THE PREDICTIVE POWER OF ESG FOR INSURANCE

Allianz Global Corporate & Specialty & The Value Group
August 2018
ABOUT THIS RESEARCH

- AGCS and The Value Group, supported by academia, undertook pioneering research on the relevance of ESG for industrial insurance
- The study establishes the argument for the integration of ESG into risk analysis
- The research identified ESG parameters with predictive power for risk events
“ESG parameters have predictive power and add additional information to perform an effective risk analysis”

Classical ESG analysis looks at current ESG parameters and past developments. However, past developments cannot be simply projected into the future, they have limited predictive power. Risk relevant events/developments would not be captured, ignored or falsely interpreted.

This study delivers two important results:

• It provides evidence for the relevance of ESG for industrial insurance
• It identifies ESG parameters helping to identify risks ex-ante

Critical tipping point can be identified with ESG parameters, hence, risks could potentially be anticipated before they materialize.
INTRODUCTION

- From the fringes to the mainstream
- Increasing public focus

There is increasing scientific evidence that companies with favorable ESG metrics outperform their less sustainable peers. More sustainable companies manage to attract better employees and motivate their workforce; they gain a reputation advantage over their competitors; and they attract less regulatory and fiscal backlash.

Furthermore, companies with a better outlook can afford to do more good, hence “sustainability” can be seen as a proxy for high-quality.

Corporations around the world find themselves under increasing public surveillance in terms of their environmental, social and governance performance, in short ESG. Firms are expected to measure and report a large number of ESG performance indicators that range from the amount of pollutants they emit over the quality of corporate governance to employee wellbeing.
FILLING THE RESEARCH GAP

- Relevance of ESG for insurance
- ESG parameters with predictive power for harmful events

The benefits of ESG analysis for investors is widely publicized and sustainable investing approaches are widespread. Surprisingly, to date there is no research on the relationship between companies’ sustainability parameters and the risk they pose to their insurers. Some industrial insurers take ESG parameters into account when deciding whether to insure a given company or project. However, systematic and scientific research that provides evidence for the relevance of ESG for insurers was missing.

In order to fill this gap, Allianz Global Corporate & Specialty SE together with The Value Group supported by academia initiated a research project to investigate the following:

- The relevance of ESG and ESG related harmful events for the profitability/bottom line of industrial insurance
- The identification of ESG parameters with predictive power for various types of harmful events
The underlying research is based on a wide range of data sets, encompassing more than **6,000 global companies** compiled over **12 years** from The Value Group’s proprietary data base. To capture the dimensions of insurance-related risks, various **new parameters** were developed for this study.

In detail:
- AGCS loss data (>200 companies)
- Employee accidents (>20 Mio.)
- Employee fatalities (>7,500)
- Fines & indemnity payments (>13,000 with $250 billion in payments)
- Controversies reported in major media (>15,000)
- Financial data (> 200,000)
- Man-made incidents (>270)
To evaluate the predictive power of ESG-factors within industrial insurance more than 800 financial and extra-financial indicators were analyzed.

<table>
<thead>
<tr>
<th>THE VALUE GROUP RESEARCH DATA</th>
<th>OVER 100 SCORES</th>
<th>OVER 800 DATA POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINANCIAL AND EXTRA-FINANCIAL DATABASE</td>
<td>EMISSIONS</td>
<td>ENVIRONMENTAL FINES</td>
</tr>
<tr>
<td></td>
<td>ENV. EFFICIENCY</td>
<td>ENV. CONTROVERSIES</td>
</tr>
<tr>
<td></td>
<td>COMMUNITY</td>
<td>DONATIONS</td>
</tr>
<tr>
<td></td>
<td>HEALTH &amp; SAFETY</td>
<td>INJURIES</td>
</tr>
<tr>
<td></td>
<td>MANAGEMENT</td>
<td>FATALITIES</td>
</tr>
<tr>
<td></td>
<td>SHAREHOLDER RIGHTS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>分享者权利</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QUALITY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INNOVATION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMAGE &amp; BRAND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXT. STAKEHOLDER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HUMAN CAPITAL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CORPORATE RISK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINANCE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An analytical approach applying state-of-the-art methods of data science was developed with the support of Prof. Dr. Klaus Röder, Chair of Financial Services from the University of Regensburg and Prof. Dr. Rudi Zagst, Chair of Financial Mathematics from Technical University of Munich (TUM).
ESG and Quality parameters of a company are far more than just tools to achieve social and environmental progress. ESG parameters have a highly significant predictive power for the researched types of harmful events. This result holds true for all companies examined, irrespective of industry, country, firm size and time period.
ESG – HIGHLY PREDICTIVE

ESG parameters were identified to be significant early warning indicators to identify potential ESG risks before they materialize.

ESG parameters have significant predictive power to identify firms that pose a financial risk to the insurer.
### HIGH LEVEL RESULTS: RESEARCHED RISK EVENTS

#### Proxies for insured risks

<table>
<thead>
<tr>
<th>Insured Losses</th>
<th>Workforce risks</th>
<th>Fine Payments</th>
<th>Future Controversies</th>
<th>Financial Outlook</th>
<th>Sector Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Headset Icon]</td>
<td>![People Icon]</td>
<td>![Fine Payment Icon]</td>
<td>![Controversy Icon]</td>
<td>![Financial Icon]</td>
<td>![Ship Icon]</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ / ✗</td>
</tr>
</tbody>
</table>

- **Highly significant ESG predictor identified**: for oil pipeline failures, accidents in oil production, chemical and pharmaceutical violations; ship, rail and plane crashes as well as dam failure are too random to be predicted by ESG parameters.
SOURCES AND LINKS

- ESG / Sustainability and Quality Data: The Value Group database
  - Corporate and shareholder reports
  - Alacra Store
  - Asset 4
  - Best Place to Work
  - BrandFinance
  - Bloomberg
  - Carbon Disclosure Project
  - Corporate Knights
  - CorporateRegister.com
  - corporate CSR reports
  - CSR Hub
  - German Patent Office
  - Environmental Protection Agency
  - European Patent Office
  - Fortune 1000 List of Top Companies
  - Glassdoor
  - Global Footprint Network
  - Heritage Foundation Index of Economic Freedom
  - Human Rights Campaign
  - Interbrand Best Global Brands
  - International Labour Organization Database
  - online media / Google News
  - Newsweek Top 500 Green Companies
  - Thomson Reuters
  - Transparency International Corruption Perception Index
  - UN Global Compact
  - Company websites
  - United States Patent and Trademark Office
  - World Bank Database
  - World Coal Association
  - World Economic Forum Global Competitiveness Report

- AGCS data
- Employee accidents und fatality rates: The Value Group data base and online research
- Fines and financial penalties: US-based governmental publications and NGOs, media reports
- Reputational risk events, sector-specific events and controversies: Thomson Reuters, Bloomberg, Google News and other media
- Commodity prices: Thomson Reuters.
STATISTICAL METHODS USED

Insured Losses (Loss Ratio)
- Logit Model to identify ESG parameters to predict the loss ratio

Workforce Health & Safety
- Vector Autoregression (VAR) to capture the predictive power of ESG factors on the workforce injury rate. A vector of current related factors is predicted by one or more vectors of the same lagged variables.
- Elastic Net Regularization to find the best possible ESG parameter(s) to predict the injury rate
- Linear regression controlling for industry

Fine Payments
- VAR and elastic net regularization to find the best possible ESG parameter(s) to predict the penalty ratio

Future controversies
- VAR and elastic net regularization to find the best possible ESG parameter(s) to predict future controversy ratios.
- Linear regression controlling for industry

Financial Outlook
- VAR and elastic net regularization

Sector events:
- Linear regression with controls
ALLIANZ GLOBAL CORPORATE & SPECIALTY
AT A GLANCE

• Full range of products and services covering corporate and specialty insurance worldwide
• Allianz Global Corporate & Specialty (AGCS) teams in 34 key countries
• A combined Allianz and partner network in more than 200 countries and territories worldwide
• Global team of almost 4,700 employees of some 70 nationalities with approximately 280 risk engineers and more than 600 claims experts worldwide
• Diversified risk portfolio and capital efficiency offers stability and long term consistency
• Provides insurance for more than three quarters of the Fortune Global 500 companies and large specialty clients
• Managing some 2,500+ lead programs with more than 19,000 local policies attached
• Market leading capacity – to handle the largest risks
• Consistently strong ratings: AA (‘Very Strong’) from Standard & Poor’s, A+ (‘Superior’) from A.M. Best*

Our aspiration

“To be recognized as the best in our business – the benchmark for our target customers, our employees and our shareholder.”

*AGCS SE and AGCS North America, correct as at May 2017 (S&P) resp. August 2017 (A.M. Best)

© Copyright Allianz August 2018
The Value Group was founded in 2004 and is an independent, privately-owned investment and risk consultant with a proprietary research approach. It is a leading provider of extra-financial data. A specific database covers more than 6,000 companies worldwide.

Statistically significant qualitative and quantitative indicators are combined and lead to different types of ratings. These ratings provide accurate risk and performance profiles of companies. Clients implement these ratings and indicators into their established risk and investment management processes.

All products and services are based on independent in-house research. The Value Group conducts research studies, evaluates external company and market research and develops tailor-made evaluation models.

Homepage: [www.thevaluegroup.de](http://www.thevaluegroup.de)
CONTACT

Should you have any questions or feedback about this topic please contact us:

Contact for journalists: AGCS.COMMUNICATION@ALLIANZ.COM

CREDITS

Publisher: Allianz Risk Consulting, Allianz Global Corporate & Specialty SE
Authors: Dr. Claus Duerrndorfer, Stefan Roithmeier, Tobias Bogner (The Value Group); Isabel Bodlak-Karg (Allianz Global Corporate & Specialty)
Photos: Shutterstock, Allianz

DISCLAIMER & COPYRIGHT

Copyright © 2018 Allianz Global Corporate & Specialty SE. All rights reserved.

The material contained in this publication is designed to provide general information only. Whilst every effort has been made to ensure that the information provided is accurate, this information is provided without any representation or warranty of any kind about its accuracy and Allianz Global Corporate & Specialty SE cannot be held responsible for any mistakes or omissions.

Allianz Global Corporate & Specialty SE
Fritz-Schaeffer-Strasse 9, 81737 Munich, Germany
Commercial Register: Munich HRB 208312
August 2018