Munich RE

Global Consulting

Pricing Survey H1 2020

Insights into sophistication, tools and trends

Summary

- Munich Re's consulting unit spearheaded a pricing and data analytics survey among our clients, with the help of our client teams
- The majority of our surveyed clients believe that using a professional pricing software is a must
- The expected benefit of machine-learning (ML) techniques, only a few years ago, has not materialised in terms of the actual adoption in primary insurance, as of 2020: more room for the future, if expectations are managed correctly by experts in the field
- There is great untapped potential in the combination of smart business technology solutions with pricing and underwriting in primary insurance

August 2020 – The Global Consulting Unit is focussed on keeping on track with the pricing and analytical requirements of our clients and in the markets in which Munich Re operates. In this spirit, we ran a first half-year survey on pricing sophistication in primary insurance. Throughout this document we will refer to pricing uniquely from a primary-insurance (B2C) rather than reinsurance (B2B) perspective.

The 2020H1 Pricing Survey

This questionnaire was proposed to roughly 60 clients via the generous effort of our client teams, and received roughly 40 responses. The clients were predominantly mid-sized players (but with some exceptions) in countries mainly from Central/Western European states (~20 responses), UK (5), Israel (5) and Asia (3); additionally there were replies from a single country. Given the low numbers per country, it is beyond the scope of the current publication to address regional differences, which nonetheless could be the backbone of the next survey. In the future we will scale this effort globally, with the aim of corroborating this initial insight through the whole client network.

With these caveats in mind, we believe our insight to be generally valuable for the whole network of Munich Re's clients, both because it might show the likely development for some un-surveyed markets, and because the insights confirm what our business intelligence and experience tells us from our competitors in the consulting space for primary insurance. We recommend also not to extrapolate these views indiscriminately to all clients or all countries, because of the different regulatory environments and specific market trends.

Pricing and data analytics in the 2020s

Current overview

The application of non-traditional predictive modelling in the pricing value chain dates back a couple of decades, but from the early 2010s it has risen to prominence due to the progressive commodification of both technology and maturity of theoretical insights. This process allows more sophisticated approaches to the ever-growing datasets, as well as leading to a commodification of the role of the technical analyst. The availability of data sources and the increased agility of some rating engines (the front-runners in this market as well as the emergence of some niche insurtechs) has increased the willingness, if not the necessity, of trying out new techniques.

Advanced analytics in pricing
The race of algorithms

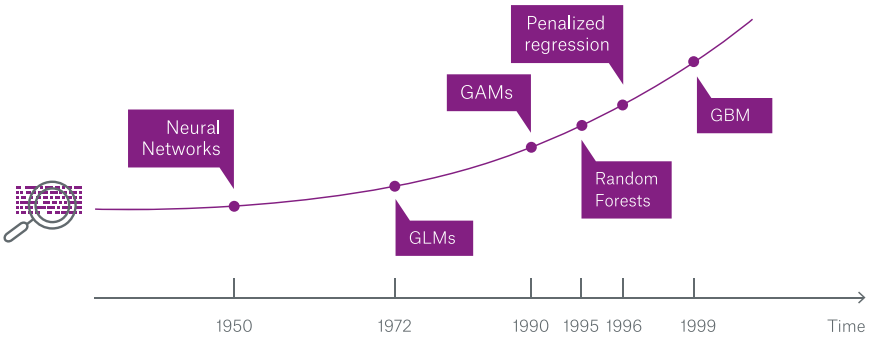


Exhibit 1: Evolution of theoretical and technological landscape

While practitioners tend to agree that in the last three years, generalised linear modelling (GLM, the "traditional" approach) still covers the absolute majority of the modelling, tree-based methods have grown in popularity. These and other approaches (elastic nets or other penalised regression methods, gradient boosting machines – GBMs – or random forests) are not generally adopted more than in a third of the modelling efforts. GLMs (in fact, we should refer to generalised additive models, because it is customary to include polynomials or splines, while preserving additivity) are still chosen the vast majority of the time as the most important method in pricing and underwriting.

The ML approach complements the traditional approach rather than substituting it, in the use cases that involve the use of tree-based methods.

The typical example is competitive market analysis, or benchmarking analysis, in which the initial datasets are initially modelled with e.g. GBMs, in order to reduce the dimensionality of the problem. In layman's terms, the ML step allows one to reduce hundreds of columns down to a more manageable dataset. In the next step, a more traditional GLM/GAM approach is used to compare against a primary-insurance own street price, and more easily integrate within the existing architecture.

This is driven by the combination of the triad

– "good enough" accuracy,
– interpretability,
– regulatory compliance

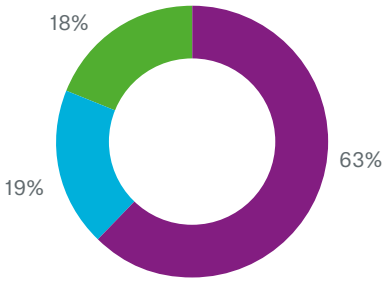
with the equally important domain expertise. The most insightful opinion though, emerges when comparing the expectations for 2020 (expressed only a few years ago) of the use of ML vs the actual figures that emerged this year. The ML approach has doubled in adoption in recent years, but the so-called augmentation of automated underwriting is still where it used to be: in single-digit percentages. This shows that expectations were somewhat exaggerated a few years ago, compared to the actual adoption of these methodologies in pricing and underwriting.

Munich Re's survey: Q&A

Pricing and Data Analytics Survey Results

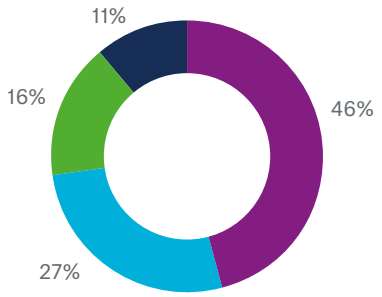
1 Describe the status of your technical sophistication

- We use GLMs for the majority (50–80%) of covers
- We combine traditional and machine learning (ML) approaches for nearly all risk and demand (renewals/new business) models
- We use Generalized Linear Models (GLMs) for less than half of the covers



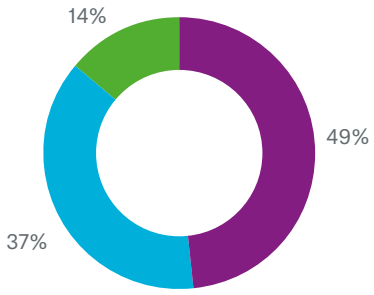
2 Describe your use of machine learning (ML) in pricing today

- We ran some pilots but it´s hard to bring them to production level
- Use ML in other projects (discounting, customer lifetime value, etc.) other than the others mentioned
- Use some ML in demand models
- Use some ML in risk models



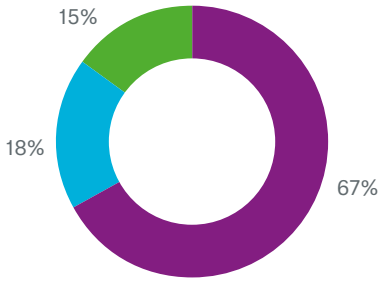
3 Describe your level of automation of pricing in a rating engine system

- We manually import rating tables through our IT system, and we would like to move to API
- We have an API connection between our pricing tool and the rating system/policy administration system
- We manually important rating tables through our IT system, and we do not see reason to change it



4 Describe your use of proprietary software

- It's better to use professional pricing software from a known brand in combination with coding abilities where needed
- It's better to hard-code all your models in SAS, R, Python, etc.
- We are considering switching to a different pricing software provider



5 What do you observe in your market/within your competitors

- We feel our technical sophistication is in line with our peers
- We should ramp up our sophistication level because we're lagging behind
- We are way ahead, and we can see the benefit of our early move in this space

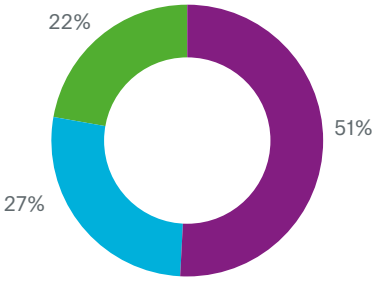


Exhibit 2: Collection of the five questions in the 2020H1 Pricing and Analytics survey, with an overview of the responses.

Our clients were approached with five questions. The main focus of the enquiry was around the routine use of machine learning vis-à-vis the self-reported use of more traditional approaches, and the challenges with regards to implementation. To the question "*Describe the status of your technical sophistication*", two thirds of the clients reported that the use of GLM/GAM modelling covered more than 50% of the products; indeed slightly less than half replied to "*Describe the use of Machine Learning in pricing today*" with the known challenge of extracting value from alternative approaches. The different positive answers are in our opinion also a reflection of different regulatory environments, which led to different degrees of adoption of an ML-based approach in pricing.

With regard to the questions on automation, we also asked how integrated the modelling stage was in the pricing value chain, regardless of whether this responsibility lay with our cedant's IT department or product or actuarial departments. Somewhat unsurprisingly, in nearly two out of three of cases, rating tables were manually imported into the rating engine, but for the majority of these, there was a wish to automate this process.

Better automation is certainly key for the digital future, particularly considering how COVID-19 forced companies to rethink how smart processes and operations are managed. Pricing and automation need to leverage professional solutions, as less than one in five players relied uniquely on open software for modelling. In the space of professional pricing-software providers, there is certainly room for insurtechs to play an important role, if integration with legacy systems is properly managed.

When looking at the competitive space, only one in five primary insurers felt they had moved ahead with pricing sophistication and technology with respect to their peers.

Summary and considerations

From our perspective, this survey on pricing in primary insurance confirms known trends in the market while highlighting how there are green fields ahead for the players that can successfully blend domain expertise, technology and advanced analytics. Our results can be summarised in the following points:

- There is a recognisable challenge in extracting value from pricing with methods different than the traditional ones, which still make up the majority of the approaches (63% of our clients use GLMs for pricing 50–80% of the covers, 19% for less than half of the covers – likely because they still price with simpler rating tables);

- The challenge in moving from pilots or PoCs (46% of the respondents found it hard to bring them to production level) is driven by legacy in the IT system: roughly half of our surveyed clients manually import the GLM results or the rating tables into the rating engine (but would like to move to a more flexible technology);

- Around 37% already connect the pricing tool with the rating engine and/or the policy administration system via API: there is huge untapped growth potential;

- Over two thirds of our clients believe that it is better to use professional pricing software (combined with coding abilities), with an additional 15% considering testing a different provider than the one they already use;

– Only 22% of our clients did not feel the need to increase their pricing sophistication. This fact underpins the investments carried by Munich Re in growing the pricing and data-analytics consulting expertise to support our clients in improving their pricing excellence.

– Different initiatives by Munich Re are already tapping into this potential and will show that the combination of Munich Re's infrastructure with a professional pricing software is the key to excel in pricing and underwriting in primary insurance in the next decade.

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Authors

Dr. Davide Burlon
Senior Pricing Consultant
dburlon@munichre.com

Dr. Massimo Cavadini
Head of Actuarial Consulting
& Data Analytics
mcavadini@munichre.com