البنك المركزي السعودي
SAMA
Saudi Central Bank

31 October 2022

Dear CEO

SAMA review of Actuarial Submissions for Year 2021

The year 2021 was the second consecutive year of insurance companies submitting actuarial reports under the Actuarial Work Rules issued in March 2020. The primary objective of those Rules is to enhance the role and responsibilities of actuaries in the insurance sector in order to facilitate informed decision-making by management and to provide greater technical support to the business as the market sophistication continues to grow in the Kingdom.

This document encompasses SAMA's observations from its review of the following actuarial reports:

1. Actuarial Reserves at year-end 2021 (pages 2 – 13)
2. Actuarial Pricing report 2021 for Health and Motor businesses (pages 14 - 19)
3. Reinsurance Appropriateness and Adequacy report 2021 (pages 20 – 23)
4. Solvency and Capital report 2021 (pages 24 – 26)
5. Experience Studies report 2021 (pages 27 - 30)
6. Investment and Asset Liability Management report 2021 (pages 31 – 34)

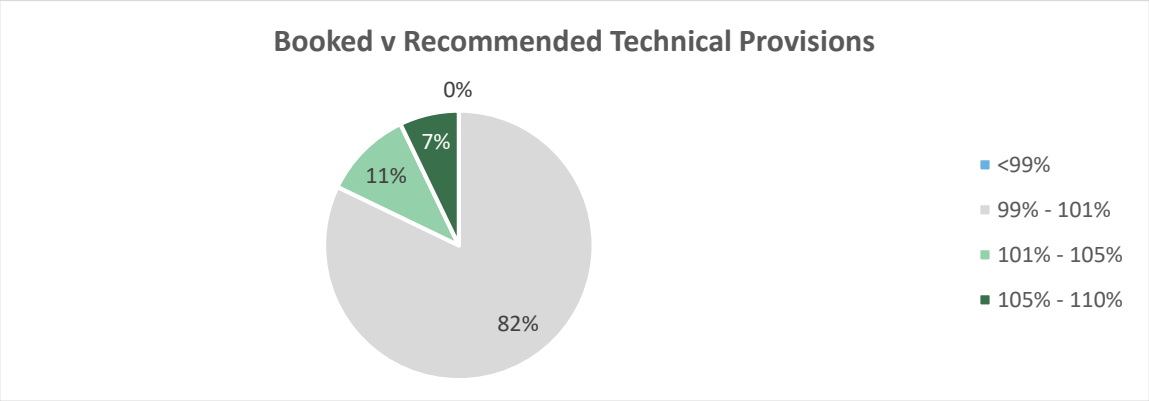
A number of important observations emerged from the above reviews performed by SAMA. We would like to share those observations with the Company's management, along with our expectations in respect of those observations, in anticipation that management will consider each of those observations and recommendations diligently, internal discussions will be held at the Board of Directors' level and with all relevant functions, and appropriate actions will be taken by management.

1. Actuarial Reserves at year-end 2021

1.1 Booked Reserves vs Actuarial Recommendation

SAMA instructions require an Appointed Actuary to estimate and communicate the uncertainty in the technical provisions recommended to the Company management, thus enabling management to decide whether it wants to book margin on top of the recommended technical provisions so that the booked position is in line with the Company's risk appetite.

The graph below shows the distribution of booked technical provisions against those recommended by the Appointed Actuary.



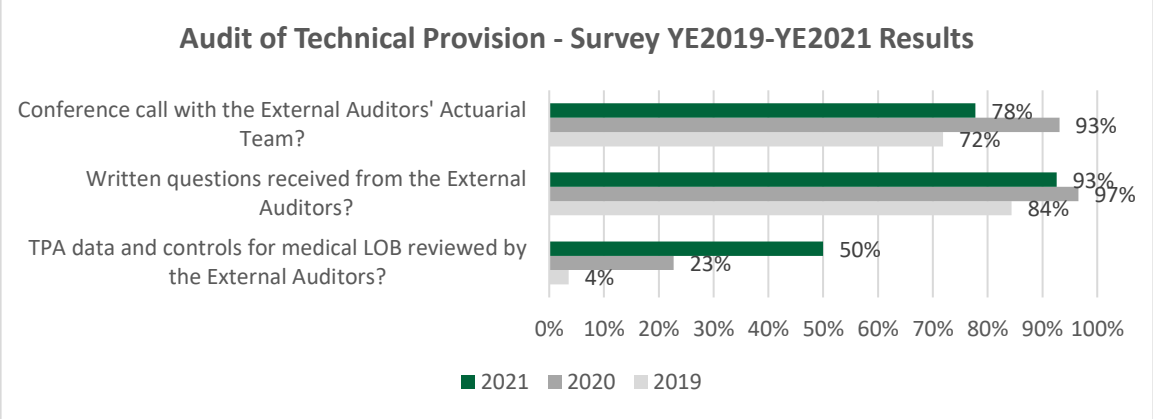
It can be observed that, while the majority of managements booked technical provisions in line with the Appointed Actuary's recommendation, nearly one in every five companies booked margin on top of the technical provisions recommended by its Appointed Actuary.

It is important for management to recognize that, once IFRS17 goes live, the management discretion on technical provisions is likely to be curtailed, and instead, all companies will be required to reflect uncertainty in the technical provisions via 'Risk Adjustment', a new concept introduced under IFRS17. Any margin currently held will likely be released upon transition to IFRS17 that may offset the potential transition strain, in part or in full.

SAMA expects management to enhance its understanding of the uncertainty around the best estimate of reserves and decide on the management margin from an informed position and with due regard to the risk appetite of the Company. It is also expected that management will seek to understand its role in determining Risk Adjustment under IFRS17, and where current technical provisions include a management margin, the impact of releasing those margins when transitioning to IFRS17.

1.2 Role of the External Auditors

The external auditors play an important role in providing assurance to the Audit Committee on the reserves estimated by the Appointed Actuary. In previous years, we had identified areas that required attention from the Audit Committee in order to have an effective and technically sound input from the external auditors in line with the professional auditing standards. Every year, we have carried out a survey of the interaction between the external auditors and the Appointed Actuary as an indicator of the quality of the external auditors' work. The graph below shows the results of this survey in those areas where we had observed shortcomings in the past.



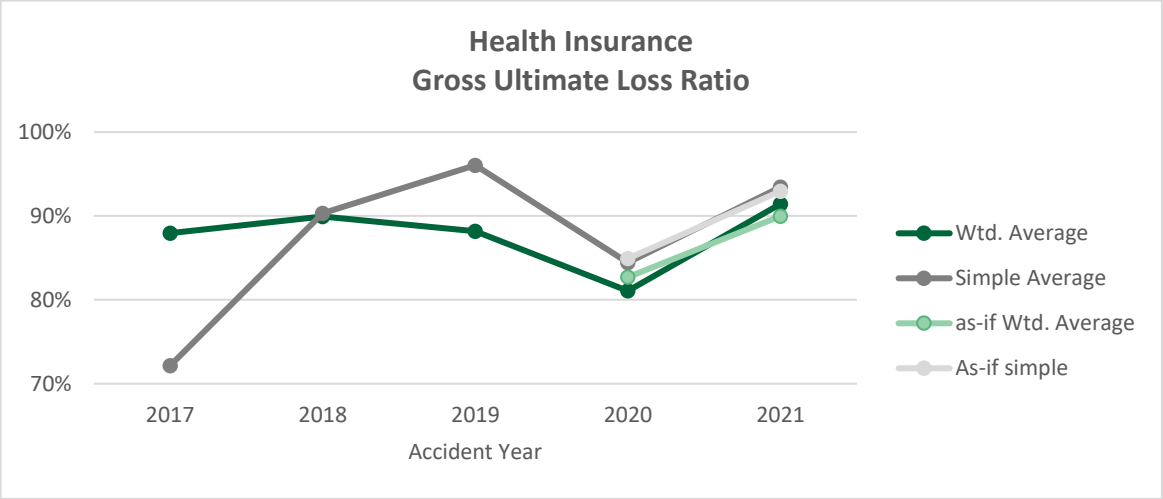
After starting from a very low base in 2017, interaction between the Appointed Actuary and the external auditor's actuary through written questions & answers and/or conference calls had improved year-on-year. However, a reduction in the interaction between the two sides was observed last year, which was not in line with our expectations. On the other hand, a marked progress was noted in respect of the audit of third party administrators (TPAs) for Health insurance claims, though there are still nearly half of all health insurance companies using TPAs that are yet to obtain audit comfort around their TPAs, potentially exposing their financial statements to a significant risk.

SAMA expects each Audit Committee to ensure that the scope of external audit requires adequate input from the external auditor's actuary, that the external auditor's actuary possesses appropriate professional qualification and skill and is fully aware of the latest trends in the Saudi insurance sector, and that sufficient interaction between the external auditor's actuary and Appointed Actuary is appropriately covered in the scope of audit activities. Where the Company uses the services of a TPA, the Audit Committee shall satisfy itself that the audit scope appropriately covers the activities of the TPA, as applicable under the International Auditing Standards. SAMA expects the Audit Committee to facilitate, monitor and ensure adherence by the external auditors to the above scope items.

1.3 Trends in Health Insurance

1.3.1 Loss Ratios

The graph below shows the year-on-year loss ratio for Health insurance in aggregate, both on a simple average basis and a weighted average basis, where weights used are the earned premiums for each insurance company. The simple average loss ratios are more influenced by companies writing SME business, whereas weighted average loss ratios are more influenced by large companies writing big volume corporate policies.



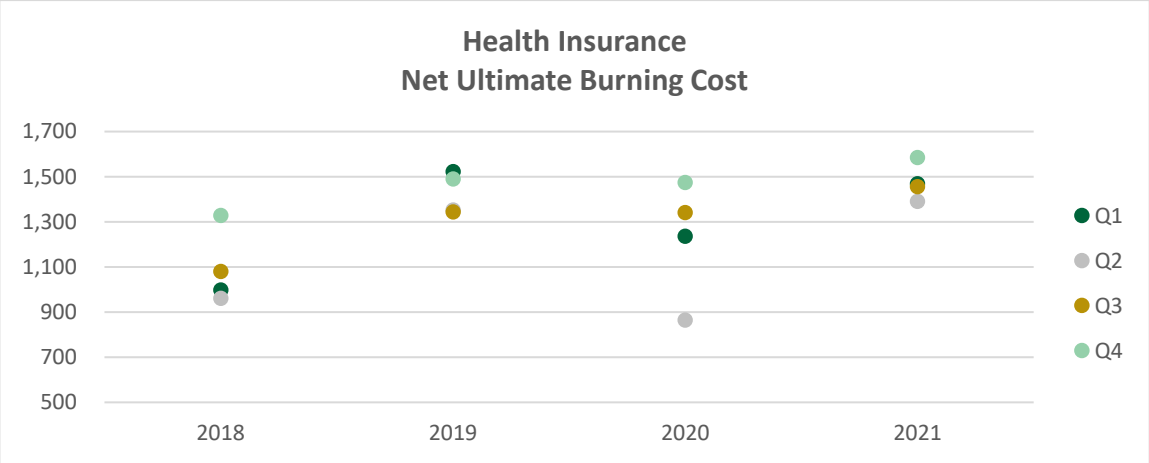
Since 2019, the simple average loss ratio has continued to stay above the weighted average loss ratio, possibly due to increased awareness among insureds in this segment, stiff competition in that market segment driven by a 'perceived' low utilization and by inability to compete with bigger players in the corporate segment.

Moreover, after the COVID-induced dip in 2020, the loss ratios reverted back to normal levels in 2021. The loss ratio on both simple-average and weighted-average bases in 2021 is above the 90% mark, leaving only a little margin for expenses and profits and exposing many companies to underwriting losses.

The weighted average loss ratio in 2021 exceeded that seen pre-pandemic in 2019, however the simple average loss ratio in 2021 stayed below its peak observed in 2019, possibly due to some pricing corrections. The effect of reversion-to-normal in 2021 was slightly offset by the provision for deferred health claims held by insurance companies at year-end 2020 under SAMA's instructions, as indicated by 'as if' loss ratios in the above graph.

1.3.2 Seasonality of Burning Cost

The graph below shows the average burning cost of Health insurance policies, by accident quarter, for recent years.



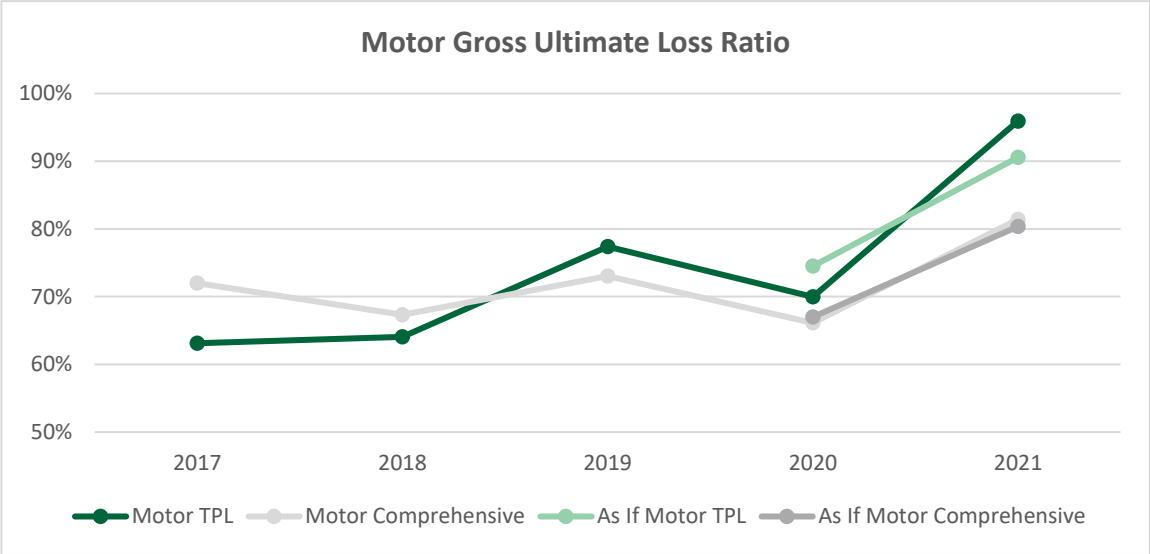
While year 2020 was a clear aberration, an increasing trend in burning cost can be observed in recent years. Moreover, year 2021 shows seasonality of claims different from that seen previously. In particular, the burning cost in the third quarter of year 2021 is not far from the highest burning cost by quarter, possibly due to the restrictions on foreign travel due to COVID-19 and hence the opportunity to utilize more health care services during the holiday season. The above trend is also affected by changes in the minimum Health insurance benefits announced by Council of Health Insurance (CHI) in the past.

SAMA expects management to closely follow the emerging trends in Health insurance claims experience for each market segment, considering both short term and long term effects of delayed treatments due to COVID-19, identify and segregate temporary changes from permanent changes in the seasonality of claims, and write business on sound technical and profitable terms while staying competitive.

1.4 Trends in Motor Insurance

1.4.1 Loss Ratio

The graph below shows the claims experience under Motor insurance, separately for Motor Third Party Liability (TPL) and Motor Comprehensive, over the last few years.



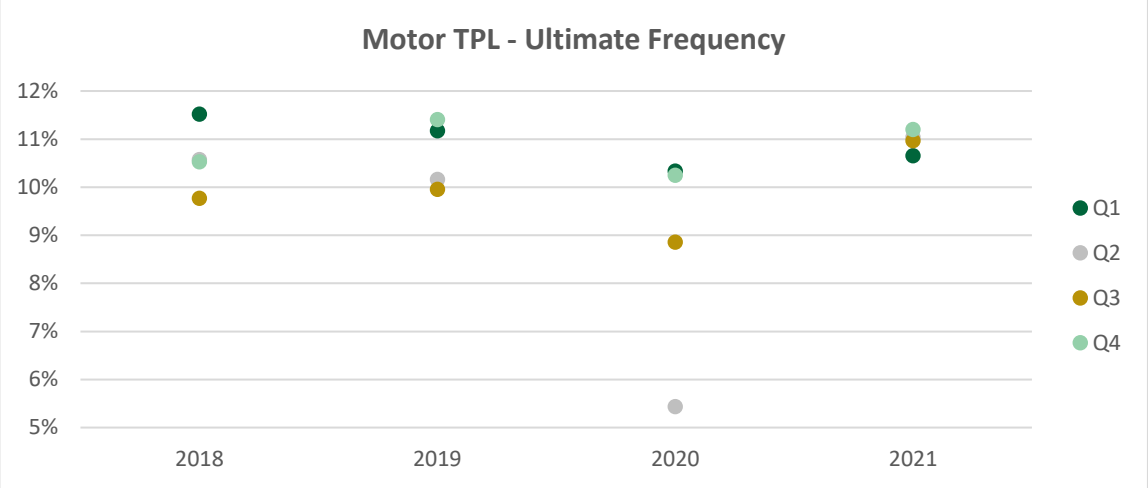
Note: The above loss ratios are weighted average loss ratios, net of salvage and subrogation, for all motor insurance companies.

Since the COVID-induced dip in loss ratio in 2020, the loss ratio in 2021 jumped to its highest level seen in recent years for both Motor Comprehensive and Motor TPL policies. The impact of this increase on the financial statements was partially offset by the provision for two-month free cover held by insurance companies at year-end 2020 following SAMA's instructions (indicated by 'as if' loss ratio in the above graph). The two-month free cover was provided by insurance companies to all retail policyholders in the spirit of fair treatment, recognizing the low incidence of claims during the COVID-19 period.

Such high loss ratios leave little room for expense and profit margin, thus exposing many companies to the risk of, possibly material, underwriting losses. It is therefore imperative for such companies to undertake corrective pricing and underwriting decisions.

1.4.2 Seasonality of Claims Frequency

The graph below shows the frequency of claims under Motor TPL insurance.

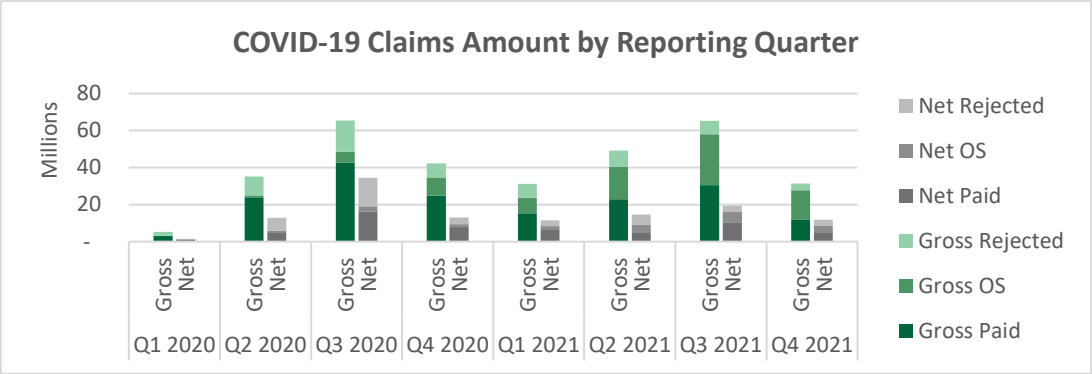


While year 2020 is clearly an outlier, the seasonality of claims in year 2021 differed from that seen in previous years, as the variation between quarters was much lower than seen in previous years. In particular, historically a low claims frequency period, the frequency of claims in the third quarter of year 2021 jumped to a level in line with other quarters. One of the reasons for this behavior during the summer months could be the general restriction on foreign travel due to COVID-19 and hence greater traffic density leading to more claims than usual. Still, the experience of following years will determine whether the above shift was temporary or permanent.

SAMA expects management to ensure close monitoring of the emerging claims experience under Motor insurance, identification of drivers behind the recent spike in loss ratios, understanding of changes in the seasonality of claims and implementation of corrective measures on a timely basis in order to avoid underwriting losses and unhealthy price competition.

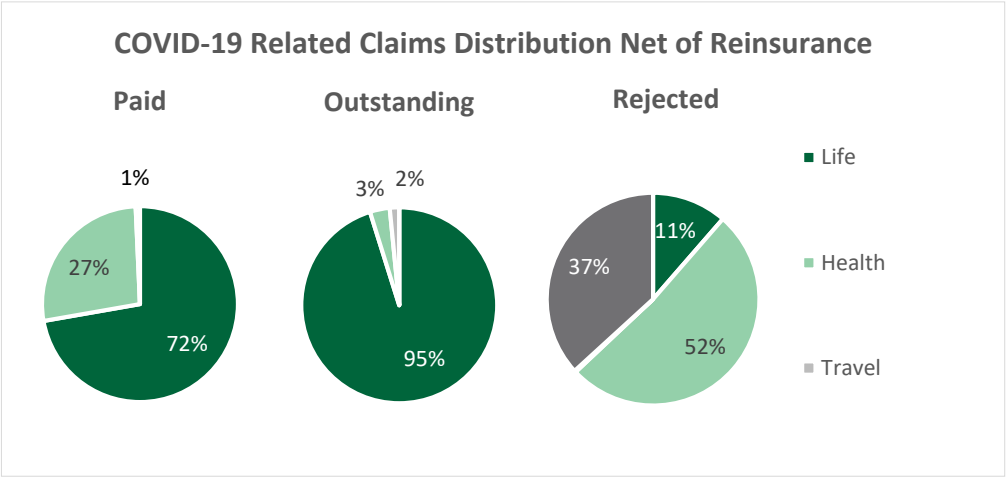
1.5 COVID-19 Related Claims

Since the early days of the pandemic, SAMA established additional reporting requirements for insurance companies so that the claims emerging due to COVID-19, directly or indirectly, can be monitored and measures can be taken, if necessary. The graph below shows the status of reported claim amounts, split into paid, outstanding and rejected, at year-end 2021 by reporting quarter.



The reported claims showed an increasing trend in the first three quarters of year 2021, mainly due to Life insurance claims, and also due to some companies starting to categorize health complications due to past incidence of COVID-19 as 'COVID' claims (a.k.a. 'long COVID'). The reinsurance recoveries however significantly mitigated the impact of COVID-related claims, and the cumulative net to gross ratio for COVID-related incurred claim amount was 30% at year-end 2021. The absolute amount of net incurred claims was SAR 78 million, or 0.13% of combined net earned premium in years 2020 and 2021. Therefore, the overall net impact of COVID-19 pandemic has remained minimal for the insurance sector.

The graphs below show the distribution of settled, outstanding and rejected claims by line of business, all on a net of reinsurance basis, for all claims reported since the beginning of the pandemic till the year-end 2021.



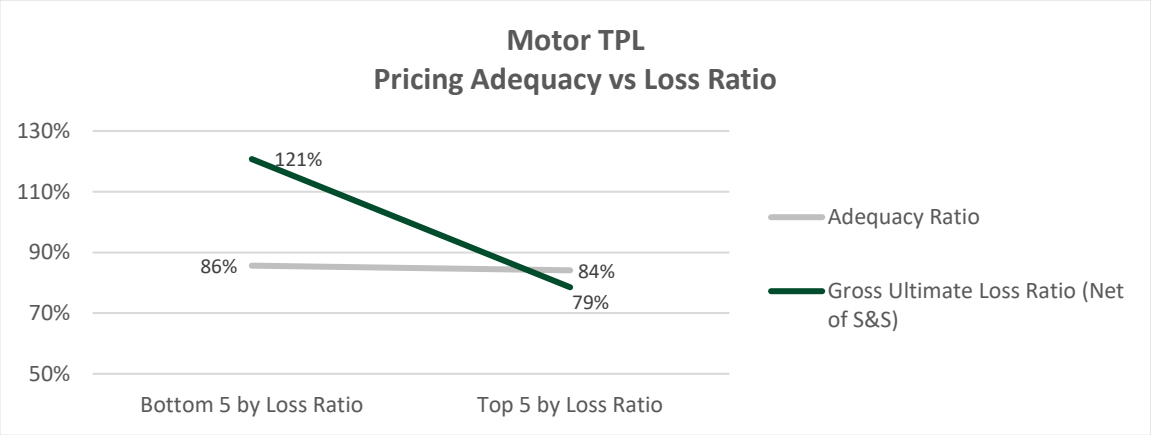
The majority of settled claims as well as outstanding claims relate to Life insurance, covering deaths attributed to COVID-19, followed by Health insurance claims. Although the cost of COVID-19 treatment was borne by the Government, many companies classified indirect COVID-related medical treatments under 'COVID' claims.

While the impact of COVID-19 related claims has so far been minimal for the Saudi insurance sector, SAMA expects management to continue to monitor the emerging experience, particularly given that the cost of COVID-19 claims will have to be borne by insurance companies going forward as per the CHI instructions, as well as be on the lookout for any new waves or new virus outbreaks (e.g., monekypox). Moreover, it is expected that learnings from COVID-19 will be embedded in the pricing, underwriting and claims management philosophies of the Company.

1.6 Impact of Pricing Adequacy on Loss Ratios

For Motor and Health classes, subject to meeting a number of conditions, SAMA rules give flexibility to the Underwriting function of an insurance company to sell an insurance policy at a price different from that recommended by its Appointed Actuary. Among others, these conditions require that any discounts on the technical price must be within the underwriting authority framework approved by the Company's Board of Directors, rationale for any discounts given should be appropriately documented, and the Board should be made aware of the potential financial impact of those discounts. Everything else being equal, a low price adequacy can be expected to produce a high loss ratio and low profitability.

The graph below compares the pricing adequacy ratio against the gross ultimate loss ratio for accident year 2021 between companies with the highest loss ratios and those with the lowest loss ratios for Motor TPL business.



Note: Loss ratio is weighted average gross ultimate loss ratio of top/bottom 5 companies for accident year 2021.
Pricing adequacy ratio is taken as the average of 2020H2 and 2021H1 ratios to correspond to accident year 2021.

For the worst-performing companies with the highest loss ratios, it is obvious from the above graph that adherence to technical prices would have significantly improved the loss ratio; however, the loss ratio would have still stayed above 100%, which points towards the inadequacy of technical prices calculated by the appointed actuaries of those companies.

As regards the best-performing companies with the lowest ratios, the good performance appears to have been achieved despite writing business at a low pricing adequacy. This highlights the importance of possessing strong underwriting expertise that can enable an insurance company to write business on profitable terms while deviating from the technical price for selective clients. For these companies, it may also be necessary for the Appointed Actuary to revisit the technical prices.

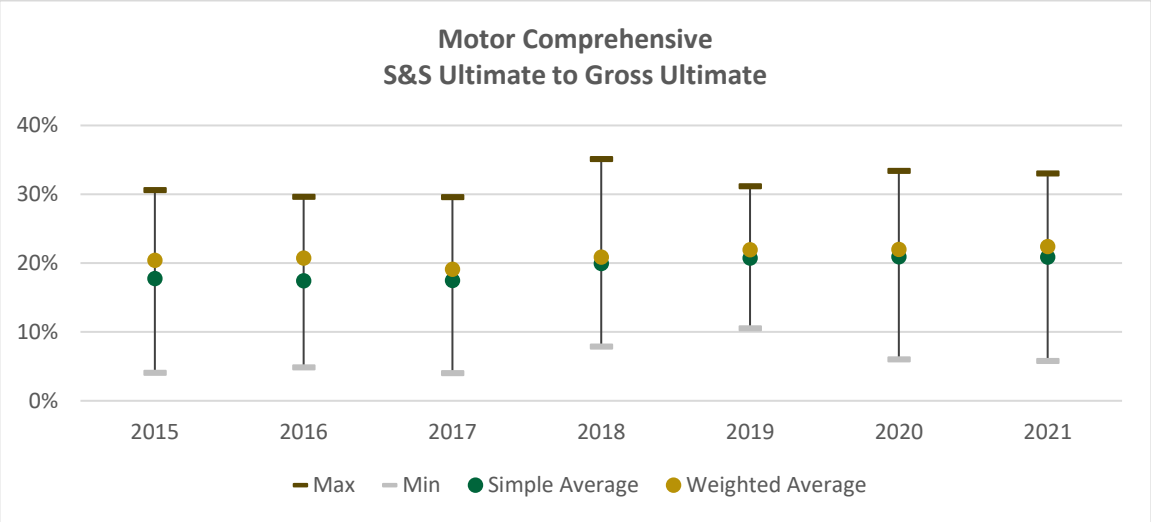
It is possible that the above statistics suffer from a lack of reliable data, a concern commonly shared by appointed actuaries and observed at multiple occasions during SAMA's inspection visits. The fact that many insurance companies still produce the above reports manually, unlike many others who have fully automated the process, give credence to the doubts regarding the reliability of data.

SAMA expects management to ensure:

a) *reliability of data used to produce the pricing adequacy reports;*
b) *full automation of the process to produce the pricing adequacy reports;*
c) *strict adherence to the authority framework for discretionary reduction in premium rates;*
d) *timely sharing of information with the Board of Directors as regards the expected financial impact of any material pricing discounts;*
e) *maintaining a strong feedback loop between the Underwriting function and the Appointed Actuary for maintaining the relevance and accuracy of the technical prices calculated by the Appointed Actuary.*

1.7 Salvage & Subrogation (S&S) Estimates

Effective management of salvage and subrogation recoveries can help a Motor insurer in reducing, possibly substantially, the net cost of claims. The graph below shows the range of the projected ultimate recoveries by insurance companies for recent accident years.



The wide range seen above implies that while some companies are able to improve their net claims experience by efficiently realizing the potential of salvage and subrogation recoveries, there are companies at the lower end of the spectrum with significant untapped potential, which in turn can severely affect their competitive position in the sector.

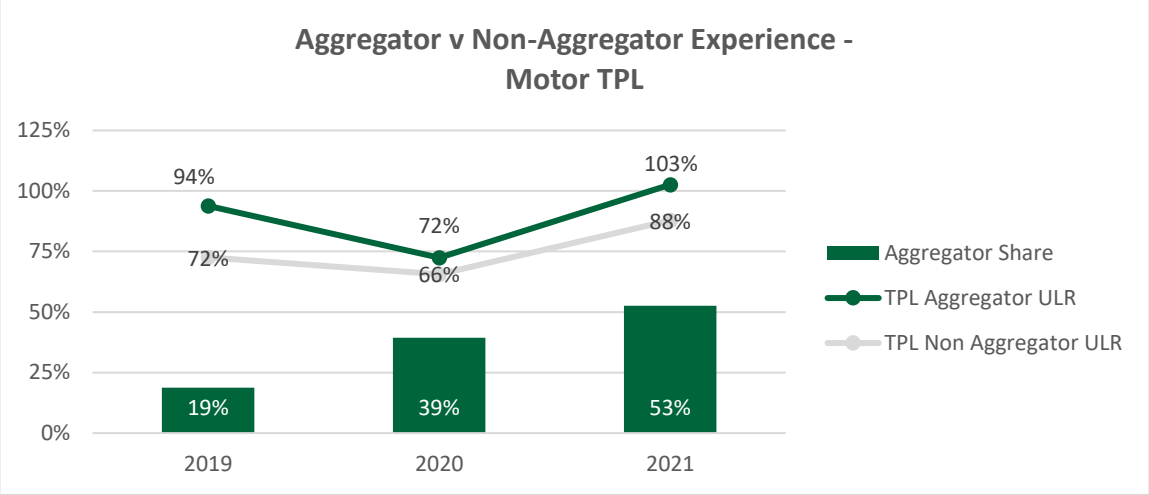
The average recovery ratio has remained stable in the recent past. Interestingly, very similar simple average and weighted average recovery ratios suggest that smaller insurance companies are almost equally effective in recoveries as larger insurance companies.

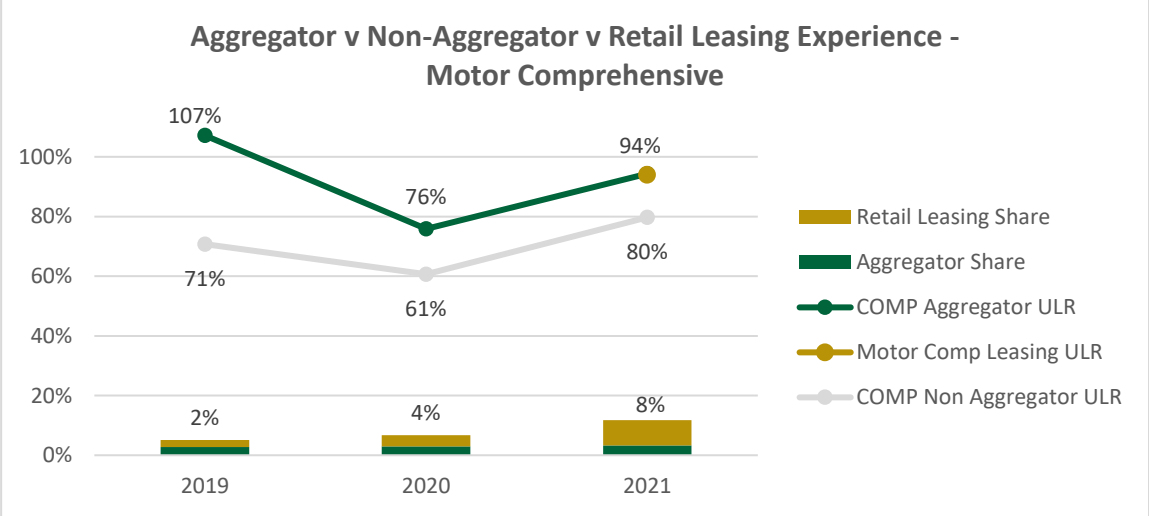
SAMA expects management to continue enhancing the efficiency of its claims recovery process in order to maximize the benefit of this potentially sizable revenue source, and be able to offer more competitive rates to policyholders, in particular for Motor Comprehensive policies.

1.8 Actuarial reserving - areas for improvement

1.8.1 Reserve segmentation for Motor insurance by Sales Channel

Subsequent to the entry of aggregator sales channels in Saudi Motor insurance sector in late year 2017 and capture of a material share of the market since year 2019, SAMA instructed the Appointed Actuary to project and track the experience of motor business sourced via aggregator channels separately from other motor business. The graphs below show the growth in aggregator business in recent years and the comparison of the loss ratios between the policies sold through the aggregator channels and other sales channels.





For Motor Comprehensive, the experience of retail leasing is shown additionally, as the sales mechanism for this business underwent changes in year 2020 subsequent to the issuance of the relevant SAMA rules.

For Motor TPL, the share of aggregator business has grown rapidly. On the downside, the loss ratio of the aggregator business is significantly higher than the non-aggregator business.

Similarly, for Motor Comprehensive, significantly higher loss ratios are observed for aggregator business than for policies sold through other channels. Interestingly, for retail leasing business that formed part of non-aggregator business until 2021 and thus can be implied to have lower loss ratios than that of the aggregator business, the loss ratio for this newly carved-out segment jumped almost equal to that of the aggregator segment.

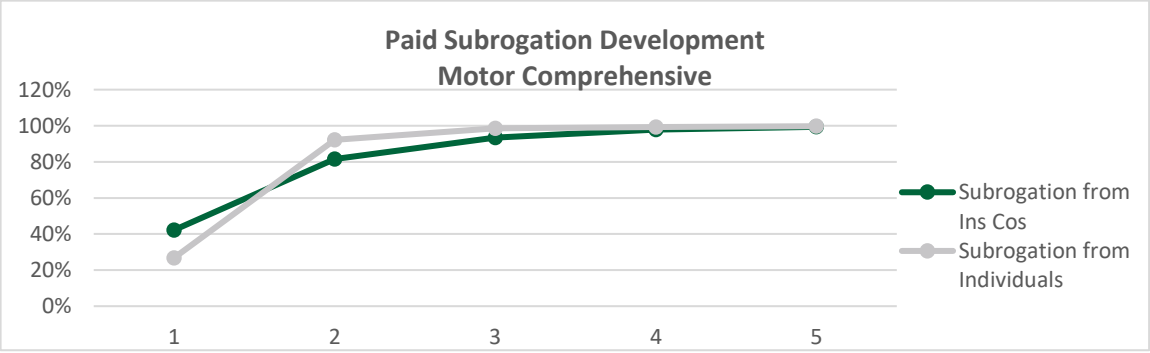
It is obvious that the above very high loss ratios of the aggregator segment (including retail leasing for Motor comprehensive) are not sustainable for insurance companies. Therefore, it is imperative that insurance companies look at both the commercial and technical aspects of business sold through the aggregator channel, and seek to avoid '*winner's curse*'.

SAMA expects the Appointed Actuary to seek to further refine the analysis of business sourced via aggregator channels, including retail leasing, and respond adequately both in actuarial pricing and reserving in a timely manner.

1.8.2 Reserving for Motor Subrogation

As part of its continuous efforts to improve the standard and sophistication of reserving in the Saudi insurance sector, SAMA encouraged the Appointed Actuary to differentiate between individuals and insurance companies when estimating reserves for Motor Subrogation.

The graph below shows that, for a selection of companies that estimated the reserves for the above two segments separately, there are marked differences in the claims development pattern between the two segments during the early stages of development.



The above graph highlights the need for other insurance companies to estimate and hold provisions for the above two segments separately from each other. It is also important to ensure that data is captured reliably with sufficient details in order to assist the Appointed Actuary with implementing the desired refinements to the reserving exercise and improve the accuracy of actuarial reserves.

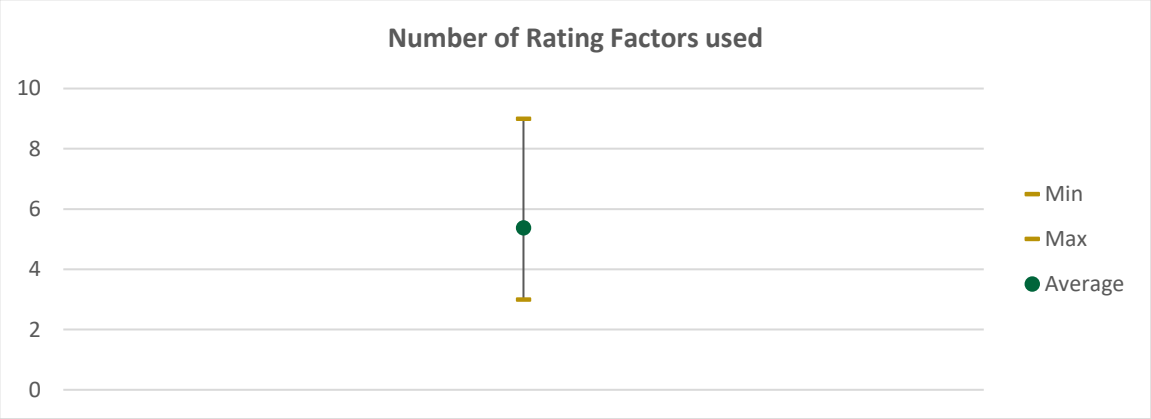
2. Pricing

2.1 Medical Pricing

Annually, each Appointed Actuary is required to carry out a comprehensive review of the premium rates to reflect the latest claims experience and uncertainty around it, expense outgo of the Company, and profit target set by the Board of Directors. The analysis culminates with the Appointed Actuary recommending a revised set of technical prices for use by the Company's sales and underwriting teams. Depending upon the appropriateness of the assumptions used, range of rating factors considered, allowance made for any regulatory changes, and credibility assigned to a client's own claim experience, the competitive position of an insurance company can be significantly affected by the Appointed Actuary's recommendations.

2.1.1 Rating Factors

SAMA encourages appointed actuaries to continue to explore new rating factors with a view to enhance the pricing sophistication and accuracy in the Saudi insurance sector. The graph below shows the range of the count of rating factors used by insurance companies for pricing of Health insurance policies.



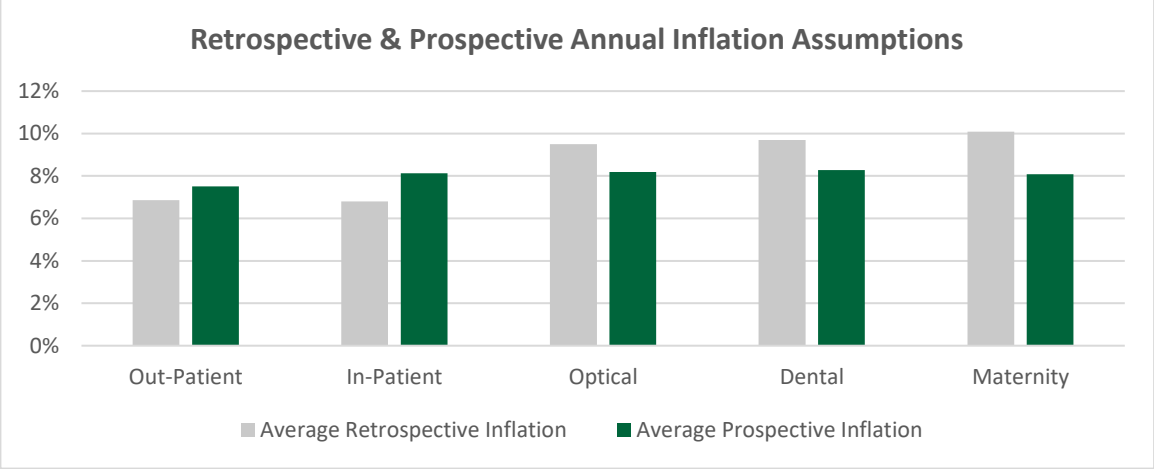
It can be seen that there is a significant variation between insurance companies in terms of the number of rating factors considered in pricing. This can affect, perhaps materially, the competitive position of an insurance company as well as the profitability of its business due to less accurate pricing than its peers.

2.1.2 Inflation Assumption

Using an appropriate inflation assumption in pricing is of immense importance. The retrospective (historical) inflation assumption is used to bring the historical claims cost to the current price levels, whereas prospective (future) inflation assumption adjusts the premium from the point of calculation to the point of medical treatment. Using inaccurate

assumptions for any of the above two can have material consequences for the accuracy of technical price produced by the Appointed Actuary.

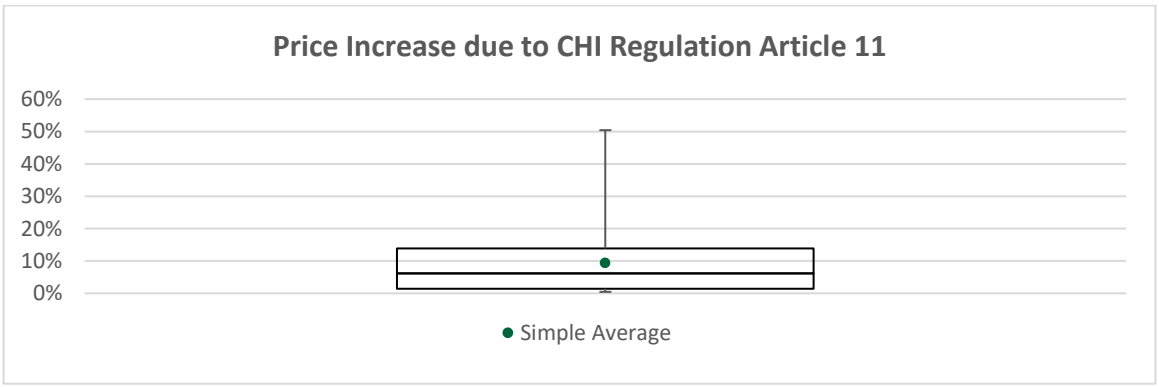
The graph below shows the comparison of average (unweighted) inflation assumptions by treatment-type, both prospective and retrospective, used by appointed actuaries.



Based on the above assumptions, it can be implied that the average cost of maternity treatments has grown at the fastest pace in recent past, followed by dental treatments. Interestingly, while there are noticeable differences in retrospective inflation assumptions by treatment-type, those differences appear to have been somewhat diluted for the purpose of prospective inflation assumptions.

2.1.3 Impact of Article 11 of Council of Health Insurance (CHI) regulations

Article 11 of CHI regulations allows government health facilites to recover the cost of providing medical treatment to those individuals who possess private insurance from their insurance companies. The graph below shows the range of increase in premium rates due to the above regulation estimated by appointed actuaries for their insurance companies.



It can be observed that, while the mean and median both sit between 5%-10% increase in price, the 25th and 75th percentiles are close to 0% and 15% respectively. One insurance company is a significant outlier with an estimated impact of 50% increase in premium

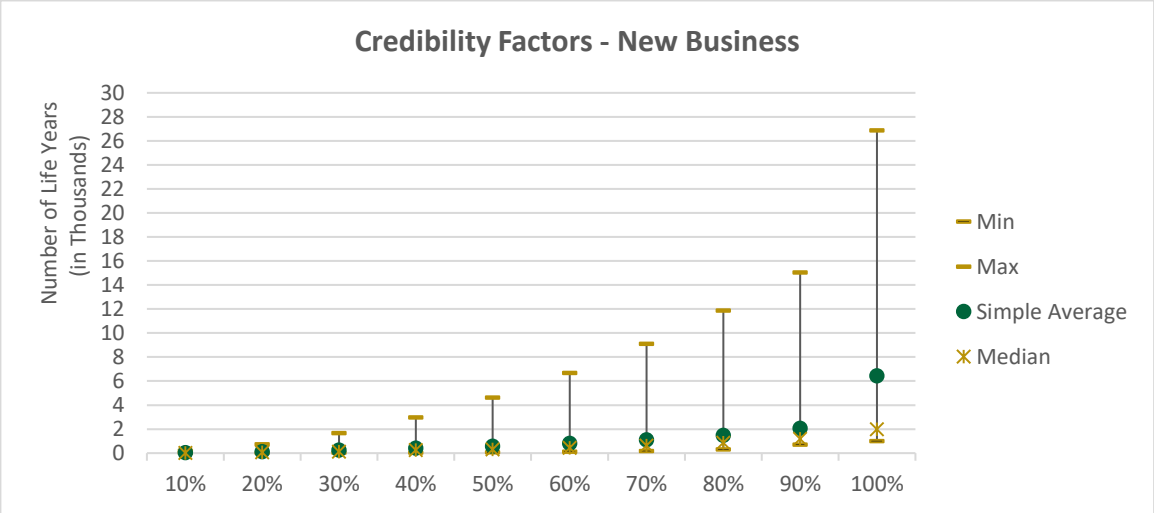
rates. The wide range highlights the uncertainty in prices due to the introduction of Article 11, likely caused by an absence of historical data.

The range is likely to narrow down with the emerging experience, also considering the fact that the tariff is fixed between insurance companies and government health providers, as specified by CHI.

2.1.4 Credibility Factors

In Actuarial Science, Credibility Theory guides an actuary on the extent of reliance to place on a policyholder's own claims experience vs. the claims experience of the overall insured population. A common measure used is the number of claims, the greater the number of claims, the higher is the credibility assigned to own experience of a policyholder. The number of insured lives is a commonly used proxy by actuaries in place of the number of claims.

The graph below shows the range of number of insured lives for new policies, used as the basis by appointed actuaries, for assigning a given credibility factor.



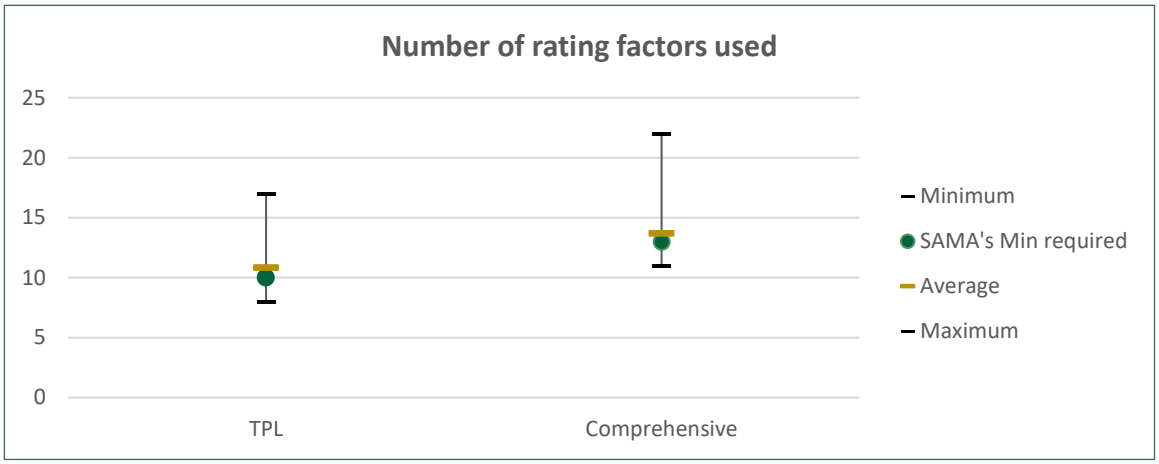
It can be seen that, for both simple average and median number of lives, values are similar at the lower levels of credibility. The difference however grows as the credibility factor increases (e.g., 2100 v 1200 lives at 90% credibility factor) before becoming very wide at 100% credibility factor, indicating higher dispersion at higher credibility factors. Moreover, there is at least one insurance company that is a significant outlier when assigning credibility and seems to rely more on the overall insured population experience than a prospective policyholder's own experience.

The actuarial literature provides adequate guidance on assigning appropriate credibility to the past experience, which is supplemented by the Appointed Actuary's judgement. Inadequate technical rigor in this area can cause the insurance company's premium to be inadequate or non-competitive.

2.2 Motor Pricing

2.2.1 Rating Factors

As regards Motor insurance, the graph below shows the range of the number of pricing factors being used by appointed actuaries, both for Motor TPL and Motor Comprehensive policies.

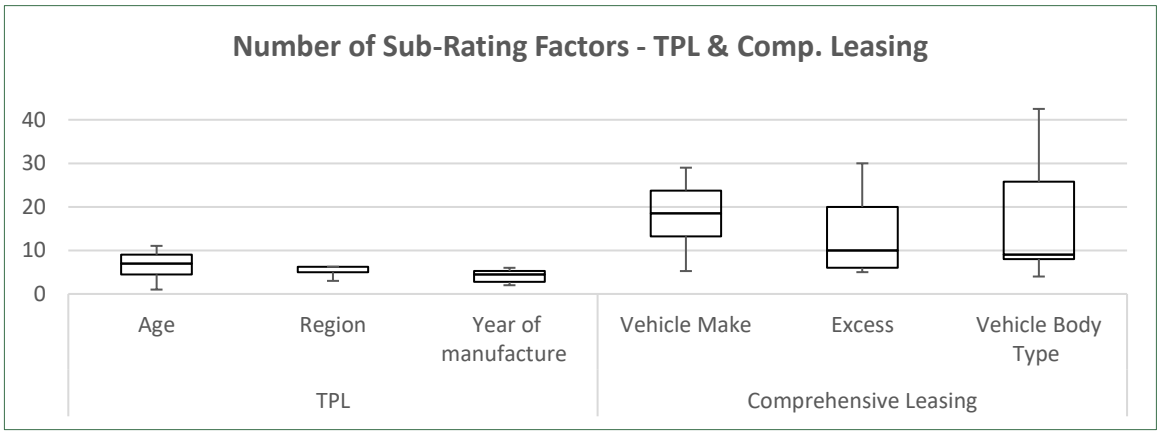


The average number of rating factors for both Motor TPL and Motor Comprehensive was just above the SAMA-prescribed minimum number of rating factors (i.e., 10 for TPL and 13 for Comprehensive). This is contrary to SAMA's expectations, as the purpose of setting the minimum number of rating factors in year 2019 was to encourage the Appointed Actuary to strive for greater pricing sophistication and differentiation with the competition. Instead, it appears that the choice of rating factors for the sector in general is still driven by the regulatory requirements.

At the same time, the maximum number of rating factors used sits significantly higher than the average value, thus showing that those aiming for the 'minimum' only are likely being competitively disadvantaged. Moreover, some have struggled to meet the minimum requirements, likely due to issues pertaining to data quality and lack of efforts from the Appointed Actuary and/or management to resolve those issues. While, on one hand, non-compliance with SAMA instructions exposes an insurance company to the risk of regulatory action, on the other hand, the insurance company is likely to be severely disadvantaged in the face of competition.

2.2.2 Granularity within Rating Factors

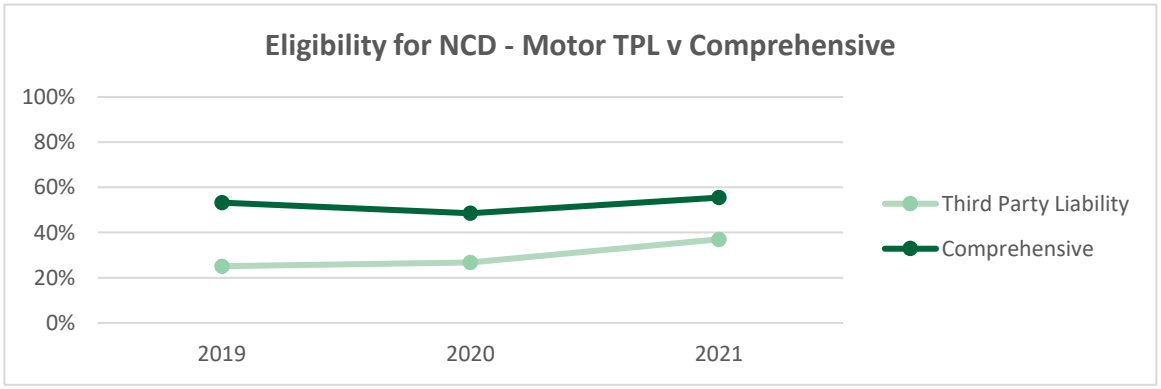
The graph below shows, for a sample of rating factors, the inter-quartile range of the count of rating bands/segments used by appointed actuaries for Motor TPL and Motor Comprehensive-Leasing.



It can be observed that the number of rating bands/segments used has a large degree of variation between insurance companies. A less granular pricing model than peers may expose an insurance company to inaccurate pricing and anti-selection risks. On the other hand, estimating prices for too many segments may expose the pricing model to the risk of 'overfitting'.

2.2.3 No Claim Discount Implementation Constraints

The current 'No Claim Discount' (NCD) regime is in place since mid-2018. Some refinements have been made since its introduction in view of emerging issues and challenges. The graph below shows the proportion of policyholders deemed eligible for NCD over the last three calendar years.



It appears from the above graph that there is an increasing trend in NCD eligibility (with the exception of Motor Comprehensive in 2020, possibly due to COVID-19). For Comprehensive policies, the proportion of those eligible for NCD is significantly higher than TPL policies. An increasing trend in NCD eligibility is desirable, as it is an indicator of

improvement in driving behavior and lower claims frequency, two of the key objectives behind introduction of the NCD regime.

Recently, SAMA in liaison with Najm is seeking to further refine the implementation of the existing NCD framework. This may impact the overall eligibility proportions, and therefore it is important for an Appointed Actuary to be aware of the above changes, as and when made, and reflect those in the pricing basis on a timely basis.

SAMA expects the insurance company management to:

- *ensure reliable and comprehensive data is made available to the Appointed Actuary;*
- *provide adequate challenge to the key assumptions used by the Appointed Actuary;*

SAMA expects the Appointed Actuary to:

- *explain the pricing methodology and key assumptions to management in an easy-to-understand manner, along with the changes in prices and drivers behind those changes;*
- *continue to push for pricing sophistication, seek to differentiate the Company's pricing basis from the competition, and move beyond the minimum stipulated by SAMA;*
- *monitor emerging experience and regulations, and update prices on a timely basis and as frequently as necessary, and not only at the time of producing the annual pricing report; and*
- *Fully involve the internal Actuarial Function in every pricing exercise and guide them in order for the internal Actuarial Function to work effectively with the Underwriting and Claims functions so that any emerging trends can be identified and reflected in the actuarial pricing basis on a timely basis.*

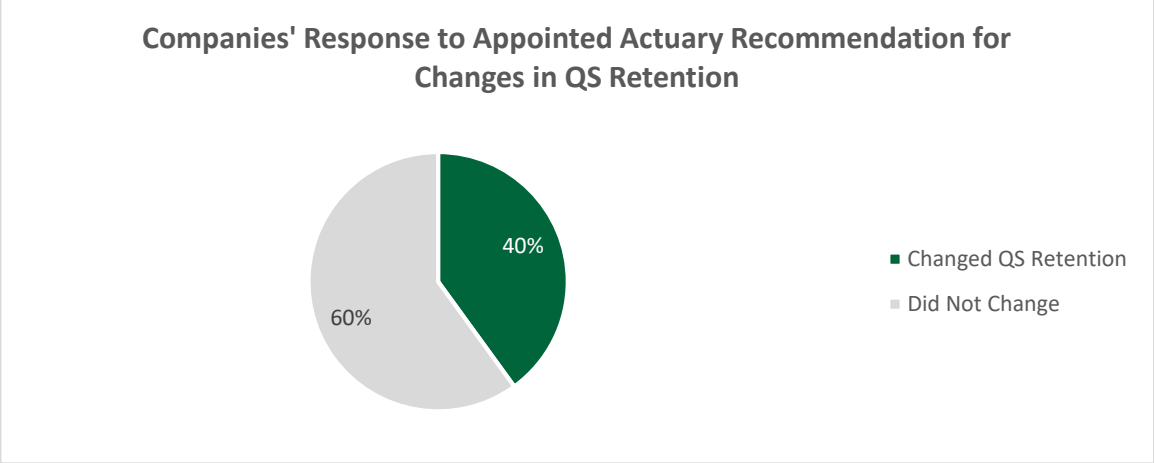
3. Reinsurance Appropriateness and Adequacy report 2021

For Property & Casualty insurance, the majority of insurers in Saudi Arabia rely heavily on reinsurance companies as a large proportion of business is reinsured. It is therefore important that each insurance company assesses its reinsurance requirements using sound technical basis, and with due regard to its risk appetite.

The Actuarial Work Rules 2020 require an annual report from the Appointed Actuary, assessing the appropriateness of the Company's reinsurance arrangements and risk retention levels for each line of business. The Appointed Actuary is also required to make recommendations for reinsurance optimization to the Board of Directors and senior management. The task requires application of sophisticated actuarial modelling techniques and is commensurate with SAMA's objective to raise the standards of actuarial practice in the Kingdom.

3.1 Management's Response to the Appointed Actuary's Recommendations

The graph below assesses how the Board of Directors responded to the Appointed Actuary's recommendation made in the previous year's Reinsurance Optimization Report.

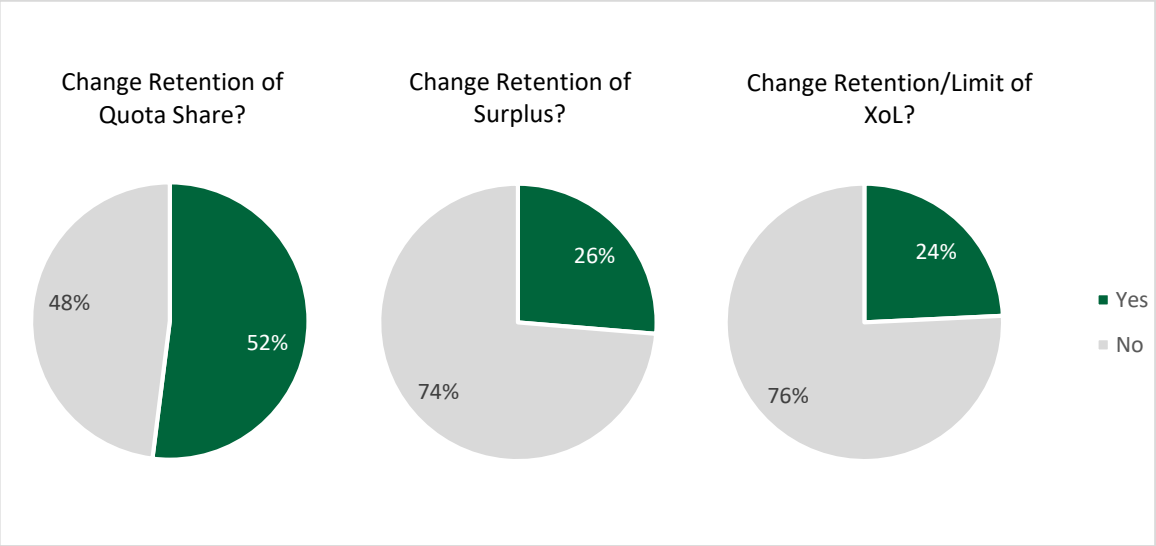


It can been seen that a significant proportion of Boards accepted the recommendation from their appointed actuaries to change the retention of their Quota Share treaties and management went ahead with making those changes, in part or in full, to the treaties. The ratio of change is even more significant, given that those recommendations are formed without taking into consideration the reinsurance market conditions.

SAMA expects the Board of Directors and senior management to actively consider the recommendations of their Appointed Actuary, with due input from Underwriting and Reinsurance departments.

3.2 Changes Recommended for Treaties in Reinsurance Optimization Report 2021

The graph below shows the outcome of the actuarial analysis performed in year 2021 and recommendations made by appointed actuaries as a result.

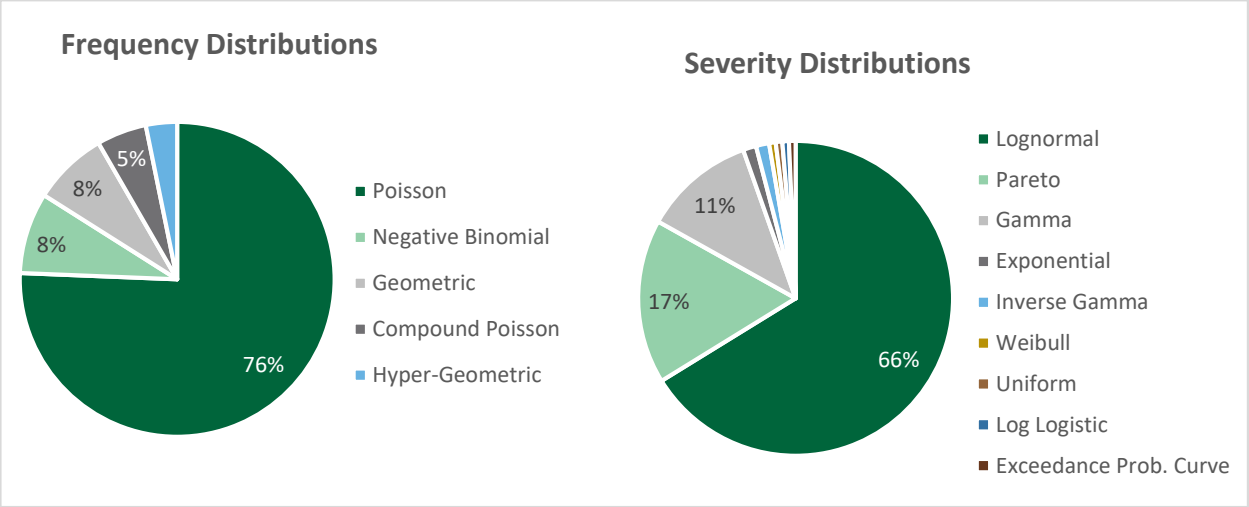


It can be seen that among all treaty types purchased by insurance companies, appointed actuaries concluded that current Quota Share arrangements for the majority of insurance companies are inefficient. As regards the other two treaty types, the proportion of insurance companies for which changes are recommended are similar.

SAMA expects the Board of Directors to seek to fully understand the rationale behind the recommendation of its Appointed Actuary and actively consider those changes, with due consideration of the reinsurance market conditions and of the Company's own risk appetite.

3.3 Distribution of Frequency and Severity

SAMA continues to encourage appointed actuaries to enhance sophistication of modelling techniques when performing the analysis to optimize the existing reinsurance arrangements. The graph below shows the range of statistical distributions used by appointed actuaries for modelling the frequency and severity of claims.

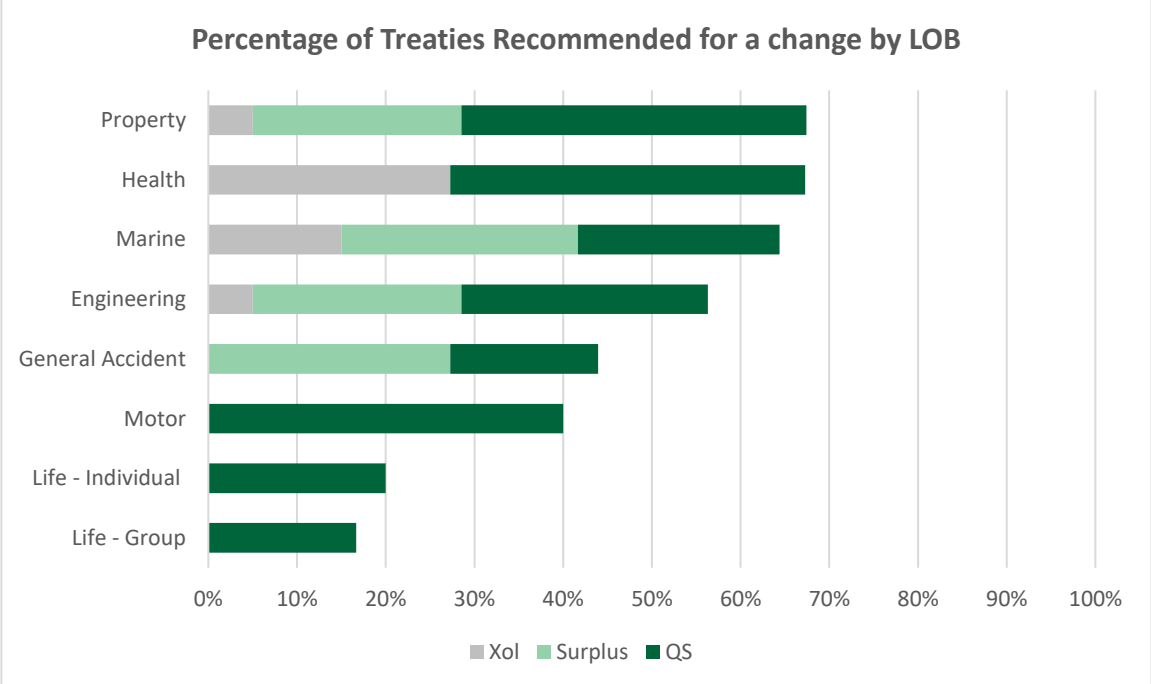


For Frequency modelling, Poisson was the most commonly used distribution, followed by Negative Binomial and Geometric distributions. For Severity modelling, Lognormal was the distribution of choice for many, followed by Pareto and Gamma distributions.

SAMA expects each Appointed Actuary to remain abreast of the latest professional developments in the area of reinsurance optimization and continue to explore and implement more sophisticated modelling techniques.

3.4 Percentage of Treaties Recommended for a change by LOB

The graph below shows the LOB-wise distribution of those treaties where a change in the existing structure was recommended by the Appointed Actuary.

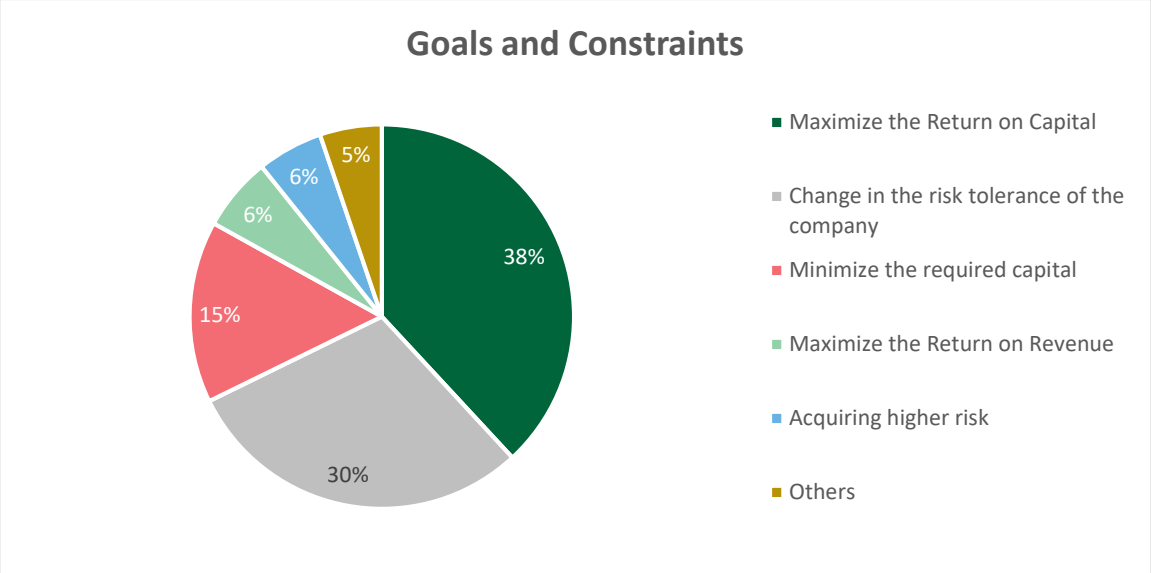


Property and Health LOBs were identified by appointed actuaries as those where the highest proportion of treaties require improvements. This was followed by Marine and Engineering LOBs. Among all LOBs, proportional treaty arrangements (Quota Share and Surplus) formed greater proportion of the treaty structures deemed 'sub-optimal' than non-proportional (Excess of Loss) arrangements. Some of these inefficient structures could be driven by bouquet arrangements between insurance companies and their reinsurers.

SAMA expects management to consider the optimal treaty structure for each line of business individually so that any decision around purchasing a bouquet of treaties can be taken from an informed position.

3.5 Goals and Constraints

In order to perform the actuarial analysis for treaty optimization, it is important for the Appointed Actuary to have a clear goal set by the Board of Directors and senior management. The graph below shows the distribution of goals used by appointed actuaries to guide their analysis.



It can be observed that the majority of actuaries aimed to maximize the return on capital for their reinsurance optimization analysis, followed by the revised risk appetite of insurance companies.

SAMA expects the Board of Directors and senior management to set clear goals for the Appointed Actuary so that the output generated is in line with the expectations and business requirements of management.

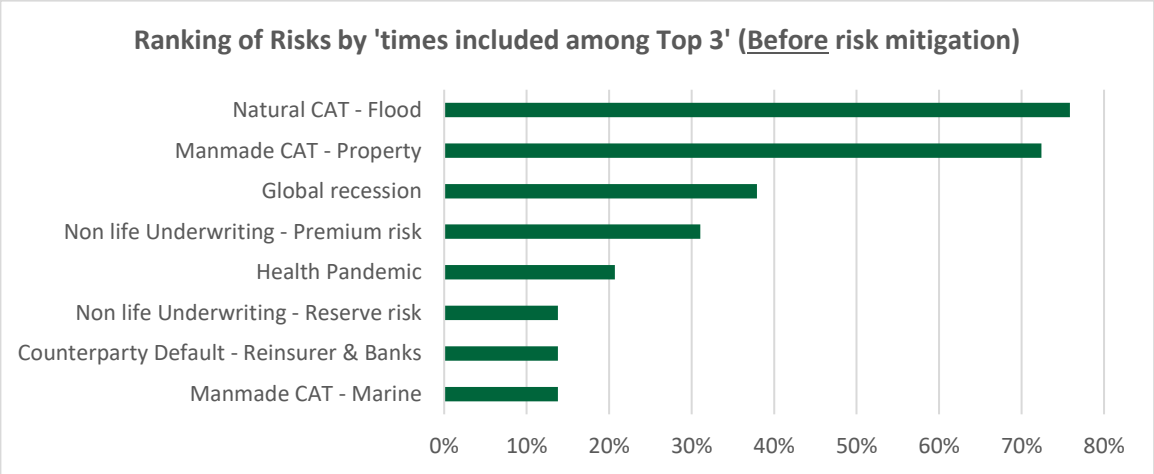
4. Solvency & Capital Report 2021

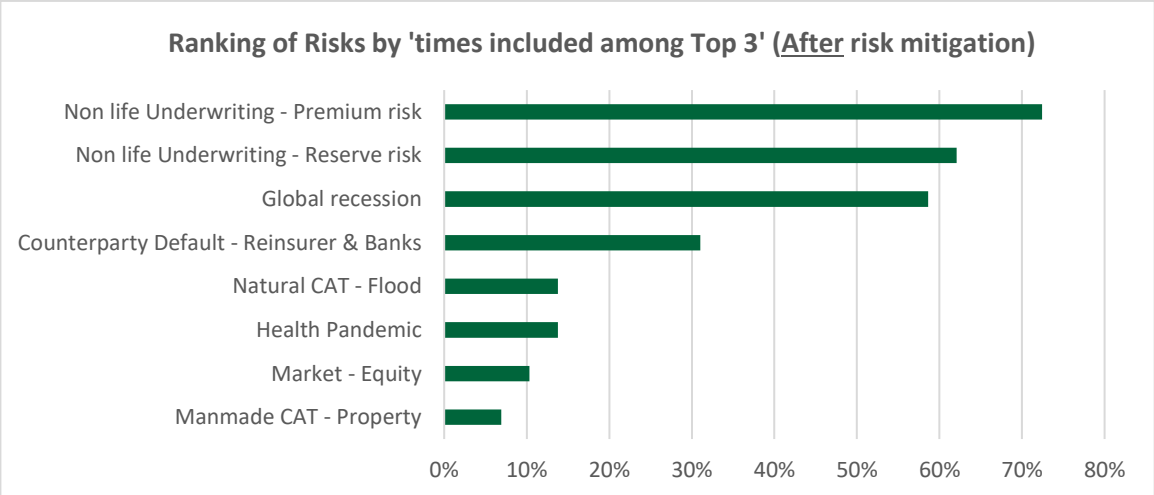
The Actuarial Work Rules introduced a requirement for the Appointed Actuary to investigate and advise the Company on its solvency position and identify all major risks the Company is exposed to using a range of actuarial techniques. A Stress & Scenario Test (SST) framework was introduced by SAMA in 2020 to facilitate the Appointed Actuary in fulfilling this requirement, and 2021 was the second year of running the SST exercise.

Subject to the parameters used in the above framework, the results of the above exercise enable each insurance company to identify its largest risk exposures, and evaluate the effectiveness of its risk mitigation strategies in the face of stressed business environment caused by extreme events. The study also provides useful insights to SAMA as regards the vulnerabilities of insurance companies to various risks.

4.1 Top risks for Insurance Companies

The graphs below show instances of each risk being counted among the top three risks by insurance companies, both before and after the impact of risk mitigation (i.e., reinsurance & hedges).



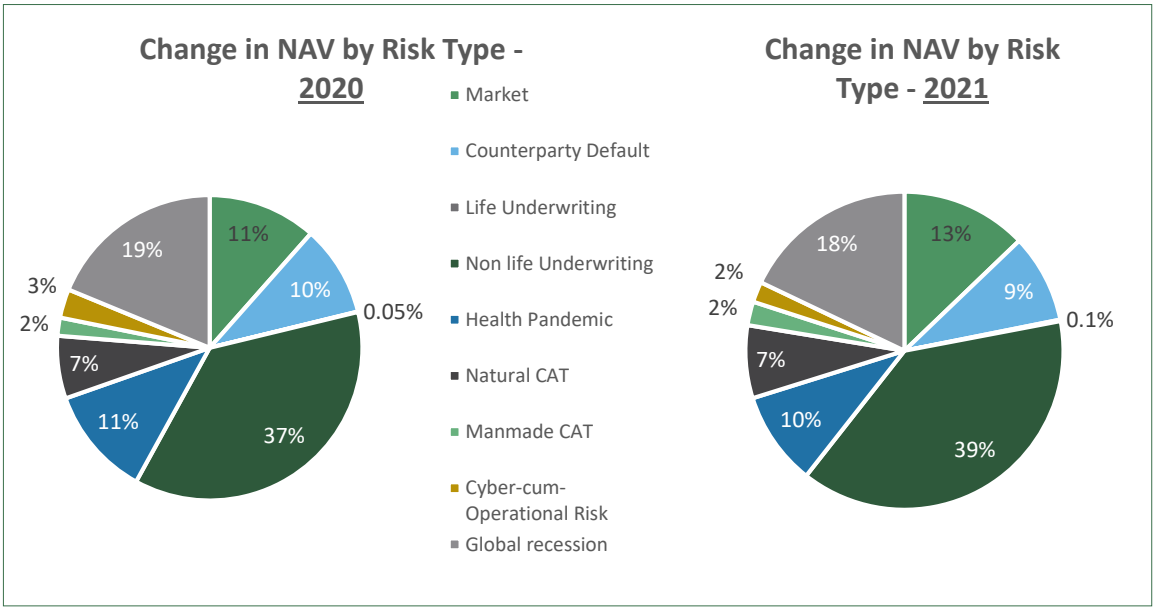


Before allowing for reinsurance recoveries, the Flood risk is ranked at the top in the list of risks that are counted among the top three risks for insurance companies. After allowing for reinsurance recoveries, however, the Flood risk falls to the fifth position, thus highlighting the importance of having adequate natural catastrophe cover in reinsurance treaties, including but not limited to Hours clause, Follow-the-Fortune clause, etc.

After allowing for reinsurance recoveries and risk-hedging activities, Non-life Pricing risk (i.e., higher loss ratio than assumed in pricing) is ranked at the top, followed by Non-Life Reserve risk (i.e., deficit in reserves). Global recession is ranked at the third position in both before and after risk mitigation scenarios.

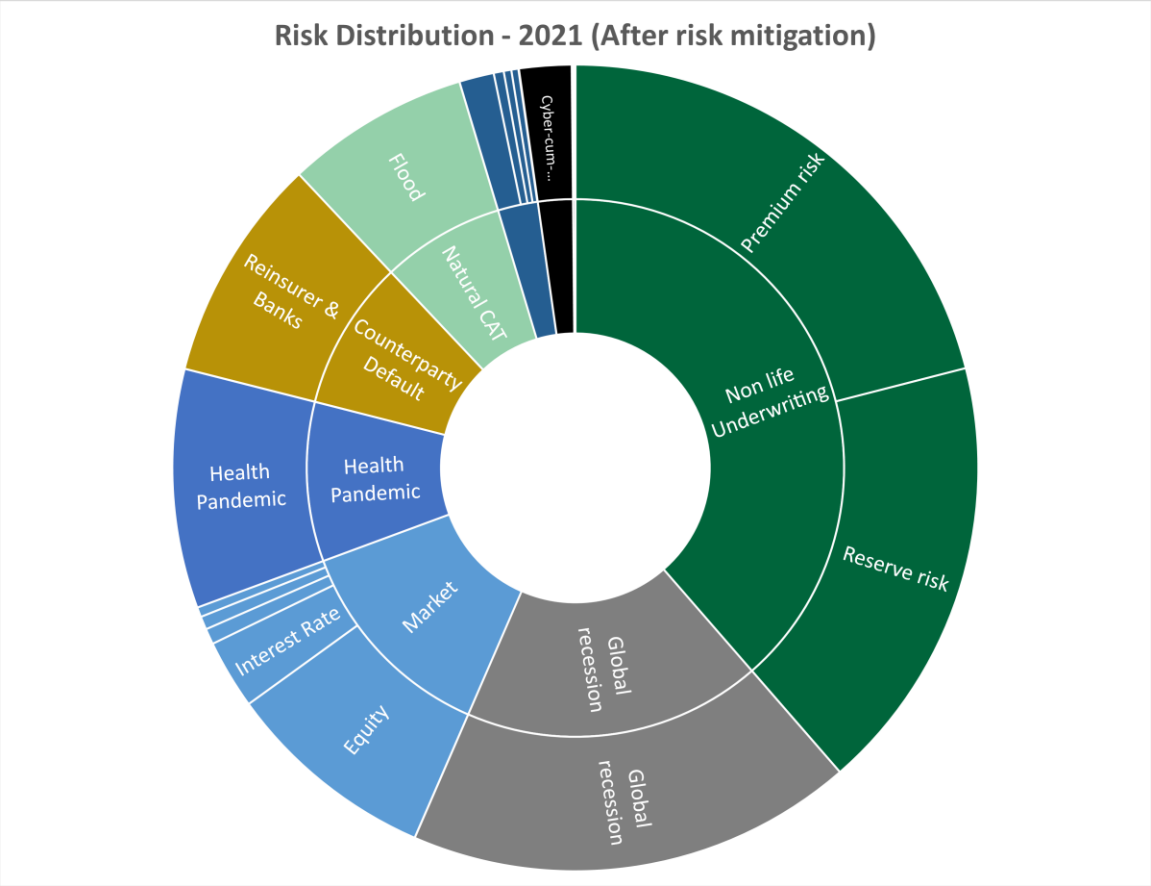
4.2 Overall Sector-wide Results by Risk Type & Sub-Risk Type

The graph below shows the proportion of each risk (in terms of the change in Net Asset Value) in the overall impact of the selected stresses and scenarios on the insurance sector, after allowing for reinsurance recoveries and other risk mitigation measures (e.g., derivatives, if any) and compares those with the results from last year.



In terms of the adverse impact for the sector as a whole, Non-life Underwriting risk is identified as the most significant risk for the insurance sector, followed by Global Recession, Market and Health Pandemic risks. It is noted that the impact of Health pandemic may be limited in the future given the recent change in Unified Health Insurance policy that now has an exclusion for Health pandemic.

The graph below shows the proportion of each risk, split into sub-risks, after risk mitigation.



It can be observed that, within Non-Life Underwriting risk, the Premium risk and Reserve risk are equally important. Within Market risk, the Equity risk appears to be of most significance, followed by the Interest Rate risk.

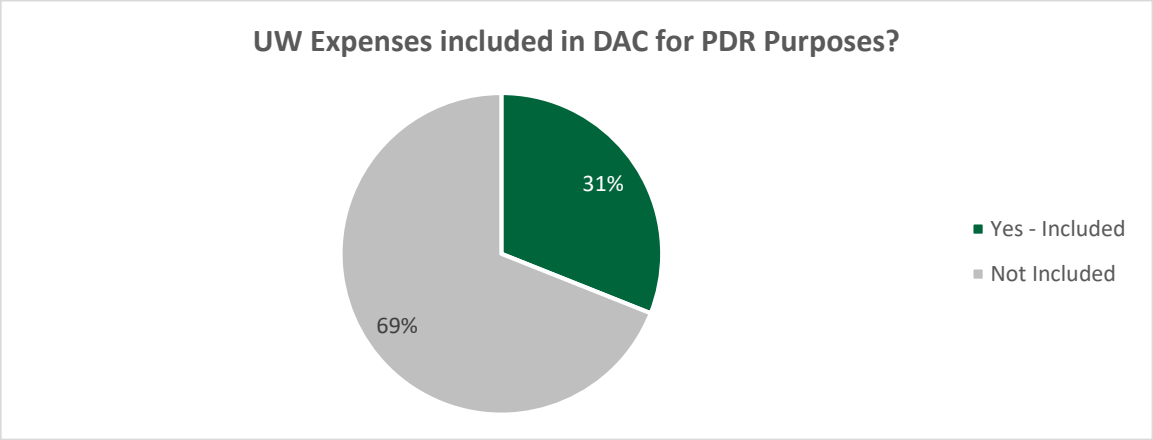
SAMA expects management to carefully consider the results of the above exercise for shaping its business strategy and risk mitigation arrangements. SAMA also expects management to analyze the capital resources currently available against those indicated by the above exercise, and hold discussions to identify options for meeting any potential shortfalls if the need arises in the future.

5. Experience Studies Report 2021

5.1 Acquisition Cost for PDR Purpose

Under the Actuarial Work Rules, an Appointed Actuary is required to perform an annual expense analysis, with the objective of deriving appropriate expense assumptions for use in actuarial reserving and pricing.

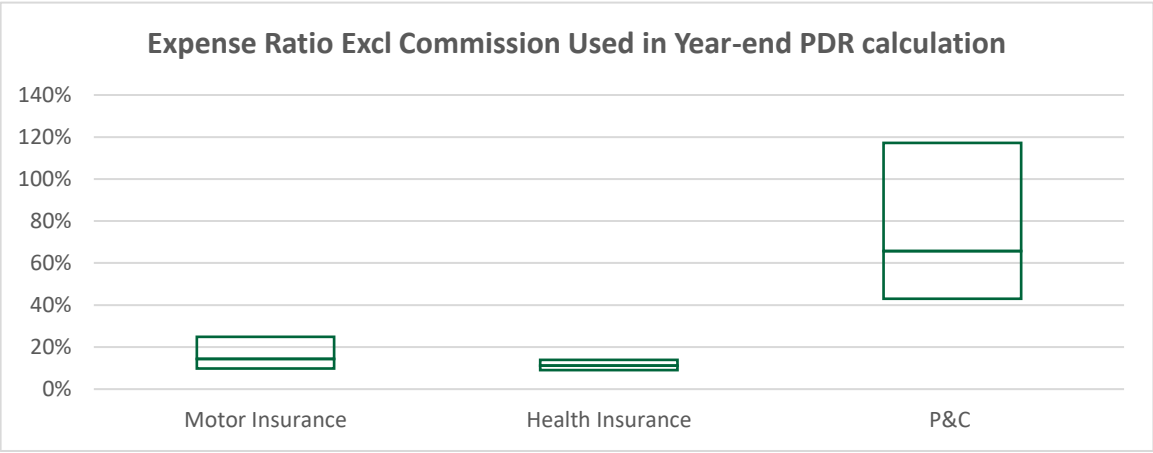
An important use of expense assumption is in determining the Premium Deficiency Reserves (PDR). A consideration in deriving that assumption is whether to treat underwriting expenses incurred in acquiring business as part of the deferred acquisition cost (DAC), as doing so leads to a higher expense assumption and possibly a higher PDR.



It can be seen above that, based on the review performed by the appointed actuaries, nearly one-third of all insurance companies consider the underwriting acquisition cost within the expense assumption for PDR purposes, thus holding higher PDR than the remaining two-third of insurance companies (assuming everything else being equal).

5.2 Expense Ratio for PDR Purpose

The graph below shows the inter-quartile range, including median, of the expense ratio assumptions used in the calculation of PDR at year-end 2021.



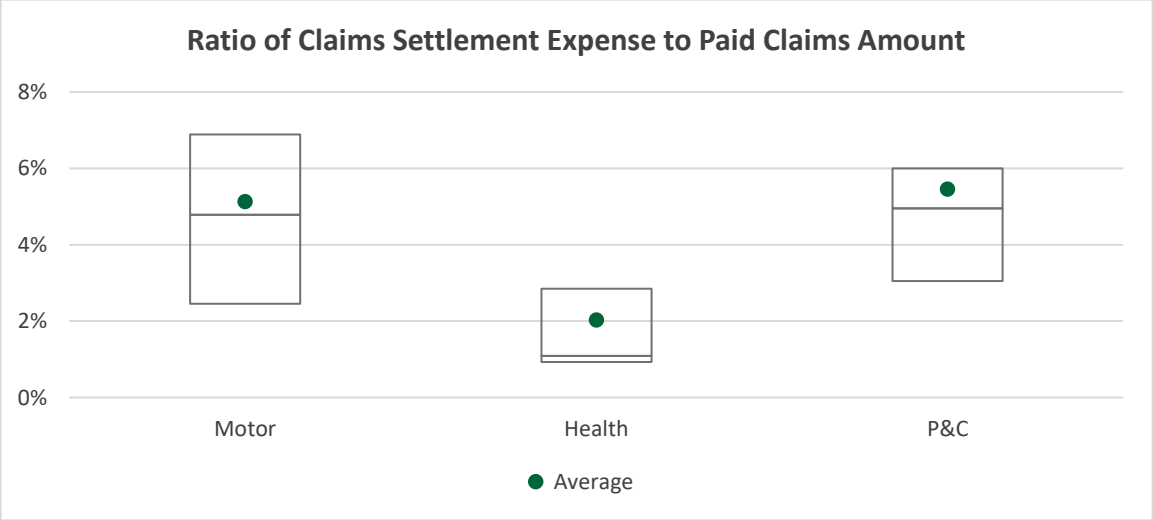
It can be observed that, for P&C business, some companies use very high expense ratio assumptions when calculating the PDR, and many are able to offset it with high reinsurance commission ratios, resulting in low net expense ratios and possibly avoids setting up of PDR for P&C business. Between the other two segments of Motor and Health, PDR expense ratio assumptions for Health were lower in general than for Motor. Some of this difference could be due to some companies not including the TPA fee for claims management under the argument that those amounts are charged upfront.

SAMA expects the Appointed Actuary to ensure that expense ratio assumption used for the purpose of PDR calculation reflects the true incidence of expenses by line of business. Moreover, under IFRS17, which becomes effective from 1st January 2023, the topic of expense allocation will attain even greater importance, in particular due to its role in determining whether a group of contracts is loss-making or otherwise.

5.3 Unallocated Loss Adjustment Expense (ULAE) Reserve

SAMA requires all appointed actuaries to estimate an appropriate provision for expenses that will be incurred in the future in settling the incurred-but-yet-to-be-settled claims, comprising both outstanding and IBNR claims.

A common actuarial technique for estimating the above provision is to refer to the expenses incurred in respect of the claims already settled, i.e., the ratio of paid claims settlement expenses to paid claims amount (Paid-to-Paid ratio). The graph below shows the range of Paid-to-Paid ratio for various lines of business.

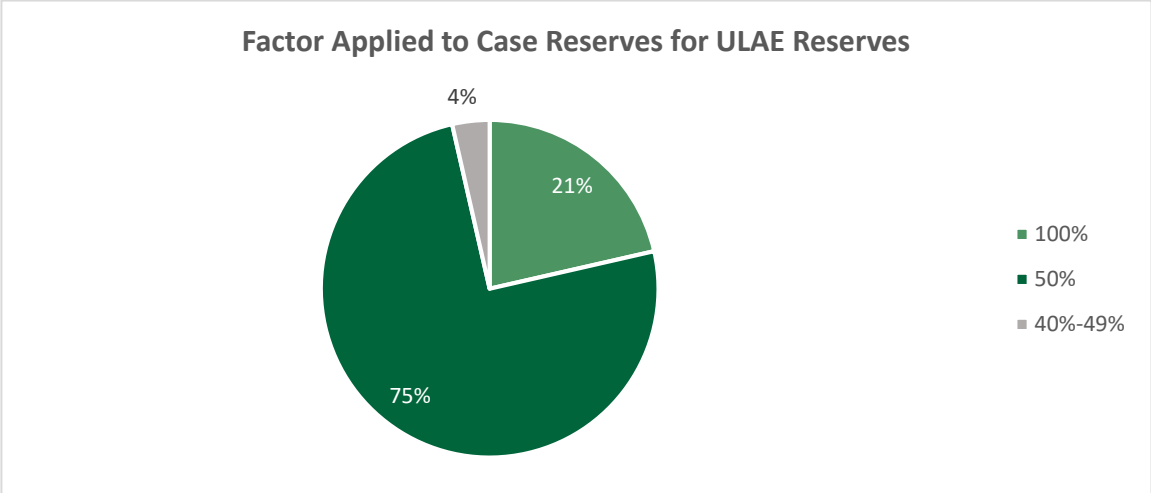


It can be observed that Motor line of business has the largest variation in the Paid-to-Paid ratio among insurance companies, whereas Health line of business has the lowest variation. As regards the median and average ratios, Health line of business has the lowest values, whereas Motor and P&C lines have similar median and average ratios.

5.4 Factor applied to Case Reserves

When setting the provision for unallocated loss adjustment expense, a usual consideration for actuaries is whether to differentiate between the outstanding claims and IBNR claims. Proponents of this differentiation argue that the expense provision should be lower for outstanding claims than IBNR claims, since a part of total settlement expenses is already incurred in opening a claim and maintaining its record.

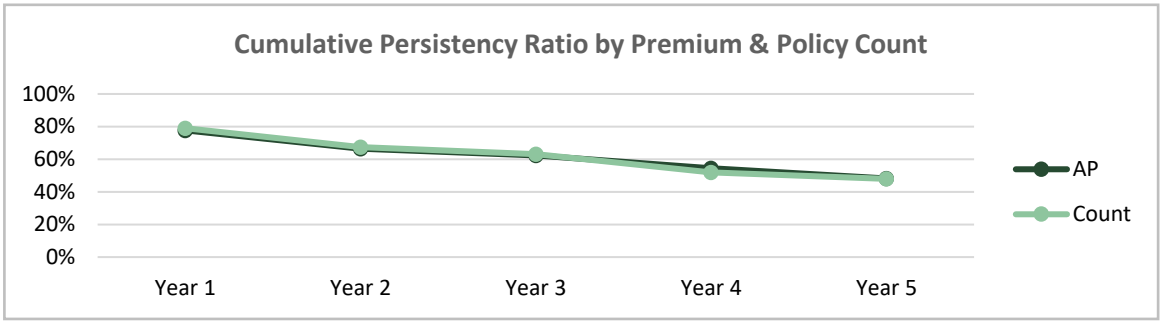
The graph below shows the distribution of companies based on whether they differentiated between the expense assumptions for outstanding claims and IBNR claims.



It can be observed that the majority of insurance companies differentiated between outstanding claims and IBNR claims when setting the provision for unallocated loss adjustment expense. When differentiating, all but one insurance company assumed that, when incurred in the future, unallocated settlement expenses for outstanding claims will be one-half of those for IBNR claims. Only one insurance company varied the factors applied to the outstanding claims by line of business, resulting in the overall factor being lower than 50%.

5.5 Persistency (Long term Life)

For long term Life insurance business, the graph below shows the average persistency ratio of policies at each policy duration, both by (annualized) premium and by policy count, for the first five years after policy issue.

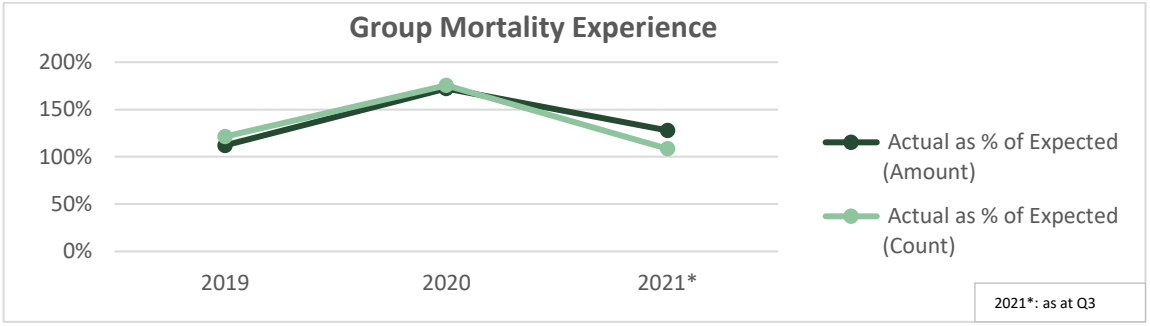


It can be observed that the average customer retention remains very low. By the end of the first year, already more than one fifth of all policies lapse on average, whereas, more than half of the total policies issued lapse by the end of the fifth year. Also, for all durations, there does not appear to be any noticeable difference between low premium and high premium policies.

SAMA expects that management will invest in training of its marketing staff and in improving the value of its product offerings in order to improve the extent of customer satisfaction with those products and, in turn, the persistency ratios in the market.

5.6 Mortality (Short Term Group Life)

The graph below shows the comparison of 'actual mortality' experience with 'expected mortality' based on the assumptions used by the Appointed Actuary, in terms of both the number of claims and the amount of claims.



It can be observed that the actual mortality experience has been worse than the expected in each of the last three years, with the experience in 2020 significantly worse than the other two years due to the COVID-19 pandemic. Moreover, between Group Life and Group Credit Life, the experience of the latter is significantly worse than the former.

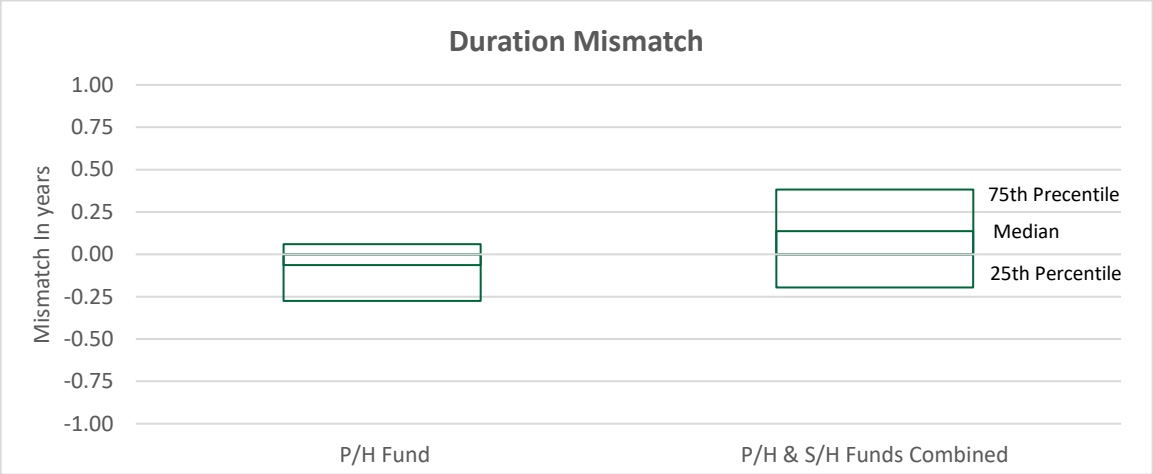
SAMA expects the Appointed Actuary to continue to monitor the emerging mortality experience and, in conjunction with the underwriting function of the insurance company, consider improving the pricing and/or underwriting basis as necessary.

6. Investment and Asset Liability Management Report 2021

Under the Actuarial Work Rules, an Appointed Actuary is required to coordinate with the Investment Committee and investment manager to provide recommendations to the Company's senior management and Board of Directors regarding the Company's investment policy and asset liability management strategy, keeping in view the nature and timing of assets and liabilities and the availability of appropriate assets.

6.1 Asset-Liability Duration Mismatch

The graph below shows the mismatch between the asset and liability durations, separately for the policyholder fund and for the policyholder and shareholder funds combined, depicting the median and inter-quartile range for each category.

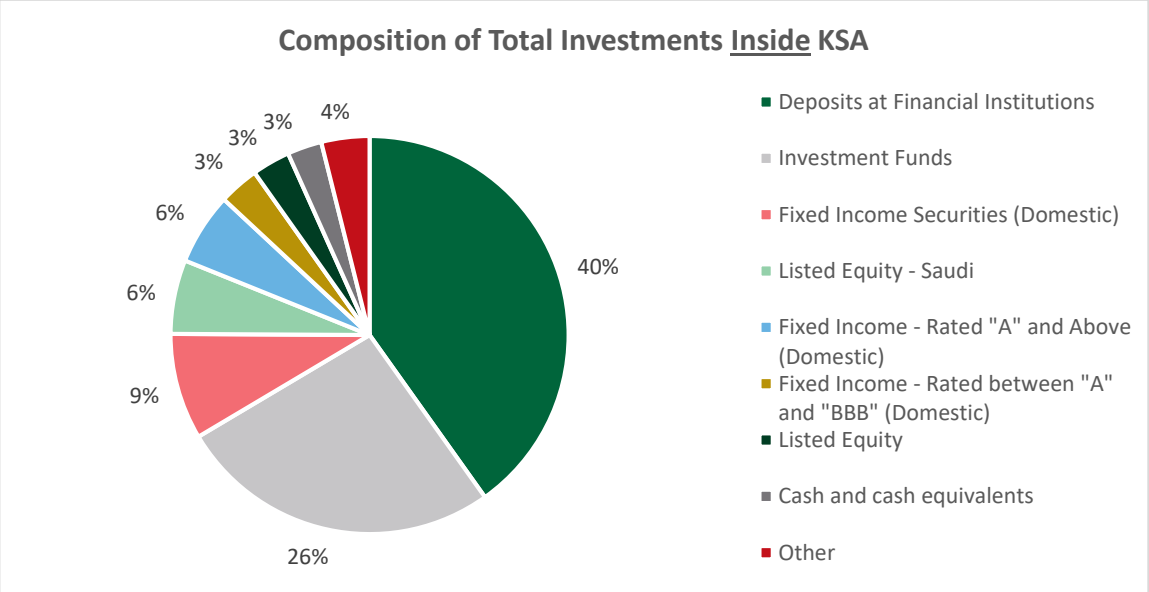


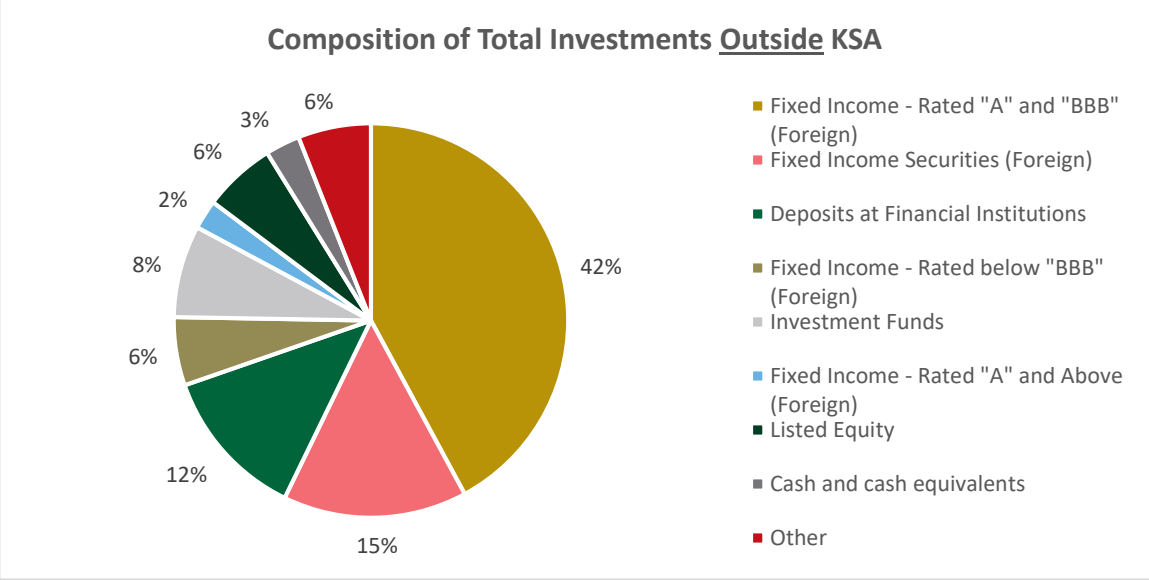
It can be observed that assets and liabilities of the policyholder fund are relatively closely matched. The median and interquartile range indicate that insurance companies prefer liquidity over yield. For the policyholder and shareholder funds combined, it appears that insurance companies are willing to take more risk with the shareholder funds in order to increase the yield on investments.

Moreover, at least one insurance company was identified as an outlier, with asset duration materially exceeding the liability duration, and the Appointed Actuary had raised concerns and made recommendations for consideration of the Board of Directors. Upon SAMA's enquiry, the concerned insurance company clarified that corrective actions had been taken in that regard.

6.2 Investments Inside versus Outside the Country

The graphs below show the difference in the composition of domestic and foreign investments by insurance companies in aggregate.



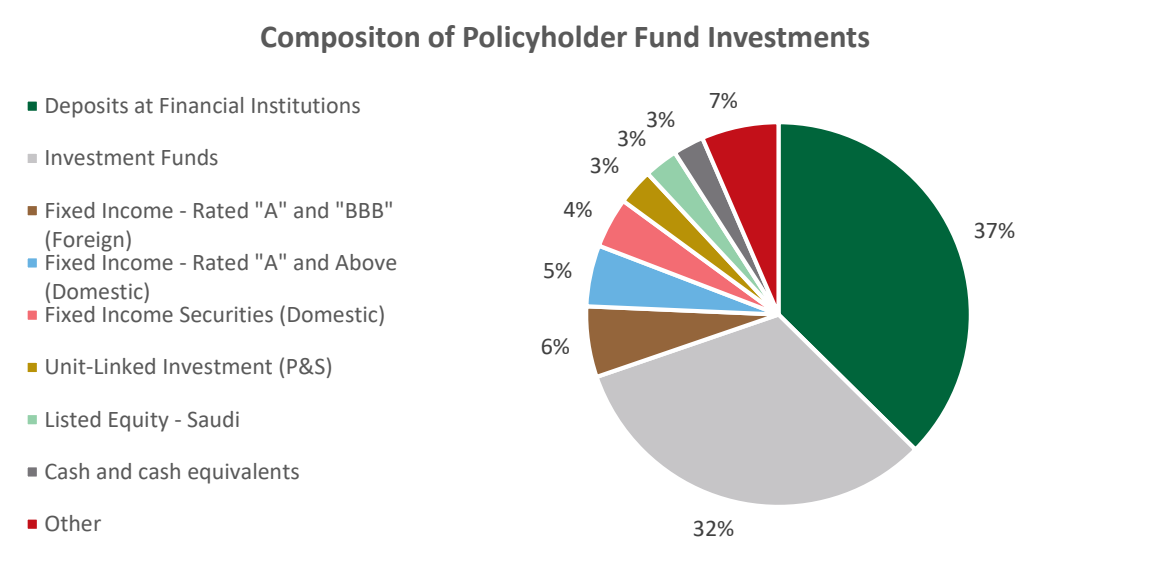


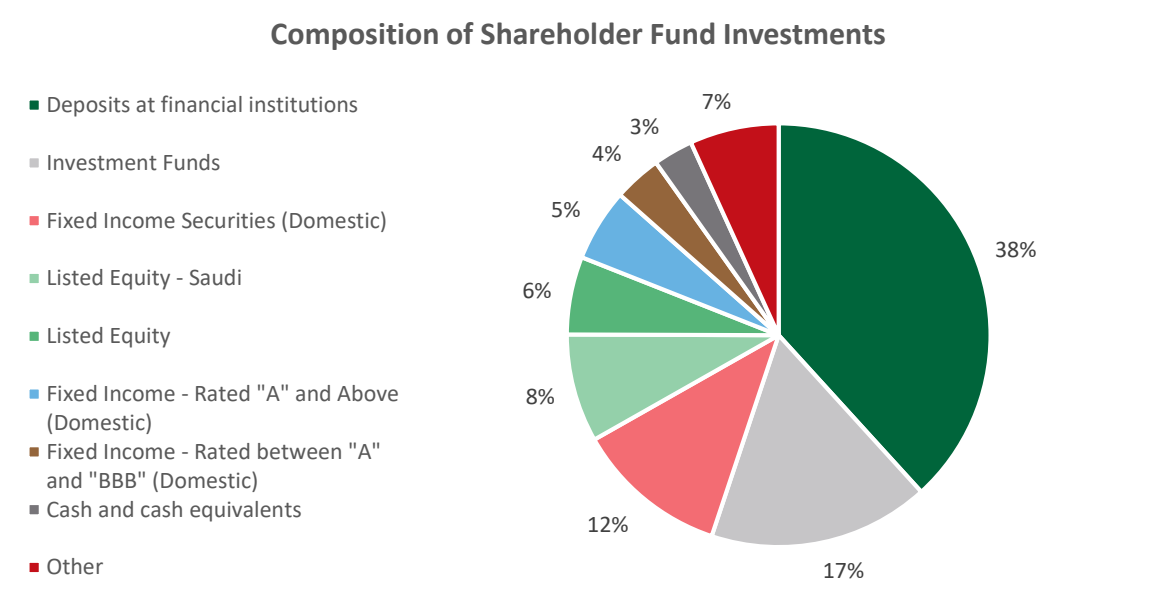
When investing domestically, deposits at financial institutions are the first choice for insurance companies, which is probably a combination of liquidity needs commensurate with short term liabilities of insurance companies, limited availability of sophisticated investment instruments, and restrictions imposed by SAMA regulations.

When investing abroad, it appears that decision is driven by the yields on fixed income securities, as these have the highest share. When doing so, it appears insurance companies aim for securities rated BBB or above, thus maintaining the quality and security of the investment portfolio.

6.3 Composition of Investments of Policyholder Fund versus Shareholder Fund

The graphs below show the difference in the composition of investments between policyholder fund and shareholder fund for all insurance companies in aggregate.





It can be observed that both funds have their biggest share of investments in the form of deposits with financial institutions, driven by the factors mentioned previously under 6.2 above. As regards the investment in Investment Funds, the Policyholder fund has a greater share than the Shareholder fund, likely due to the existence of investments backing the unit-linked liabilities. Moreover, the share of equities is materially higher for Shareholder funds than Policyholder funds, reflecting the ability and appetite of the former to take on more risk than the latter.

SAMA expects,

- *the Appointed Actuary to perform thorough analysis and provide clear recommendations to the investment team and senior management that are insightful and assist in informed decision-making in the process of making suitable investments;*
- *the investment team, senior management and Board of Directors to seek to understand the recommendations made by the Appointed Actuary, including implications of the current investment choices and alternatives available on the Company's ability to meet its liabilities with sufficient confidence and in a timely manner.*

Copy to:

- Appointed Actuaries
- Heads of Actuarial Functions