article covering the increasing lack of coverage said, "With another storm kicking up, holes in insurance policies are destined to frustrate more owners in Florida." (Staff, 2024). This is only further confirmed by data the program itself released this year revealing the program's statistics on financial losses by state.

Figure 2

Post-Hurricane Financial Losses by State

State	Number of Records	Closed With Payment Losses	Open Losses	Closed Without Payment Losses	Total Payments
FLORIDA	18,355	276	17,515	564	$ 61,923,768
NEW MEXICO	77	1	75	1	$ 275,892
NORTH CAROLINA	39	0	34	5	$ 17,000
GEORGIA	9	0	7	2	$ -
SOUTH CAROLINA	8	0	8	0	$ -

Note. Data set from the National Flood Insurance Program showing the top five states in financial losses for 2024.

Out of the 18,355 claims opened in Florida in 2024, only 840 cases have been closed with only 276 of those cases resulting in payment of losses. Thousands of people have been left stranded with their cases left open and no help in rebuilding their lives. These numbers are only going to rise as people get better at surviving. When looking at fatalities, Sadowski and Sutter state, "Through improved hurricane warnings, better evacuation, and engineering advances, the probability of fatalities has been reduced, thereby decreasing the expected cost of living along

hurricane-exposed coasts." (2005, pg. 423). The private sector is increasingly leaving these high-risk areas as these disasters get worse, leaving thousands of people with no option but to buy federal coverage to protect themselves. However, with the increasing lack of payouts, people are losing faith in insurance entirely.

Media Coverage in the Aftermath

Internal factors such as high damages and federal funding are not the only risk the industry is facing right now, however. The media attention surrounding the insurance industry post-Hurricane Helene and Milton has been overwhelmingly negative. Insurance is already an industry that many do not understand; from the perplexing jargon to the complex calculations, those unfamiliar with the industry often have a hard time navigating it. That difficulty is only compounded when one is trying to handle all the requirements of making a claim after possibly losing their entire livelihood in a natural disaster. And the industry does not always make it easy for those looking for relief. Florida is a state that knows this well; due to the state's proximity to the ocean, they are at an increased rate for natural disasters such as hurricanes and floods. Expectedly, this increased risk comes with an increased cost. As stated in a Vox article covering the recent hurricane damage, "Florida homeowners already pay the highest rates, on average about $3,600 per year, according to the Florida Office of Insurance Regulation, well above the national average of around $2,400 per year." (Irfan, 2024). These high premiums bring high expectations for customers. When people spend years paying high premiums, those who do expect to see returns in the event of a natural disaster. But those returns may never come. According to an article covering the aftermath of Hurricane Helene, "Hurricane Ian struck two years ago, but 50,000 claims remain unresolved, according to the state of Florida." (Staff, 2024). Now there are a wide variety of reasons that a claim may go unresolved, but those reasons do not matter to those who

are currently suffering and need relief. And they certainly do not matter to the media, who are predisposed to spin simple facts into sensational scandals. The insurance industry is failing its customers, and the media is making sure to document every second of it.

Addressing the Issues

Industry Response

To start, the insurance industry needs to understand that this year is not an anomaly. The changing climate has increased the likelihood of natural disasters such as storms or hurricanes, and the decrease in fatalities during these events due to early warnings and evacuation strategies means that there are more people left after these disasters that need relief. A study looking at how hurricane fatalities and damages have shifted over time states that, “Advances in meteorology, engineering, and emergency management have combined to make hurricanes less deadly over time. Yet if hurricanes are less likely to produce fatalities and injuries, living along an exposed coast becomes more inviting, and coastal populations will increase.” (Sadowski and Sutter, 2005, pg. 431). As long as safety protocols for these natural disasters keep advancing, the industry is going to see an increasingly higher number of claims as more people are left alive with nothing to return to. With the way this system is currently running, many of those claims will be left unaddressed. This will only draw more media attention the longer that the industry leaves these larger problems unaddressed.

Changing Federal Legislation

It is also important to keep in mind that this problem is not one that the private sector of storm insurance can solve alone. Due to the massive amount of damage caused by these storms,

many people rely on the National Flood Insurance Program for affordable coverage. However, the National Flood Insurance Program may not always be there to fall back on. According to the latest report by the Congressional Research Service analyzing the program, “As of September 30, 2024, the NFIP had $5.001 billion available to pay claims, with $1.339 billion in the NFIF and $3.662 billion in the Reserve Fund, and can borrow up to $9.9 billion from Treasury, if needed.” (Congressional Research Service, 2024, pg. 1). This means that the National Flood Insurance Program could only cover about 14% of the estimated $34 billion of damages done by Hurricane Milton alone, leaving the insurance industry to cover the other 86%. Currently the National Flood Insurance Program is no one’s priority. Until a major storm hits, no one thinks about its funding or long-term future. However, it has seen repeated success when it comes to short-term funding. The recent report from October discussing the program’s reauthorization states that “Since the end of FY2017, 31 short-term NFIP reauthorizations have been enacted.” (Congressional Research Service, 2024, pg. 1). This shows that politicians up in Congress do see the importance of the National Flood Insurance Program when it is put in front of them. The insurance industry can push for more focus to be placed onto venturing that this program continues to be funded. And while the program may have debt, there has now been a precedent set for getting that debt cancelled. As the report explains, “On October 26, 2017, $16 billion of NFIP debt was cancelled to make it possible for the program to pay claims for Hurricanes Harvey, Irma, and Maria. This represents the first time NFIP debt has been cancelled” (Congressional Research Service, 2024, pg. 3). Seven years later and Congress may be convinced to cancel that debt again. There are billions in damages that need to be covered, and that cost is only compounding as the decade continues. If the industry can lobby for this debt to be forgiven, even partially, people will receive coverage without

bankrupting companies. This relief will also help repair the severe reputational damage that the insurance industry has taken following the various disasters that have landed this year.

Conclusion

It is not too late for the industry to prepare for these upcoming storms. By properly analyzing how the historical precedent has changed over the past few decades, preparations can begin for dealing with the upswing of natural disasters that have revealed themselves. Hurricanes and storms will only cause increasing damages as safety procedures are continually improved and continue to keep people alive. If companies want to continue operating in the private sector providing flood insurance, they must be aware of how these rising costs will affect them. Dozens of companies have gone bankrupt due to claims from damaging storms. It is also important for the industry to keep an eye on the National Flood Insurance Program and its funding. Millions of Americans rely on the program for flood insurance due to the lack of companies that feel comfortable providing insurance for something as risky as this. As long as people and organizations still operate along the coastline, something that does not seem to be changing any time soon, the fact that the federal sector does not have enough resources to cover the gap that the private sector has left is a nationwide problem that needs to be addressed sooner rather than later. The industry must start addressing these problems now. As the Vox article describes the industry, “Insurance is also where the risks of tomorrow manifest today, and with rising average temperatures, many buildings will face bigger threats.” (Irfan, 2024). By examining how these threats are changing with the climate, the industry can begin to minimize the growing risk that people and property alike will face as disaster swells.

References

Congressional Research Service. (2024). National Flood Insurance Program Borrowing Authority. In *Congressional Research Service* (pp. 1–4). Congressional Research Service. https://crsreports.congress.gov/product/pdf/IN/IN10784

Irfan, U. (2024, October 9). *Just how doomed is home insurance?* Vox. https://www.vox.com/climate/377094/hurricane-milton-helene-home-insurance-flooding-damage

Lamb, R. P. (1995). An Exposure-Based Analysis of Property-Liability Insurer Stock Values around Hurricane Andrew. *The Journal of Risk and Insurance*, *62*(1), 111–123. https://doi.org/10.2307/253695

National Hurricane Center. (n.d.). *U.S. Hurricane Strikes by Decade*. [U.S. Hurricane Strikes by Decade] Www.nhc.noaa.gov. https://www.nhc.noaa.gov/pastdec.shtml

Sadowski, N. C., & Sutter, D. (2005). Hurricane Fatalities and Hurricane Damages: Are Safer Hurricanes More Damaging? *Southern Economic Journal*, *72*(2), 422–432. https://doi.org/10.2307/20062119

Staff, T. (2024, October 7). *Hurricane Helene victims face second shock: denial of insurance claims*. The Real Deal. https://therealdeal.com/national/2024/10/07/hurricane-helene-victims-face-denial-of-insurance-claims/

The National Flood Insurance Program | FloodSmart | NFIPServices | Flood Insurance Data and Analytics. [Financial Losses by State]. Nfipservices.floodsmart.gov. https://nfipservices.floodsmart.gov/reports-flood-insurance-data

Zurich. (2024, August 7). *Severe thunderstorms drive insured losses to USD 60 billion in first half of 2024, Swiss Re Institute estimates*. Swiss Re Group. https://www.swissre.com/press-

release/Severe-thunderstorms-drive-insured-losses-to-USD-60-billion-in-first-half-of-2024-Swiss-Re-Institute-estimates/fdefcc81-c403-4ce8-ab2c-37ca6d98cf4a

Weathering the Risks: Innovations and Challenges in the E&S Insurance Market

Peyton Holly

Dr. Jelena Milovanovic

Arizona State University

December 1, 2024

1. Introduction

Changing weather patterns are undeniably impacting the entire economy, including the excess and surplus (E&S) insurance market. With less regulatory oversight, E&S carriers have flexibility in rates and coverage but cater to insureds unable to bind coverage in traditional markets. Climate change has resulted in increasingly frequent and severe natural disasters across the country, including hurricanes, wildfires, and convective storms, resulting in substantial financial consequences for E&S carriers. As more insureds seek coverage from E&S carriers, E&S carriers struggle to ensure their solvency. This is further amplified by the skepticism facing catastrophe modeling and the increased regulation of insurance as a result of climate change.

As the E&S market becomes ideal for insuring catastrophe-related risks, many carriers are raising premiums. However, many carriers are instead diversifying coverages and offering creative solutions to satisfy policyholders and reduce climate-related risks. Dynamic, customizable coverages are easy to understand and reduce the risks of high losses associated with changing weather conditions. Incorporating AI and innovative solutions into catastrophe modeling and underwriting may set up a sustainable future for E&S carriers.

2. Climate change

Climate change drives extreme weather conditions and creates ideal environments for natural disasters, such as hurricanes, wildfires, and convective storms. Rising ocean surface temperatures intensify evaporation and the transfer of heat, creating severe hurricanes and storms with aggressive wind, heavy rainfall, and more power to continue on its path inland

(Environmental Defense Fund). Tropical storms are rapidly transforming into major hurricanes, giving communities little time to prepare for the potential damages. Hurricane Helene, for example, hit the gulf coast as a category 4 hurricane on September 26, 2024, and soon followed Hurricane Milton, making landfall as a category 3 hurricane. The combined impact of these events is estimated to be over $50 billion (Borenstein).

In the west, extreme heat extends dry seasons, reducing the available water supply and moisture in the vegetation. This effectively extends the wildfire season, allowing wildfires to start more easily and causing the fires to burn hotter. Over the last 20 years, wildfires have drastically increased in severity in states like California, where the extent of burned area has increased by 4.17 acres per square mile of land (Environmental Protection Agency).

Between the wildfires in the west and the hurricanes in the east, the midwest is facing an increase in severity of convective storms, which occur when warm, moist air from the earth rises and cools, which manifests in the form of thunderstorms, lightning, hail, and tornadoes (iii citation). Since 2008, these storms have caused more than $10 billion in insured damages annually, and it has increased to more than $20 billion annually since 2016 (Dunsavage).

3. Impacts of climate change on E&S pricing

For years, admitted carriers have mispriced climate related risks, resulting in high losses and subsequent withdrawal from markets, pushing business into the E&S market. Although this has driven E&S market growth, carriers are responding by raising premiums to offset the influx of climate-related risks. As the E&S industry navigates climate risks, catastrophic reinsurance is also becoming more expensive as they have also seen higher losses, prompting them to retain less risk, allocate less capital to catastrophe prone areas, and charge higher premiums.

3.1 Market share in catastrophe-prone regions

As catastrophic events are increasing in both frequency and severity, so are the risks faced by all property and casualty (P&C) insurers. Many admitted carriers are exiting markets, especially in areas with heightened risks of wildfires and hurricanes, like California and Florida. The S&P Global reports that the E&S market makes up for 9.2% of the total direct premiums written in the United States in 2023. Commercial and homeowners lines faced significant growth as admitted carriers left these markets (Woleben). While increased market share implies more business for E&S insurers it also inevitably presents more climate-related risks.

3.2 Premiums

Despite its rapid growth, the E&S market now faces the climate risks admitted carriers were attempting to avoid. To stay profitable, E&S carriers are raising premiums and/or reducing coverage in order to stay profitable. Aggregate premiums in E&S property lines and homeowners insurance have surged to $27.44 billion in 2023, an increase of 41% from the previous year (Woleben). Additionally, higher reconstruction costs have contributed to this trend. According to Verisk, from July 2023 to July 2024, material costs for both residential and commercial reconstruction rose by 4.35% while labor costs increased by 4.31% (Verisk). After natural disasters, there is often widespread labor and material shortages, which makes indemnifying the insured properties difficult. Considering the increased frequency and severity of catastrophes in combination with surging reconstruction costs, E&S carriers are pricing policies higher in order to continue operations and properly indemnify policyholders.

3.3 Reinsurance

In addition to changing property costs, reinsurance costs have also increased. As weather patterns have significantly changed over the past decade, many reinsurers have mispriced weather-related risks, leading to lower investment returns and stricter underwriting practices (Devlin and Morrison). Many reinsurers have increased their deductibles in an attempt to pass more risk back to the ceding insurer. As a result, many E&S carriers are raising their rates or increasing their own deductibles to cover increased reinsurance costs.

4. Impacts of climate change on E&S products

As the E&S market continues to grow, competition amongst carriers increases. While raising premiums is a common response to climate-related risks, many carriers are modifying their products to remain competitive. To manage costs, E&S carriers are excluding certain coverages to share the risk with the insured. Policyholders seeking excluded coverages may have to purchase an extra policy with a separate deductible, or participate in a state sponsored plan.

4.1 Exclusions

E&S carriers are mitigating risks in catastrophe-prone regions through exclusions for wind and hail in response to rising storm activity. As tropical and convective storms cause more damage, many E&S carriers are excluding wind and hail coverage from policies to limit exposure to large-scale losses. This is a cost-saving measure for both the insured and the insurer because by narrowing coverages, carriers can better control claim costs and reduce premium costs for the policyholder. However, exclusions can be complicated when it is unclear if the majority of the damage was caused by wind or water. The wording of the policy plays a

significant role, as some policies may cover flying debris as a result of high winds, but others may exclude all wind-related damages (Voss Law Firm).

4.2 Coverage-based deductibles

Some insurers may choose to offer policies with wind coverage but have a separate deductible that falls into one of two categories: hurricane and named storm deductibles and windstorm, wind, or wind and hail deductibles. These policies are normally separate from standard commercial or homeowners lines, requiring additional purchase and are priced as a percentage of the property's value, allowing insurers to adjust risk exposure based on the potential severity of storm damage, providing flexibility in managing losses across diverse geographical areas.(Smart Home America). Consequently, policyholders in high-risk areas may encounter higher deductibles, which helps carriers balance risk and maintain financial stability.

5. Risk management and underwriting challenges

E&S carriers face many challenges due to climate-related risks. The rising frequency and severity of natural disasters is unlike anything previously experienced, undermining traditional catastrophe modeling methods. Impacts of climate change are also felt across the economy as E&S carriers face transition risks, which reduce demand for clientele that require E&S lines and impact investments in carbon-reliant industries. Regulatory pressures create additional compliance costs and reduce the flexibility of E&S carriers, leading to higher premiums.

5.1 Catastrophe modeling credibility

As business expands, E&S carriers want to avoid a high concentration of exposures in geographical areas prone to catastrophes. Unpredictable weather patterns make it difficult to

manage portfolios effectively. Many catastrophe models in the E&S market have relied on geo-coding of exposures to monitor the collective risk posed by all insured properties; however, this process doesn't include real time data and often lacks accuracy (Araullo). The rapidly changing frequency and severity of catastrophes has led to growing concerns about the reliability and effectiveness of past-looking catastrophe models. Many catastrophe models use past data to predict future activity, which is not sufficient to use when the probability of a catastrophic event occurring as well as the extent of the damage caused by the event are increasing (Bernacki).

As seen in Figure 1, natural disasters resulted in $108 billion in insured losses globally in 2023 (Banerjee et al.). Aon reports that 2023 set the record for the largest number of $1 billion or more loss events with 66 such events occurring (Frost). Large frequent losses are considered to be the "new normal," discouraging E&S carriers from being reliant on a single model (Frost). Consequently, E&S carriers should not rely on out-of-date models to predict such large losses.

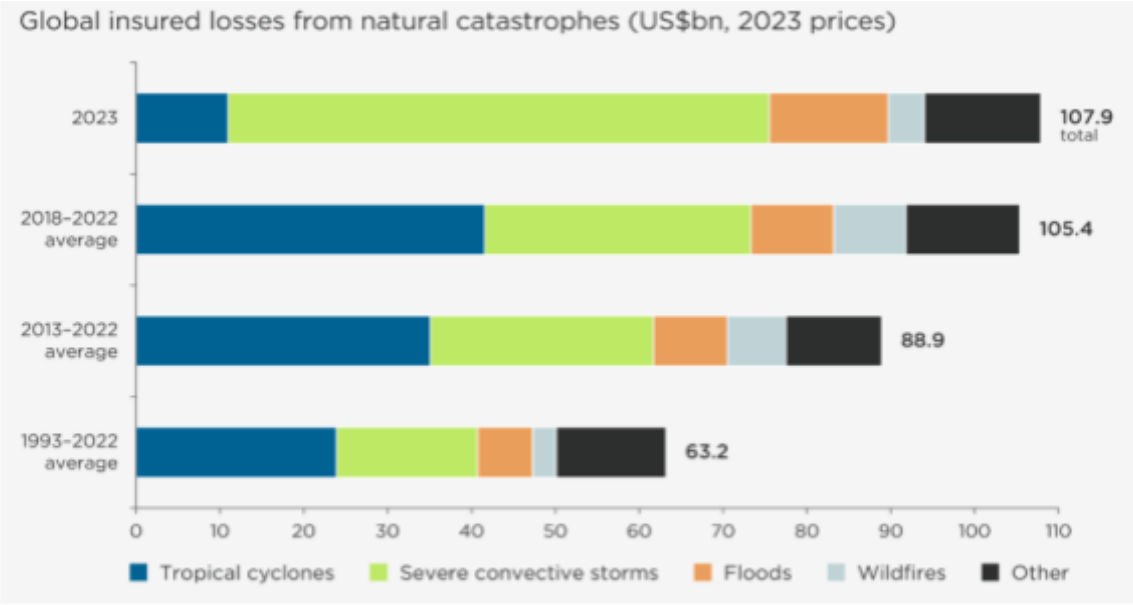

Figure 1: Global insured losses from natural catastrophes; Swiss Re Institute

5.2 Transition Risks

As society transitions into a sustainable economy, E&S carriers face significant transition risks. Activists are pushing the economy away from companies and industries reliant on fossil fuels, reducing revenue for E&S carriers providing coverage to these sectors (Fredman). E&S carriers whose balance sheets are heavily invested in carbon-intensive sectors may face unexpected financial strain. Insurance companies in the US have roughly $582 million invested in carbon-reliant industries, and in some states like New York, 11% of insurers' investments are in carbon-intensive sectors (Fredman). As weather continues to intensify, consumers and investors will stray away from industries that rely on fossil fuels, lowering their value as investments. To navigate these transition risks, E&S carriers must diversify their investments and avoid carbon-reliant industries.

5.3 Regulation

As climate-related risks grow harder to predict, regulators are implementing stricter tax laws and reporting standards to ensure solvency. The New York Department of Financial Services issued climate risk management guidance, requiring incorporation of climate risks into public filings (Fredman). Stricter reporting requirements lead to higher operational costs and reduced flexibility for E&S insurers. As the demand for E&S products rises, state imposed taxes on premiums also rise. California imposes a 3% tax on surplus lines premiums with an additional 0.18% stamping fee. In contrast, Florida imposes a 4.94% tax (excluding wet marine risks) along with a 0.06% service fee collected by the surplus lines agent. Both states use taxes to fund regulatory activities and support surplus lines oversight (Emmanuel and Lerner). These extra fees offset climate-risks but are ultimately transferred to the policyholder via higher premiums.

6. Opportunities for E&S

Despite the challenges of underwriting climate-related risks, E&S carriers have opportunities to offer innovative products. This includes parametric insurance, which is flexible and easy to price, as well as green products that promote sustainability and create positive adverse selection. Expanding coverage solutions allows E&S carriers to cater to customers looking for tailored and progressive policies. The integration of artificial intelligence into catastrophe modeling and risk management can more accurately predict future losses and potentially reduce the severity of losses when a natural disaster occurs.

6.1 Diversification of product offerings

E&S carriers can offer parametric insurance to simplify the claims process and address risk that is difficult to quantify. Parametric policies trigger payouts when specific parameters, such as a flood's intensity or an earthquake's magnitude, are met, allowing for coverage of losses that traditional insurance is unable to cover (Swiss Re Corporate Solutions). Parametric insurance is also less complex and easy for both the insured and insurer to understand (Munich Re). Since the payout is predetermined, there is no ambiguity about the loss amount. These policies are highly customizable to specific risks, and are growing in popularity for natural disaster coverage. The global market for parametric insurance was worth $11.7 billion in 2021, and it is projected to grow to $29.3 billion by 2031 as it allows carriers to manage exposures during catastrophic events and remain solvent (Nationwide).

The E&S market should capitalize on the influx of green and sustainable products being offered across all lines. Green products provide "environmental, social and economic benefits while protecting public health and the environment over their whole life cycle" (Zona et al.). As

residents in catastrophe-prone areas seek homeowner's insurance, especially for high value homes, E&S carriers could offer many products that benefit both the insured and the insurer through: green policies, including green property rebuilding coverage, and property loss mitigation device discount. Green Property Rebuilding coverage covers the costs of energy-efficient and environmentally-friendly materials after a covered loss has occurred. A property loss mitigation device discount promotes storm-resistant construction techniques and reduces the severity of damages in the event of a catastrophe (Zona et al.). Both products encourage a sustainable lifestyle amongst policyholders and reduce costs for both parties.

For commercial and specialty lines, E&S insurers could offer coverage for renewable energy property and equipment, including replacement costs of energy-efficient upgrades, like a green roof. They can also provide professional liability insurance discounts to firms practicing building commissioning, which ensures systems function efficiently. Premium credits are given to firms who adopt these practices to promote energy efficiency and create positive adverse selection, as environmentally conscious customers tend to have lower risk profiles. (Zona et al.).

6.2 Artificial Intelligence

Additionally, artificial intelligence (AI) can enhance various aspects of E&S business by improving predictions and reducing the severity of catastrophic events. As current catastrophe models are doubted, integrating AI and geo-coding could create forward-looking models that are less reliant on historical data. Combining historical loss data with satellite imagery could improve prediction of potential losses and property risk predictions (Kulkarni). By training AI to recognize patterns in satellite imagery and catastrophic losses, catastrophe modeling processes could be streamlined and less reliant on historical data.

E&S carriers should also collaborate with local government agencies using AI for disaster detection and preparedness. In California, CAL FIRE has implemented an innovative wildfire detection program that uses AI to monitor and detect wildfires through over 1,000 cameras set up throughout the state (Governor Gavin Newsom). The Office of Wildfire Technology Research and Development is training AI to analyze satellite imagery and differentiate between clouds, dust, and smoke, allowing early detection that potentially decreases the damages caused by wildfires (The Department of Forestry and Fire Protection). By collaborating with states with innovative solutions, E&S carriers can refine their own models and even provide lower rates as the system is proven to prevent the spread of wildfires and reduce the amount of losses.

7. Conclusion

Changing weather patterns have intensified natural disasters, like hurricanes, wildfires, and convective storms, pressuring the E&S market to adapt through pricing and coverage adjustments. The unforgiving nature of natural catastrophes increased the market share for E&S insurers as admitted carriers are unable to make adequate rates. To stay competitive and manage risk, many E&S carriers are developing innovative products, like parametric insurance and green products, highlighting the industry's shift towards proactive risk management in the face of climate change. Artificial intelligence might also play a significant role in catastrophe modeling, demonstrating innovation for loss mitigation. Despite these opportunities, the E&S market's resilience might depend on its ability to adapt to this "new normal" while maintaining financial stability under increased scrutiny from regulators. By embracing sustainable practices, the E&S market might manage these risks more efficiently, ensuring continued protection for communities in increasingly vulnerable areas.

References

Araullo, Kenneth. “How Geocoding Enhances Risk Management – and How It Looks to Further Evolve.” *Insurance Business*, 7 Oct. 2024, www.insurancebusinessmag.com/us/risk-management/news/how-geocoding-enhances-risk-management--and-how-it-looks-to-further-evolve-508638.aspx

Banerjee, Chandan, et al. “Sigma 01/2024: Natural Catastrophes in 2023.” *Swiss Re Institute*, 26 Mar. 2024, www.swissre.com/institute/research/sigma-research/sigma-2024-01.html.

Bernacki, Mark. “The Problem with Current Catastrophe-Risk Models.” *Propertycasualty360*, 27 June 2022, www.propertycasualty360.com/2022/06/27/the-problem-with-current-catastrophe-risk-models/?slreturn=20241113154745.

Borenstein, Seth. “Helene and Milton Are Both Likely to Be $50 Billion Disasters, Joining Ranks of Most Costly Storms.” *Associated Press News*, 16 Oct. 2024, apnews.com/article/helene-milton-hurricanes-climate-development-damage-costly-82c1d5df81c76fa08e035bf7c6db3a37.

The Department of Forestry and Fire Protection. “Research Development and Innovation.” *The Department of Forestry and Fire Protection*, www.fire.ca.gov/what-we-do/research-and-development. Accessed 13 Nov. 2024.

Devlin, Alan, and Kirsteen Morrison. “Reinsurers: Placing an Economic Price on Climate Change.” *Impax Asset Management*, 17 June 2024,

impaxam.com/insights-and-news/blog/reinsurers-placing-an-economic-price-on-climate-change/.

Dunsavage, Jeff. “SEVERE CONVECTIVE STORMS: Evolving Risks Call for Innovation to Reduce Costs, Drive Resilience.” *Insurance Information Institute*, May 2020, www.iii.org/sites/default/files/docs/pdf/convective_storms_wp_050520.pdf.

Emmanuel, John N., and Zachary N. Lerner. “Excess and Surplus Lines Laws Manual.” *Locke Lord*, Mar. 2024, surplusmanual.lockelord.com/.

Environmental Defense Fund. “How Climate Change Makes Hurricanes More Destructive.” *Environmental Defense Fund*, www.edf.org/climate/how-climate-change-makes-hurricanes-more-destructive. Accessed 13 Nov. 2024.

Environmental Protection Agency. “Climate Change Indicators: Wildfires.” *United States Environmental Protection Agency*, 23 July 2024, www.epa.gov/climate-indicators/climate-change-indicators-wildfires.

Fredman, Alex. “Regulators Should Identify and Mitigate Climate Risks in the Insurance Industry.” *Center for American Progress*, 13 June 2024, www.americanprogress.org/article/regulators-should-identify-and-mitigate-climate-risks-in-the-insurance-industry/.

Frost, Jen. “Do We Rely Too Much on Catastrophe Modeling for Insurance?” *Insurance Business*, 12 Apr. 2024,

www.insurancebusinessmag.com/us/news/catastrophe/do-we-rely-too-much-on-catastrophe-modeling-for-insurance-485026.aspx.

Governor Gavin Newsom. “TIME Recognizes CAL FIRE AI & AlertCalifornia as a Best Invention of 2023 .” *Governor Gavin Newsom*, 24 Oct. 2023, www.gov.ca.gov/2023/10/24/time-recognizes-cal-fire-ai-alertcalifornia-as-a-best-invention-of-2023/.

Hemenway, Chad. “As E&S Market Growth Hits New Heights, Some Risk May Be There to Stay: AM Best.” *Insurance Journal*, 24 Sept. 2024, www.insurancejournal.com/news/national/2024/09/24/794186.htm.

Kulkarni, Sachin. “E&S Solves Two Key Challenges for E&S Companies.” *E&S Insurer from Reuters*, 27 June 2024, www.es-insurer.com/viewpoint/ai-solves-two-key-challenges-for-es-companies/.

Munich Re. “Parametric Solutions.” *Munich Re*, www.munichre.com/en/solutions/for-industry-clients/parametric-solutions.html. Accessed 13 Nov. 2024.

Nationwide. “Parametric Insurance Gains Traction in the Market.” *Nationwide*, www.nationwide.com/excessandsurplus/programs/news-insights/articles/parametric-insurance-gains-traction-in-the-market. Accessed 13 Nov. 2024.

Smart Home America. “Wind Insurance.” *Smart Home America*, www.smarthomeamerica.org/about-insurance/wind-insurance. Accessed 13 Nov. 2024.

Sompo. “E&S Coverage: Not Just for Hard-to-Place Risks Any More.” *Risk & Insurance*, 14 Oct. 2024, riskandinsurance.com/sponsored-es-coverage-not-just-for-hard-to-place-risks-any-more/.

Swiss Re Corporate Solutions. “What Is Parametric Insurance?” *Swiss Re Corporate Solutions*, 7 July 2023, corporatesolutions.swissre.com/insights/knowledge/what_is_parametric_insurance.html.

Verisk. “360Value Quarterly Reconstruction Cost Analysis Q3 2024: United States.” *Verisk*, 23 July 2024, www.verisk.com/4a3257/siteassets/media/underwriting-v/resources/360value-quarterly/360value-q3-2024.pdf.

Voss Law Firm. “What Happens When There Is a Wind Exclusion in an Insurance Policy but the Damage Was Caused by a Hurricane?” *Voss Law Firm*, www.vosslawfirm.com/blog/what-happens-when-there-is-a-wind-exclusion-in-an-insurance-policy-but-the-damage-was-caused-by-.cfm. Accessed 13 Nov. 2024.

Woleben, Jason. “US E&S Insurance Market Report: Growth Slows for Excess and Surplus Market.” *S&P Global*, 20 June 2024, www.spglobal.com/marketintelligence/en/news-insights/research/us-e-s-insurance-market-report-growth-slows-for-excess-and-surplus-market.

Zona, Rita, et al. “Sustainable/Green Insurance Products.” *Casualty Actuarial Society*, winter 2014, www.casact.org/sites/default/files/database/forum_14wforum_zona_roll_law.pdf.

“Generative AI's Effect on the Market for Excess and Surplus Insurance”

William DeBord

Eastern Kentucky University

November 13th, 2024

Generative AI's Effect on the Market for Excess and Surplus Insurance

Introduction

As a subset of the larger insurance market, the excess and surplus (E&S) insurance market covers risks that are frequently too complex or unusual for the typical insurance market to handle. These hazards may include novel business practices, significant exposures, or new dangers. Both enormous advantages and previously unheard-of risks are brought about by the incorporation of generative artificial intelligence (AI), like ChatGPT, into the operations of companies in a variety of sectors, including insurance. Although artificial intelligence (AI) technologies, especially generative models like ChatGPT, can improve client experience, operational efficiency, and cost reduction, they also pose complicated hazards that the insurance industry must manage. Generative AI offers companies in the E&S sector, which focuses on offering coverage for unusual and high-risk exposures, a chance to innovate, but it also brings with it new risk factors that require careful management.

This paper examines the possible effects of generative AI on the market for E&S insurance, taking into account both the risks and the opportunity for innovation. It focuses specifically on how generative AI is changing business operations and the particular dangers that come with integrating AI technology into the decision-making, data management, and service delivery processes of the insurance sector. By looking at these factors, this paper will give readers a thorough grasp of how generative AI can influence the E&S market going forward, including new hazards and the possibility of insurance policies designed to reduce them.

ChatGPT and Generative AI in Business

Systems built to produce new content based on input data—usually text, photos, or other media—are referred to as generative AI. These systems can provide outputs that resemble human creativity and reasoning since they are trained on enormous datasets, especially large language models (LLMs) like OpenAI's ChatGPT. New opportunities for automation, scalability, and business efficiency have been made possible by the quick adoption of generative AI across industries.

Generative AI has significant benefits for commercial operations. ChatGPT, for instance, AI can automate tasks like report generation, invoice processing, and scheduling, freeing up employees to focus on more strategic work. ChatGPT frees up staff members to concentrate on higher-value duties like client relations and strategic decision-making by taking care of repetitive work. ChatGPT can be used as a chatbot in customer care to respond to questions, fix problems, and interact with customers 24/7, greatly increasing customer happiness (Baker, 2023)

In the insurance industry, generative AI's application is particularly promising. It can assist in underwriting by quickly analyzing vast amounts of data, assessing risk, and generating initial policy drafts. ChatGPT can also assist claims handlers by automatically reviewing claims submissions, generating appropriate responses, and providing customers with accurate information about their policies and claims status. These efficiencies allow businesses to streamline operations and reduce overhead costs while improving the speed and quality of services provided to clients.

According to Yaqub (2024), “35% of businesses have adopted AI technologies in their operations. 25% of small enterprises are utilizing AI in one way or another. 42% of companies are considering AI for future implementation in their businesses. AI is being used by more than 50% of large companies with over 5,000 employees. 12% of companies in sectors like manufacturing, information services, and health care have integrated AI, compared to 4% in construction and retail. 99% of Fortune 500 firms have incorporated AI into their operations. There was a 270% growth in business adoption of AI from 2015 to 2019. 40% of businesses report that their primary driver for AI adoption is to enhance customer experience.” As you can see, AI is often being implemented into businesses. AI is being used by businesses to improve decision-making, increase efficiency, and streamline processes. AI lowers expense, automates tedious jobs, and enhances consumer satisfaction through tailored interactions. Additionally, it makes data-driven insights possible, which aids companies in resource optimization, decision-

making, and competitive advantage maintenance. AI is a potent tool for companies looking to grow and maintain their lead in a cutthroat market because it also fosters creativity, speeds up product development, and enhances risk management.

However, while generative AI systems like ChatGPT bring operational benefits, they also introduce risks that need to be carefully considered. These include errors in AI-generated outputs, data privacy concerns, and the potential for bias in decision-making. Furthermore, the reliance on AI technologies raises questions about accountability and transparency, especially in industries such as insurance where decisions can significantly affect financial outcomes. It is important to understand that despite their capabilities, generative AI systems still require human oversight to ensure that errors are caught and to mitigate the risk of AI hallucinations—instances where the model generates incorrect or fabricated content that could mislead clients or employees (Stahl, 2023)

Built In Risks of Generative AI

Despite generative AI's potential to completely transform sectors, it's critical to consider the hazards it poses. The accuracy and quality of outputs produced by AI are among the main issues. ChatGPT and other generative AI systems are not perfect and may provide false or misleading information. This is especially problematic in sectors like insurance, where choices made on the basis of erroneous information may lead to monetary losses, legal ramifications, and harm to one's reputation. One significant obstacle in this area is AI hallucinations, which are situations in which AI models produce content that seems accurate but is actually incorrect (Weise, 2023). For

instance, ChatGPT may produce an incorrect claim evaluation or offer a deceptive policy advice, both of which could result in expensive mistakes.

Another risk is the potential for bias in AI systems. AI models are trained on large datasets, and if these datasets are biased, the resulting models may also be biased. For example, if an AI model is trained on historical insurance data that reflects past discriminatory practices, it may replicate those biases in its predictions. This could manifest as biased pricing models, risk assessments, or claims processing that disproportionately affect certain groups of people. As AI systems become more embedded in insurance operations, addressing these biases and ensuring fairness will become increasingly important. Companies must work to identify and mitigate biases in their AI systems to prevent discrimination and maintain customer trust.

Data privacy and security concerns are also crucial when it comes to generative AI. ChatGPT and similar AI systems require access to large datasets to function effectively, and in some cases, these datasets may contain sensitive or personally identifiable information. If AI systems are not adequately protected, there is a risk that this information could be exposed, leading to data breaches and violations of privacy laws. Moreover, AI-powered cyberattacks are becoming an emerging threat, with malicious actors using AI to conduct phishing scams, infiltrate networks, and exploit vulnerabilities in systems. This increases the demand for robust cybersecurity measures and the need for specialized insurance products to address the risks posed by AI-enabled cybercrime (Stahl, 2023)

The Role of ChatGPT in the Insurance Industry

Generative AI has started to establish itself in the insurance industry in a number of ways. ChatGPT and related technologies are being utilized to enhance customer satisfaction and expedite procedures. Underwriting is one of ChatGPT's main uses in the insurance industry. Assessing risk factors for people or companies looking for coverage is the responsibility of underwriters. In order to create risk profiles and recommend suitable premiums, generative AI can help by processing enormous volumes of data, such as historical claims data, economic indicators, and personal customer information. Underwriters can process more applications in less time thanks to this improvement in underwriting process efficiency.

Additionally, ChatGPT could enhance insurance customer support. To answer consumer inquiries, handle claims, and offer support, traditional insurance businesses mainly rely on human agents. AI-driven chatbots, on the other hand, can act as first responders for common questions, giving clients prompt responses. Furthermore, generative AI may provide customized, AI-generated policy documents that are dynamically modified in response to user feedback, guaranteeing that policies are customized to suit specific requirements.

The claims handling procedure is another intriguing use. Handling claims can be difficult and time-consuming, involving several steps that call for human involvement. Parts of this process, like the initial claims input, document preparation, and status updates, can be automated with the aid of generative AI. For example, ChatGPT might be used to provide preliminary reports and alerts for customers, saving staff a great deal of time and guaranteeing communication consistency (Rout, 2023).

Despite these benefits, generative AI poses additional dangers. An AI model like ChatGPT may provide inaccurate or deceptive information, which could result in expensive errors like erroneous risk assessments or policy recommendations. Furthermore, to make sure that the technology is not promoting discriminatory biases, the application of AI in delicate procedures like underwriting and claims processing needs to be properly controlled. An AI model built on biased data, for instance, may produce skewed conclusions that unjustly disfavor some groups of individuals. Businesses in the insurance sector are very concerned about ensuring the accuracy, fairness, and openness of AI decision-making (Capraro, 2024).

Generative AI and Cybersecurity Risks

In addition to changing commercial processes, generative AI is also changing the cybersecurity environment. AI creates new opportunities for cyberattacks even as it can be used to strengthen cybersecurity. One such danger is the use of AI in phishing scams, in which criminals pose as someone inside a company and use emails or messages created by AI to fool staff members into divulging private information. Businesses that handle a lot of sensitive data, like insurance, should be especially concerned about this.

Hackers can also use generative AI models to automatically generate malicious code or scripts that take advantage of flaws in software systems. For cybersecurity experts, recognizing and preventing AI-driven assaults is a major issue due to their speed and agility. In response, more and more insurance providers are providing cyber liability insurance plans to assist organizations in recovering from the monetary losses

caused by cyberattacks. However, conventional insurance models might not be adequate to cover the entire range of potential risks as AI-driven attacks develop. The emergence of generative AI emphasizes the need for new, more specific cyber insurance plans that can take into consideration the particular risks posed by AI (Stanley, 2024).

Additionally, companies that use generative AI need to think about the moral ramifications of its use in cybersecurity. Concerns exist, for example, regarding the possible abuse of AI for data collection, spying, or even cyber espionage. The need for regulatory frameworks that control the usage of AI systems is increasing as they get more complex, especially in delicate fields like cybersecurity. It might be necessary for insurance providers, particularly those in the E&S sector, to modify their products to cover the moral and legal ramifications of AI use in cybersecurity.

Regulatory Compliance and AI in the Insurance Market

Regulatory compliance will become a more significant concern when generative AI is incorporated into the insurance sector. Fairness, accountability, and transparency are all called into question when AI is used in decision-making procedures like underwriting and claims processing. Globally, governments are already beginning to enact laws intended to control the application of AI in a number of industries, including insurance.

The National Association of Insurance Commissioners (NAIC) in the US has been attempting to create rules for the application of AI in insurance. The goal of these

rules is to guarantee that insurers' AI models are transparent and understandable to regulators and customers alike, and that they do not discriminate against any particular group. Comparably, the General Data Protection Regulation (GDPR), which was established by the European Union, has clauses pertaining to data protection and automated decision-making. These rules will influence how insurers use AI in their business processes and handle the risks that come with it (Wenman , 2024).

Navigating these regulatory frameworks will be a crucial issue for insurers operating in the E&S market, which deals with complex and high-risk coverage. Insurance firms will have to create AI models that address the particular hazards presented by developing technology while also adhering to existing rules. Because they will have to offer specialist coverage for companies that face regulatory concerns related to the use of generative AI, E&S insurers may play a more important role in this situation.

Conclusion

There are advantages and disadvantages for the insurance sector when generative AI, like ChatGPT, is included into corporate processes. The technology presents complicated issues with accuracy, bias, cybersecurity, and regulatory compliance, even if it also offers considerable operational advantages and the possibility of new, creative insurance products. The Excess and Surplus (E&S) market is ideally positioned to create customized insurance policies that reduce these new risks because of its adaptability and capacity to handle unusual and high-risk exposures. It will be essential for insurers to remain ahead of these developments as generative AI

develops further by creating strong risk management plans, making sure that new rules are followed, and addressing the ethical issues raised by AI. By doing so, they can help businesses navigate the complexities of an AI-driven future while minimizing the associated risks.

Works-Cited

Baker, K. (2023, October 19). How to use CHATGPT for business growth: 10 prompt examples. Podium. https://www.podium.com/article/ways-to-use-chatgpt-for-business/

Capraro, V. (2024, June 11). The impact of generative artificial intelligence on Socioeconomic Inequalities and policy making. OUP Academic. https://academic.oup.com/pnasnexus/article/3/6/pgae191/7689236

Rout, A. K. (2023, May 8). Top 7 chatgpt use cases in the insurance industry. Coforge. https://www.cigniti.com/blog/seven-chatgpt-use-cases-insurance/

Stahl, B. (2023, September 9). The ethics of CHATGPT – exploring the ethical issues of an emerging technology. International Journal of Information Management. https://www.sciencedirect.com/science/article/pii/S0268401223000816

Stanley, M. (2024, September 11). Ai and cybersecurity: A new era. Morgan Stanley. https://www.morganstanley.com/articles/ai-cybersecurity-new-era

Weise, K., & Metz, C. (2023, May 1). When A.I. Chatbots hallucinate. The New York Times. https://www.nytimes.com/2023/05/01/business/ai-chatbots-hallucination.html

Wenman, R. (2024, July 9). Naic AI model bulletin guides ethical AI use in insurance industry. Captive.com. https://www.captive.com/news/naic-ai-model-bulletin-guides-ethical-ai-use-in-insurance-industry

Yaqub, M. (2024, October 25). 23 AI in business statistics: How many companies use AI. BusinessDasher. https://www.businessdasher.com/ai-in-business-

statistics/#:~:text=35%25%20of%20businesses%20have%20adopted,companies%20with%20over%205%2C000%20employees.