Cyber Update

2015 Cyber Insurance Profits and Performance

May 2016
Key Findings on 2015 Cyber Insurance Performance

The US cyber insurance market has been growing rapidly in recent years against a backdrop of constantly shifting threats, uncertain profitability, and fears about aggregation risk. Now for the first time, the insurance industry has a view into the performance of this emerging line of business. The 2015 statutory filings to the US National Association of Insurance Commissioners (NAIC) include a cyber risk supplement requesting basic information from insurers about the cyber policies they have underwritten.

A total of 117 US insurers were found to have underwritten cyber insurance in 2015. Aon Benfield has analyzed these filings and has outlined the key findings below. Our aim is to provide insights for insurers that either currently offer or seek to offer cyber insurance to help them benchmark and drive decisions on underwriting and reinsurance purchase.

Cyber insurance was profitable in 2015

Cyber insurance across all companies averaged a 49.0 percent direct incurred loss ratio\(^1\). This 49.0 percent includes pure loss, defense and cost containment expenses, and adjusting and other expenses. We estimate that the industry expense ratio for cyber underwriting to be around 31.3 percent\(^2\), implying an estimated 2015 industry combined ratio for cyber insurance of 80.3 percent.

Exhibit 1: Estimated US 2015 cyber insurance combined ratio

Given the uncertainty that has surrounded cyber risk and the attention given to large data breaches during the last several years, we see the profitability of cyber insurance during 2015 as encouraging.
Cyber losses varied widely among insurers in 2015

While 49.0 percent was the average loss ratio across all insurers, individual insurer results deviated greatly. Loss ratios among the top 20 underwriters varied between zero percent at the low end to 161 percent at the high end.

The table below shows the range of results among insurers with more than USD 5 million in written premium, split by quartile.

**Exhibit 2: 2015 Cyber insurer loss ratios averaged by quartile**

<table>
<thead>
<tr>
<th>Quartile 1</th>
<th>Quartile 2</th>
<th>Quartile 3</th>
<th>Quartile 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0%</td>
<td>20.3%</td>
<td>45.8%</td>
<td>103.9%</td>
</tr>
</tbody>
</table>

This kind of variation is to be somewhat expected, given that cyber is an emerging line with relatively low frequency and high severity. Indeed, our analysis indicates that severity was the driver of high loss ratios, not frequency. A single large incurred loss such as a USD 10 million part of the Anthem claim would have a significant impact on underwriting performance for the year. Such a loss could have a particularly large effect given that premiums for most insurers are still relatively small; only seven insurers reported written premiums over USD 50 million.

For insurers providing cyber insurance, these results illustrate the potential both for extremely good and for extremely bad underwriting outcomes, and underscore the importance of managing limits.

**Underwriting performance varied considerably between standalone and package business**

Standalone cyber insurance had the higher loss ratio, averaging 65.9 percent of which 51.4 percent was pure losses. Defense and containment costs (DCC) were also large, at 12.9 percent—this could be explained by the prevalence of response and mitigation services that commonly trigger on a standalone cyber policy after a breach.

Package cyber policies showed a significantly lower average loss ratio of 34.3 percent. While this difference is significant, there are several caveats to keep in mind:

- Cyber premiums for package policies can be difficult to break out. The numbers reported to the NAIC include both premiums quantified and premiums estimated, depending on the insurer’s ability to break out the cyber portion of policy premium. Approximately ⅓ of the total package cyber premiums reported are from insurers who were unable to quantify the amounts and used estimation techniques.
- Losses reported for package policies do not include IBNR. The NAIC requested payments and case reserves for package policies, whereas it asked for payments and total incurred amounts for standalone policies. It remains unclear whether insurers interpreted the standalone “incurred” losses to include IBNR. But the results for package business clearly do not.
- Package results likely include a significant amount of blended cyber/E&O insurance. Some of these insurers write mainly on an excess basis and had near-zero loss ratios. This diverges from the conventional understanding of a “package” policy, i.e. a small commercial or BOP policy with a cyber endorsement. Given that insurers completed the supplement questions according to their own interpretations, this may limit the value of segmenting the standalone versus package results. We discuss other potential data issues at the end of this paper.
The differences between standalone and package cyber performance are summarized in the table below.

**Exhibit 3: Estimated US 2015 cyber insurance combined ratio**

<table>
<thead>
<tr>
<th>Pure losses</th>
<th>Adjusting and other expenses</th>
<th>Defense and cost containment</th>
<th>Estimated expense ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone</td>
<td>51.4%</td>
<td>12.9%</td>
<td>28.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>94.1%</td>
</tr>
<tr>
<td>Package</td>
<td>30.8%</td>
<td>2.0%</td>
<td>34.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>68.6%</td>
</tr>
</tbody>
</table>

Additional differences between standalone and package business include:

- **Claim frequency:** claims rates were significantly higher for standalone business. Cyber claims occur at a rate of 1.8 per 100 standalone policies, versus a rate of 0.2 per 100 package policies. Note this may be in part due to the counting treatment for package policies. Also, standalone policies will tend to be purchased by larger companies. Our analysis of cyber incidents has indicated that company size is an important driver of frequency, and therefore that larger companies will on average see more frequent cyber attacks.

- **Coverage forms:** claims made coverage is preferred by most insurers. Among standalone policies, claims made policies outnumbered occurrence policies roughly 4.5 to 1. Package policies showed the opposite trend, with 1.7 occurrence policies for each claims made policy. However, this ratio for package business was highly skewed by two underwriters that together comprised 50 percent of all the package policies written. Ignoring these two underwriters, claims made policies comprised 57 percent of the package policies sold.

**First party claims predominate**

Most of the claims reported in 2015 were for first party coverage. Indeed, as seen in the table below, first party claims outnumbered third party claims by a ratio of 3:1. This was true both for standalone cyber and for package policies, and is consistent with what we have heard from industry discussions.

**Exhibit 4: US 2015 cyber claims**

<table>
<thead>
<tr>
<th>Policy type</th>
<th>First party</th>
<th>Third party</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone</td>
<td>871</td>
<td>271</td>
<td>1,142</td>
</tr>
<tr>
<td>Package</td>
<td>1,700</td>
<td>546</td>
<td>2,246</td>
</tr>
<tr>
<td>All</td>
<td>2,571</td>
<td>817</td>
<td>3,388</td>
</tr>
</tbody>
</table>

Again, this result is perhaps not surprising based on the cyber insurance activity that made the US news in 2015. Most news was about high profile breaches, particularly in healthcare, that would trigger the breach response and notification areas of first party coverage. Cyber extortion and ransomware cases are also considered first party coverages.

For cyber insurers, this is good news in that the large majority of claims can be settled relatively quickly, providing greater certainty over underwriting outcomes and avoiding the long tail associated with many casualty lines.
Premiums are heavily concentrated, but the field is widening

Our analysis shows that in 2015, the top five cyber insurers accounted for 61 percent of premiums, and the top 10 accounted for 80 percent. This is perhaps not surprising for those following the US cyber insurance market, given the prevalence of several early entrants into the line. By way of comparison, the top 10 writers of other liability claims made insurance account for 63 percent of premium, and the top 10 in commercial multi peril account for 48 percent of premium.4

More of a surprise was to find that a total of 117 insurers reported writing some cyber premiums in 2015, and 48 insurers wrote more than USD 1 million. The below chart illustrates the distribution of premium.

Exhibit 5: US 2015 cyber premium distribution by size rank

Total premium reported: USD 993 million5

As the cyber insurance market expands, we expect to see premiums for the smaller insurers in this list to expand as well, and broaden the distribution of premium in the market.

Identity theft insurance: a different product

While we have focused primarily on commercial cyber coverage in this paper, the NAIC supplement also gathers information about identity theft coverage. A few comments are worth making:

- Identity theft coverage is predominantly a personal lines product, and premiums are written mainly by large personal lines insurers. This is worth noting in contrast with cyber insurance where large commercial insurers are dominant.
- Identity theft coverage is purchased surprisingly often: 17 million policies were in force at the end of 2015, according to the NAIC data.
- Most identity theft insurance is sold as part of a package. Presumably, the identity theft “package” is usually a homeowners or property policy with identity theft coverage added as an endorsement. Written premiums for package business totaled USD 218 million in 2015. Standalone premiums were USD 21 million.
- More than half the standalone identity theft premiums were written by State National, presumably fronting for identity protection companies such as LifeLock.6
- Identity theft coverage was very profitable in 2015, with an 11.1 percent loss ratio.
About the Data

The NAIC supplement requests insurers to report on several kinds of coverage:

- Standalone cyber insurance policies
- Cyber insurance that is part of a package policy
- Standalone identity theft insurance policies
- Identity theft insurance that is part of a package policy

For our analysis, we have treated cyber insurance – both standalone and in a package – as the main area of interest. Traditionally we think of cyber “package” business as being small commercial or business owner policies with a cyber endorsement, but we believe the numbers also include blended cyber/E&O policies for some insurers. We view identity theft insurance as a different product than “cyber” – a view supported by the data.

We looked to extract as many insights from the supplement data as possible, but have some concerns about the completeness and quality of the reported information. We suggest reading this briefing not as commentary about the US cyber industry per se, but rather about this particular dataset which is noteworthy for being the first of its kind.

A few specific data issues that may exist are as follows:

Premium completeness

Our analysis suggests that the data reported to the NAIC is only a partial picture of the US cyber insurance market. Industry estimates of the global standalone cyber market range greatly, from USD 1.6 billion to USD 2.75 billion⁷, of which an estimated 90 percent or more of premium today comes from the US. The 2015 cyber premiums reported to the NAIC total USD 993 million, of which USD 481 million is standalone cyber premium—a small number even compared with the low end of the estimated range.

Our market intelligence suggests that at least three insurers provide more than USD 200 million of cyber premium, but only one insurer reported premiums over this level to the NAIC. The issue of direct versus assumed premiums may partially explain this difference. Also, we note that these premiums are only those that flow through the US operations of insurers. For insurers with global underwriting platforms, the absence of Bermuda and Lloyd’s premium from these numbers may explain the perceived shortfall.

Claims data quality

Not all insurers reported cyber claim counts, and of those that did, the number of claims varied considerably. Some insurers with very high claim counts also reported among the lowest loss ratios. None of these facts implies that the reported figures are incorrect, but they raise questions about the consistency in how claims are counted and understood. Our analysis focuses on the numbers as they are reported and explores possible interpretations.
Sources

1 Company loss ratios weighted by direct earned premium. Note that all numbers reported to the NAIC are on a direct basis.
2 2015 Insurance Expense Exhibit. Based on a premium-weighted average of the other liability-claims made expenses (for standalone cyber premiums) and commercial multi peril liability expenses (for package premiums).
3 Insurers’ average claim size, based on the NAIC data, shows an 80% correlation with loss ratio for the 18 of the top 20 insurers who reported claim counts. Claim count and claim frequency show 11 percent and zero percent correlation with loss ratio, respectively.
4 Source: NAIC 2015 statutory filings, as captured in SNL Financial as of April 21, 2016.
5 See comments about data completeness in the “About the Data” section at the end of this study.
7 Sources: The Betterley Report, Insurance Business America, PwC, and Aon Benfield research.

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