Overview of US P&C and Marine Market

Marine Insurance Issues Seminar
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What is the Insurance Information Institute?

Improving public understanding of insurance...

...what it does and how it works
Renewed 2019 Focus

While some priorities have shifted over the past year, resilience has become a central theme across numerous issue areas.
Data transformed to show the power of resilience.
<table>
<thead>
<tr>
<th>Safety/Security</th>
<th>Economic/Financial Stability</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Insurers are financial first responders</td>
<td>3. Insurers are capital protectors</td>
<td>7. Insurers are community builders</td>
</tr>
<tr>
<td>2. Insurers are risk mitigators</td>
<td>4. Insurance is a partner in social policy</td>
<td>8. Insurance enables infrastructure improvements</td>
</tr>
<tr>
<td></td>
<td>5. Insurance sustains the supply chain</td>
<td>9. Insurers are innovation catalysts</td>
</tr>
<tr>
<td></td>
<td>6. Insurers are capital infusers</td>
<td>10. Insurers are credit facilitators</td>
</tr>
</tbody>
</table>
Financial Results Q4 2018
Policyholder Surplus By Quarter

Amount of Surplus

($ Billions)

Change from Prior Quarter

$400  $500  $600  $700  $800  $900


Tax Law Increased Surplus at Year-End 2017 and Makes Surplus Growth a Bit More Volatile. $0.83 Premium per $1 Surplus.
Direct Premium Growth, Annual Change

Direct Premiums Continue to Track Economic Growth

SOURCES: NAIC data sourced through S&P Global Intelligence, Bureau of Economic Affairs, Insurance Information Institute.
P/C industry net income after taxes

Billions, 2018 dollars

Through fourth quarter. Adjusted for inflation using the BLS CPI calculator, to 2018 dollars.
Sources: NAIC data, sourced from S&P Global Market Intelligence; Insurance Information Institute.

Catastrophes Let Up After Awful ‘17; Auto Turned a Corner.
P/C Insurance Industry Combined Ratio, 2000-2018*

Including M&FG, 2008=105.1, 2009=100.7, 2010=102.4, 2011=108.1; 2012=103.2; 2013=96.1; 2014=97.0.
2018 – Third worst year for U.S. Insured Catastrophe Losses. Average Insured Loss per Year for 1980-2018 is $18.1 B.

*2018: Estimate, subject to change. 2010s is average of 2010 to 2018.
Sources: Property Claims Service, a Verisk Analytics business; Insurance Information Institute.
Key sources of P/C insurer profits, 2008-2018

Data are before taxes and exclude extraordinary items.
Source: NAIC data, sourced from S&P Global Market Intelligence.
P/C Insurer Portfolio Yields

Yields Have Been Falling for Over a Decade, Reflecting the Long Downward Trend in Prevailing Interest Rates.

Sources: NAIC data, sourced from S&P Global Market Intelligence.
Marine Results
Underwriting is Historically Volatile; Has the Market Turned?
Ocean Marine Premium Volume Fell During the Global Financial Crisis.

Source: NAIC data, sourced from S&P Global Market Intelligence.
Note: U.S. and territories
Has the Market Bottomed Out?

(U.S. Ocean Marine DWP as % of GDP)

Economy Grows Faster Than Premium – Sign of Soft Market (30% Decline Since 2006 Peak)

Sources: Federal Reserve Economic Data; NAIC data, sourced from S&P Global Market Intelligence
Total losses by type of vessel 2008 vs. 2017

While Exposures Grow, the Number of Vessels Lost Has Declined.

Source: Lloyd’s List Intelligence Casualty Statistics; Allianz Global Safety & Shipping Review 2018
# Major Energy Losses

<table>
<thead>
<tr>
<th>Year of Loss</th>
<th>Type</th>
<th>Cause</th>
<th>Region</th>
<th>PD US$</th>
<th>OEE US$</th>
<th>BI US$</th>
<th>Total US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>MOPU</td>
<td>Mechanical failure</td>
<td>Africa</td>
<td>820,000,000</td>
<td>0</td>
<td>900,000,000</td>
<td>1,720,000,000</td>
</tr>
<tr>
<td>2016</td>
<td>Rig</td>
<td>Mechanical failure</td>
<td>North America</td>
<td>83,500,000</td>
<td>0</td>
<td>95,000,000</td>
<td>178,500,000</td>
</tr>
<tr>
<td>2016</td>
<td>Pipeline</td>
<td>Anchor/jacking/trawl</td>
<td>Africa</td>
<td>100,000,000</td>
<td>0</td>
<td>0</td>
<td>100,000,000</td>
</tr>
<tr>
<td>2016</td>
<td>Platform</td>
<td>Fire + explosion/VOE</td>
<td>Latin America</td>
<td>95,367,316</td>
<td>0</td>
<td>0</td>
<td>95,367,316</td>
</tr>
<tr>
<td>2016</td>
<td>Well</td>
<td>Blowout + fire</td>
<td>Australasia</td>
<td>0</td>
<td>70,000,000</td>
<td>0</td>
<td>70,000,000</td>
</tr>
<tr>
<td>2016</td>
<td>Pipeline</td>
<td>Terrorism</td>
<td>Africa</td>
<td>65,000,000</td>
<td>0</td>
<td>0</td>
<td>65,000,000</td>
</tr>
<tr>
<td>2016</td>
<td>Platform</td>
<td>Piling operations</td>
<td>Asia</td>
<td>51,000,000</td>
<td>0</td>
<td>0</td>
<td>51,000,000</td>
</tr>
<tr>
<td>2016</td>
<td>SSGS</td>
<td>Anchor/jacking/trawl</td>
<td>Middle East</td>
<td>50,000,000</td>
<td>0</td>
<td>0</td>
<td>50,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Well</td>
<td>Collapse</td>
<td>Europe</td>
<td>42,000,000</td>
<td>151,737,600</td>
<td>35,451,000</td>
<td>229,188,600</td>
</tr>
<tr>
<td>2017</td>
<td>MOPU</td>
<td>Faulty work/op error</td>
<td>Africa</td>
<td>135,000,000</td>
<td>0</td>
<td>0</td>
<td>135,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>MOPU</td>
<td>Faulty work/op error</td>
<td>Asia Pacific</td>
<td>132,000,000</td>
<td>0</td>
<td>0</td>
<td>132,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Vessel</td>
<td>Pipelaying/trenching</td>
<td>Latin America</td>
<td>128,500,000</td>
<td>0</td>
<td>0</td>
<td>128,500,000</td>
</tr>
<tr>
<td>2017</td>
<td>Well</td>
<td>Unknown</td>
<td>Europe</td>
<td>72,000,000</td>
<td>0</td>
<td>24,000,000</td>
<td>96,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Well</td>
<td>Blowout + fire</td>
<td>Europe</td>
<td>0</td>
<td>80,000,000</td>
<td>0</td>
<td>80,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Pipeline</td>
<td>Impact</td>
<td>Africa</td>
<td>70,500,000</td>
<td>0</td>
<td>0</td>
<td>70,500,000</td>
</tr>
<tr>
<td>2017</td>
<td>Pipeline</td>
<td>Corrosion</td>
<td>North America</td>
<td>60,000,000</td>
<td>0</td>
<td>0</td>
<td>60,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Platform</td>
<td>Fire no explosion</td>
<td>Africa</td>
<td>52,000,000</td>
<td>0</td>
<td>0</td>
<td>52,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Well</td>
<td>Blowout + fire</td>
<td>Africa</td>
<td>0</td>
<td>50,000,000</td>
<td>0</td>
<td>50,000,000</td>
</tr>
<tr>
<td>2018</td>
<td>Plant</td>
<td>Earthquake</td>
<td>Asia Pacific</td>
<td>270,000,000</td>
<td>0</td>
<td>0</td>
<td>270,000,000</td>
</tr>
<tr>
<td>2018</td>
<td>Pipeline</td>
<td>Heavy weather</td>
<td>North America</td>
<td>51,000,000</td>
<td>0</td>
<td>0</td>
<td>51,000,000</td>
</tr>
</tbody>
</table>

*The Upstream loss record continues to defy gravity from a catastrophe perspective. But does this take into account the attritional effect of minor E&P losses?*

*Source: WTW Energy Loss Database as of March 1, 2019 (figures include both insured and uninsured losses)*

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**Heaviest Upstream 2018 Losses Were Outside USA.**

U.S. Marine Results, 2007-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Combined Ratio After Dividends</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>88.2</td>
</tr>
<tr>
<td>2008</td>
<td>95.6</td>
</tr>
<tr>
<td>2009</td>
<td>89.6</td>
</tr>
<tr>
<td>2010</td>
<td>88.8</td>
</tr>
<tr>
<td>2011</td>
<td>97.9</td>
</tr>
<tr>
<td>2012</td>
<td>99.1</td>
</tr>
<tr>
<td>2013</td>
<td>87.0</td>
</tr>
<tr>
<td>2014</td>
<td>85.2</td>
</tr>
<tr>
<td>2015</td>
<td>86.1</td>
</tr>
<tr>
<td>2016</td>
<td>86.2</td>
</tr>
<tr>
<td>2017</td>
<td>93.4</td>
</tr>
</tbody>
</table>

Results Deteriorated in 2018.

Source: Ocean and Inland Marine combined. A.M. Best’s Aggregates and Averages, 2017
Economic Factors
Global Premium Growth, 2017

Real premium growth in 2017, vs average 2007–16 and outlook

<table>
<thead>
<tr>
<th>Markets</th>
<th>Life</th>
<th>Non-life</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017 ’07–16</td>
<td>Outlook*</td>
<td>2017 ’07–16</td>
</tr>
<tr>
<td>Advanced</td>
<td>-2.7% −0.2%</td>
<td>1.9% 0.9%</td>
<td>-0.6% 0.3%</td>
</tr>
<tr>
<td>Emerging</td>
<td>14% 8.3%</td>
<td>6.1% 8.4%</td>
<td>10% 8.4%</td>
</tr>
<tr>
<td>World</td>
<td>0.5% 0.9%</td>
<td>2.8% 2.1%</td>
<td>1.5% 1.4%</td>
</tr>
</tbody>
</table>

*Direction of the arrow indicates whether real growth will improve, remain the same or worsen. Source: Swiss Re Institute

- Life Sector’s Growth Cooled
- P/C Looking Good
- Watch China, India

Source: Swiss Re sigma, 3/2018
World Trade and the Economy

Growth: Seaborne Trade vs. World GDP

Seaborne Trade per Capita

Source: Clarksons Research / IMF, January 2019
Global trade growth has slowed sharply.

Sources: International Monetary Fund, *World Economic Outlook*, April 2019 Statistical Appendix
* Goods and services
Total value of recreational boats sold in the U.S.

($ Millions in Sales)

Global Risk

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate conflict</td>
<td>Large-scale involuntary</td>
<td>Extreme weather events</td>
<td>Extreme weather events</td>
<td>Extreme weather events</td>
</tr>
<tr>
<td>with regional consequences</td>
<td>migration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme weather events</td>
<td>Extreme weather events</td>
<td>Large-scale involuntary</td>
<td>Natural disasters</td>
<td>Natural disasters</td>
</tr>
<tr>
<td>Failure of national</td>
<td>Failure of climate-change</td>
<td>Major natural disasters</td>
<td>Cyber-attacks</td>
<td>Cyber-attacks</td>
</tr>
<tr>
<td>governance</td>
<td>mitigation and adaptation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State collapse or</td>
<td>Interstate conflict</td>
<td>Large-scale terrorist attacks</td>
<td>Data fraud or theft</td>
<td>Data fraud or theft</td>
</tr>
<tr>
<td>crisis</td>
<td>with regional consequences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High structural unemployment</td>
<td>Major natural</td>
<td>Massive incident of data</td>
<td>Failure of climate-change</td>
<td>Cyber-attacks</td>
</tr>
<tr>
<td>or underemployment</td>
<td>catastrophes</td>
<td>fraud/theft</td>
<td>mitigation and adaptation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2015
- Water crises
- Rapid and massive spread of infectious diseases
- Weapons of mass destruction
- Interstate conflict with regional consequences
- Failure of climate-change mitigation and adaptation

2016
- Failure of climate-change mitigation and adaptation
- Weapons of mass destruction
- Extreme weather events
- Large-scale involuntary migration
- Severe energy price shock

2017
- Weapons of mass destruction
- Extreme weather events
- Major natural disasters
- Failure of climate-change mitigation and adaptation
- Failure of climate-change mitigation and adaptation

2018
- Weapons of mass destruction
- Extreme weather events
- Natural disasters
- Failure of climate-change mitigation and adaptation
- Water crises

2019
- Weapons of mass destruction
- Extreme weather events
- Natural disasters
- Failure of climate-change mitigation and adaptation
- Natural disasters

Economic | Environmental | Geopolitical | Societal | Technological

Piracy 2019 (so far)

Gulf of Guinea remains a hotspot: 22 kidnappings in Q1

The Risk Report
The Latest in the World of Property/Casualty

The Economy
- How Long Can It Last?
- The Jobs Engine Powers Along
- Trade Wars

The World of Insurance
- Mondelez/NotPetya: It’s War!
- Rating Variables
- Product Liability
  - Roundup - $158M
  - J&J talc - $142M
- Burger King’s $9,026 claim

Marine Issues
- Lloyd’s: 10th Decile
- Psst . . . Rates are Rising
Wind Power
New U.S. electricity generation by source

Coal is Out. Solar, Gas and Wind Are In.

Upside of wind energy

Wind energy provides over 20% of the electricity produced in 6 states.

The wind industry is present in 69% of all U.S. Congressional districts.

Wind energy avoided 201 million metric tons of CO2 emissions in 2018.

The U.S. wind industry has invested over $142 billion in new wind projects over the last decade.

Wind energy generated 6.5% of the nation’s electricity in 2018, enough to power 26 million homes.

Source: American Wind Energy Association, all figures are as of 2018
Growth of Wind Power Capacity in the U.S.

By 2050 total wind power capacity across 48 states will be 404.25 gigawatts, an increase of 180.15 gigawatts from 2030.

Source: Energy.gov
Offshore wind farms pros and cons

**Pros**
- Offshore wind speeds are faster and steadier than on land
- Meet energy needs of high-density coastal areas
- Renewable energy with no pollution
- Domestic energy source
- Jobs

**Cons**
- Expensive and difficult to build and maintain
- Effects on marine animals and birds are not fully understood
- May be unpopular with residents

Source: American Geosciences Institute
Key risks faced by wind farms

- Natural disasters
- Underperformance aka “wind drought”
- Mechanical issues
- Cable issues
- Start-up delays
- Lightning damage
- Prototype technology
- Substations and power delivery

Source: Willis Towers Watson, WindPower
Thank You!