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# Risky business

## A benchmarking exercise performed on the risk appetite statements of eighteen South African insurers from 2015 to 2022

**For most people, stability is typically sought after and risk is often shunned away in everyday life. However, if you are in the business of accepting risk, as insurers are, you need to have an alternative approach. Risk is a double-edged sword, with more risk generally equating to a potential for more reward, but also for greater loss. Consequently, an increase in risk appetite and risk-taking may result in greater losses. The insurance and financial services sector are familiar with this concept and there is a constant tension between growing revenue and market share versus maintaining underwriting discipline within risk appetite. So where does the sweet spot lie?**

There is no one size fits all answer to this. Each insurer has a wide range of stakeholders who have differing and often conflicting goals. For example, regulators will have policyholder protection as their main goal. Shareholders will have dividend growth as a goal, which may lead to a more aggressive investment strategy. To accommodate all stakeholders, insurers seek to constantly recalibrate their risk appetite to achieve each stakeholders' unique objectives. Once this view has been consolidated, an effective way to communicate an insurer's risk appetite to all stakeholders is by using risk appetite statements.

## Background

What is a risk appetite statement (RAS)? According to ISO31000 this is defined as "the amount and type of risk that an organisation is prepared to pursue, retain or take." A RAS is not unique to insurers, although it is more critical for an insurer to establish this view and update it on a regular basis.

From the definition, we can see that a RAS should have two components. One that defines the **type** of risk an insurer wants to accept, and another to establish **how much** of this risk should be accepted.

Generally speaking, we can expect risk appetite measures to be defined either quantitatively or qualitatively. The former considers numerical measures for quantifying risks, while the latter category is broader in nature and encompasses measures not included in the quantitative bucket.

## Regulatory framework for RAS

The regulatory landscape is scant when it comes to references to RAS. Limited mention is made in the Governance and Operational Standards (GOIs), in particular GOI3.1 paragraphs 4.1 and 6.1 which states that:

*"The objective of the ORSA is to assess - ... the overall solvency needs of the insurer taking into account the specific risk profile, approved risk appetite and business strategy of the insurer;" and "Where an insurer employs ... a capital model ... to assess its risks, it must justify to the Prudential Authority why it ... considers the standard formula to be an accurate reflection of its own risk profile, board-approved risk appetite, and business strategy."*

This indicates the importance of a RAS and clearly links to the Own Risk and Solvency Assessment (ORSA) process; however, it does not give much guidance on what constitutes a good RAS.

Given the limited guidance available, a benchmarking exercise was a natural way to identify some of the practices and leading trends in the insurance market in this respect.

The benchmark results outlined below are based on our review of eighteen ORSA reports, covering a total of 45 risk appetite statements, from 2015 to 2022, across life and non-life insurance licenses and insurance groups. The eighteen insurers reviewed were split equally among life and non-life insurers and insurance groups.

## Observations from our survey

### Overview of risk type coverage

All insurers defined each individual RAS according to a particular **type** of risk as well as including a risk appetite statement at a licence or insurance group level based on regulatory capital needs.

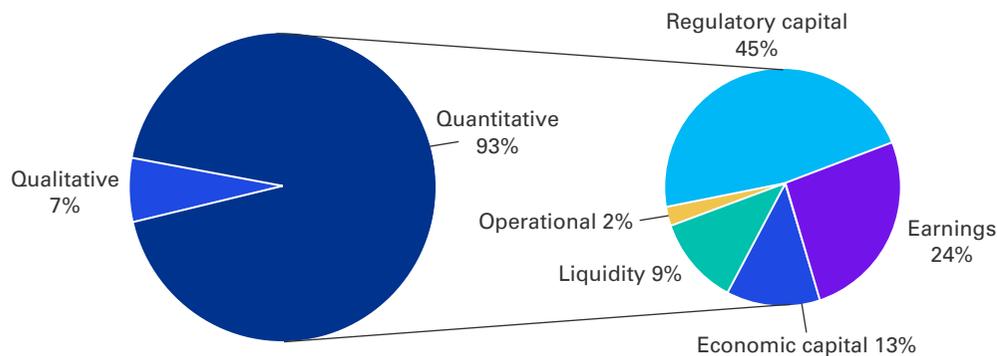
Some insurers added an economic view of capital needs by leveraging the regulatory capital framework and applying changes to desirable components of it, to better reflect their economic view of the risk profile. None of the insurers reviewed modelled a full economic view of their capital needs independently from the regulatory view.

In addition to capital related risk measures, the most common types of quantitative risk appetite statements applied by insurers included earnings measures, liquidity and operational risk types.

Figure 1 below shows a high-level view of the **types** of risks observed in risk appetite statements, grouped by quantitative and qualitative risks. It can be seen that 93% of risk appetite statements were quantitative in nature. The measures used for qualitative risk appetite statements were linked to 'brand and reputation'.

Figure 1: Pie chart illustrating the types of risks considered in RAS

### Qualitative and quantitative split of risk appetite statements measures

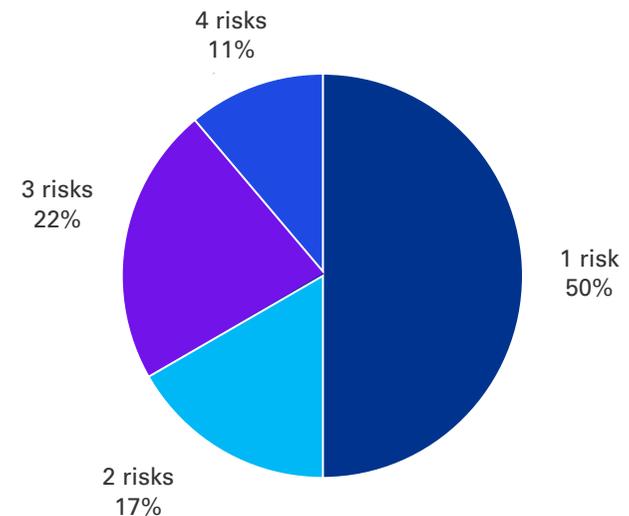


Half of the insurers reviewed defined more than one risk type when setting up their RAS. In some instances, it was also observed that insurers defined multiple risk appetite statements for each risk type using different measures or timeframes for the risk.

Figure 2 below shows that insurers included at most four risk types in their RAS.

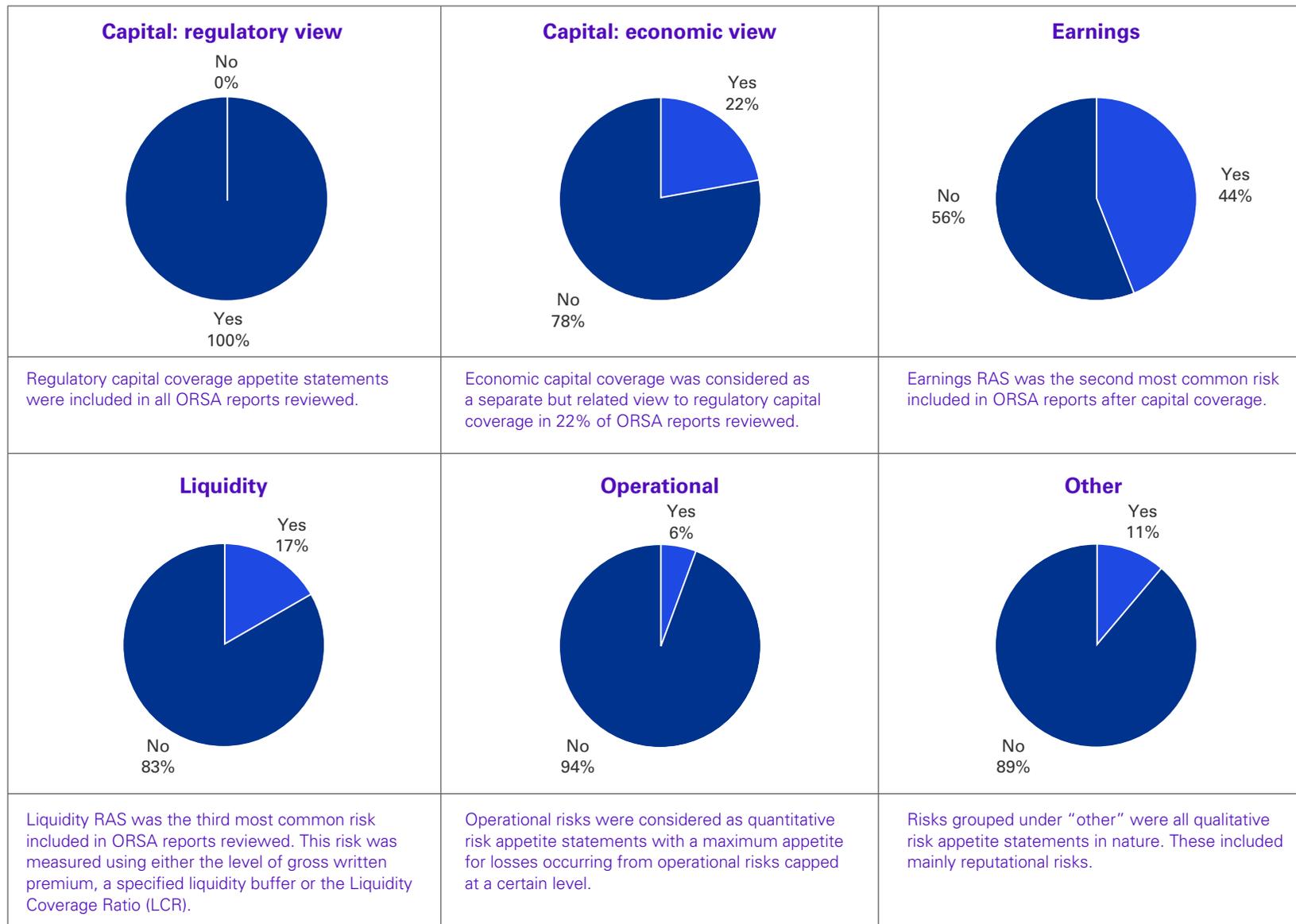
Figure 2: Pie chart showing the number of types of risks considered in RAS per insurer

### Number of measures of risk included in risk appetite statements



Of the total number of quantitative risk appetite statements surveyed, almost half modelled the regulatory capital requirement with a small portion also providing a separate economic capital view. In Figure 3 Yes indicates the proportion of insurers that included the risk in their risk appetite statements while No indicates the proportion of insurers that did not consider the risks in their risk appetite statements.

Figure 3: Pie charts showing common risks considered in RAS



## Overview of risk measures chosen

Once an insurer has determined the risk types it wants to include in the RAS, it needs to develop a consistent way of measuring exposure to this risk. While some risks lend themselves toward straightforward **measures** (for example, regulatory capital coverage), other risks were open to broader measures. The table below provides a summary of the primary **measures** chosen per **type** of risk:

**Table 1: Main measures chosen by type of risk**

Type of risk	Measure linked to
Regulatory capital	Solvency Capital Requirement (SCR) coverage
Economic capital	Economic Capital Requirement (ECR) coverage
Earnings	Earnings deviation, combined ratio, return on invested capital
Liquidity	Gross written premium deviation, size of liquidity buffer, mismatch limit, liquidity coverage ratio (LCR)
Operational	Operating earnings
Other (qualitative)	Brand and reputation

The greatest number of measures used to model exposure was identified over earnings deviation and liquidity risk, with three and four measures observed respectively. We expand on earnings deviation risk in more detail later on in this article. None of the insurers reviewed included alternative methods to model exposure to regulatory or economic capital risks, with the SCR and ECR coverage ratios being used across all risk appetite statements, albeit set at different buffer levels above 1 x SCR.

Liquidity risk appetite statements used three measures to model exposure to this risk. Either the deviation from expected gross written premium, the absolute amount of a liquidity buffer held, or the LCR. Some insurers also considered long- and short-term views for liquidity risk, with differing appetite levels set for each.

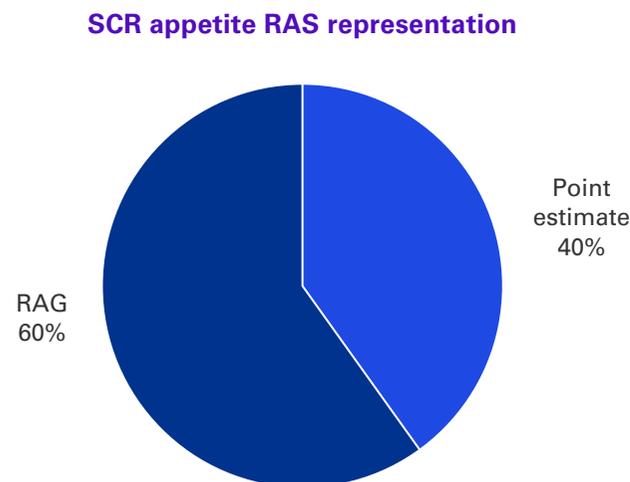
Below we expand on the most common risk types observed, namely regulatory capital, economic capital, as well as earnings risk. Due to data limitations, we were not able to

draw any meaningful conclusions from the remaining risk type measures included and therefore no further commentary has been provided.

## Regulatory capital coverage

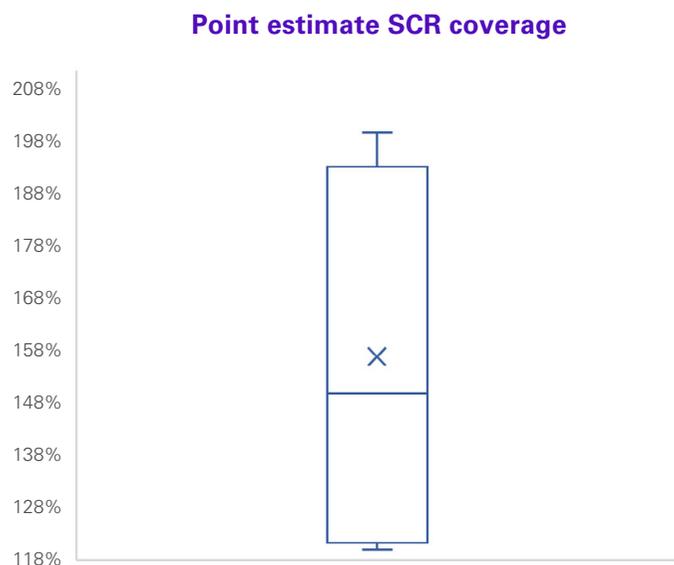
A regulatory capital coverage RAS was set by all insurers benchmarked. However, variation was observed in the appetite for SCR coverage as well as how this was presented. Figure 4 below shows that only 40% of risk appetite statements presented a point estimate as being within appetite for SCR coverage, with the remainder of risk appetite statements presented having applied more advanced risk measures incorporating bands of coverage, often with associated Red-Amber-Green (RAG) bands being explicitly defined.

**Figure 4: Pie chart showing split between insurers applying RAG bands and point estimates in demonstrating SCR coverage ratio risk appetites**



The spread of the point estimate SCR coverage within appetite was analysed in Figure 5 below, with the average being 1.58 x SCR and the minimum and maximum being 1.2 x SCR and 2 x SCR respectively.

**Figure 5: Box and whisker plot showing variation in point estimate coverage levels. The whiskers represent maximum and minimum levels, with the three lines representing quartiles 1, 2 and 3 respectively. The x represents the mean.**

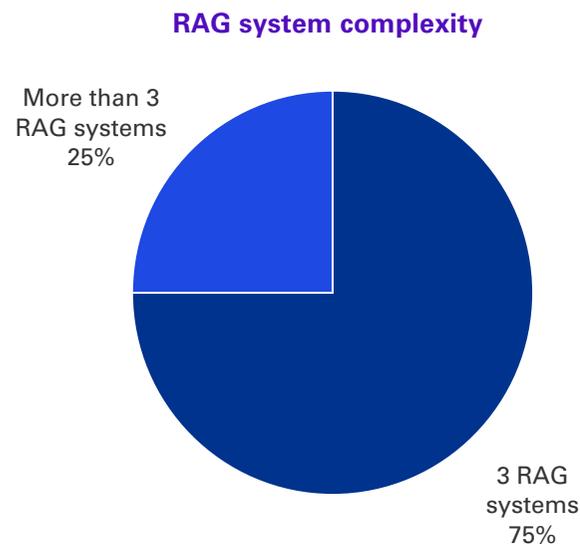


We noticed further variation in the complexity of the chosen RAG system. While 75% of RAG systems used a basic system with three explicit bands (i.e., red, amber, and green), the remainder implemented more enhanced systems.

These enhanced systems considered explicit amber and red levels above and below the green band. One is therefore able to observe and understand both upside and downside risk which is representative of current leading market practice. This is in contrast to the traditional system using only three bands which considers only downside risk. Using a more enhanced system enables insurers to define capital levels which are inefficient or

excessive, which can hamper the ability of an insurer to remain competitive in the market. Included below in Figure 6 is a comparison of the RAG systems applied by insurers surveyed.

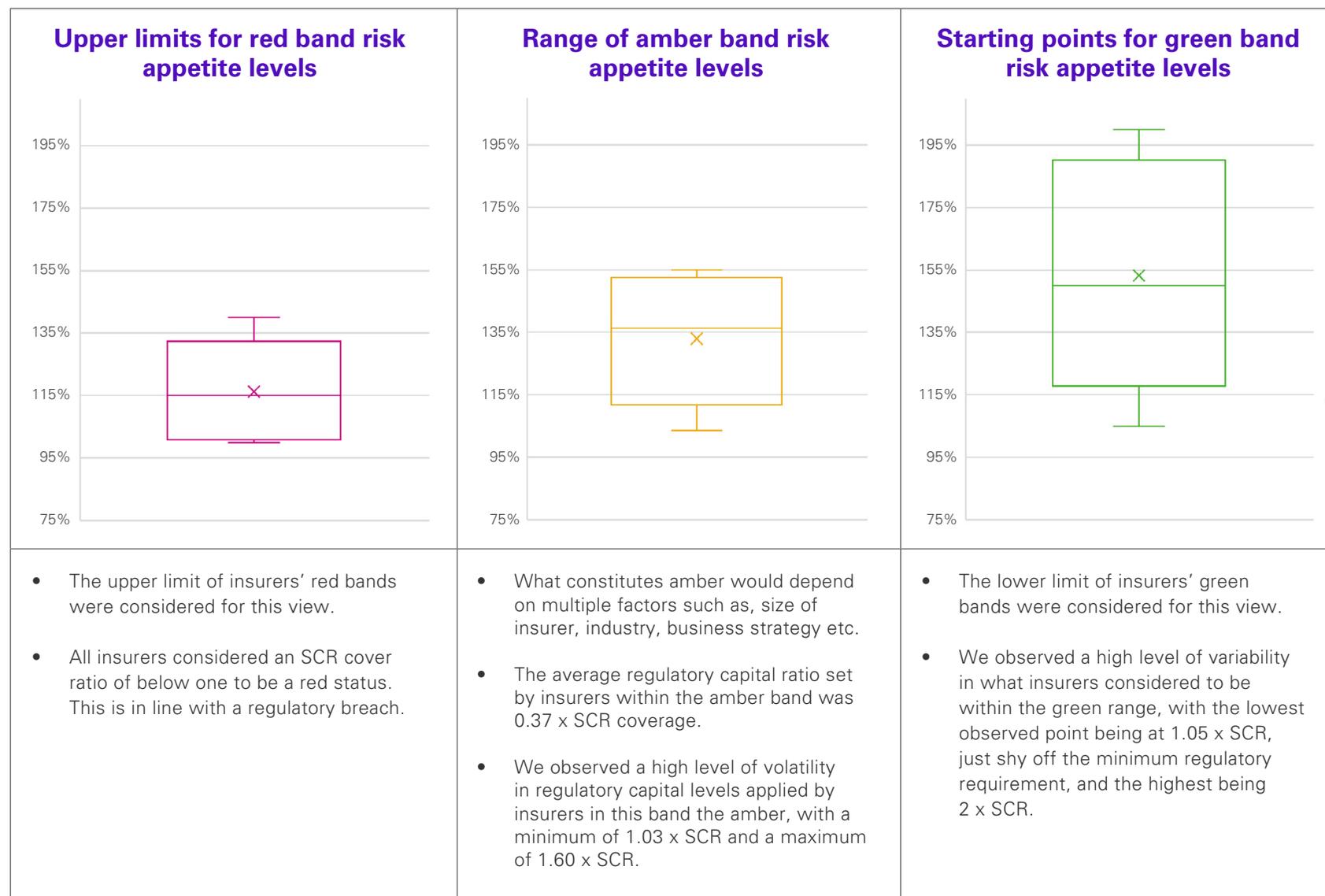
**Figure 6: Pie chart showing split between simple and enhanced RAG systems used**



For ease of comparison in respect of the analysis set out on the following page, we have simplified the use of enhanced RAG systems applied by insurers by only considering red and amber levels defined below the green band i.e. we have considered only downside risk for the purpose of this analysis.

The box and whisker diagrams set out in Figure 7 show that all insurers defined a level of 1 x SCR coverage to be red rated. The maximum point that was set for the red band was 1.4 x SCR coverage. The green band saw a much greater spread, with the SCR coverages ranging from a low of 1.05 x SCR to a high of 2 x SCR. Of course, the volatility of the underlying business being insured would also be a key driver of where the bands would sit in the context of an insurer's risk appetite.

**Figure 7: Box and whisker plots showing variation in RAG systems used for SCR coverage levels. The whiskers represent maximum and minimum levels, with the three lines representing quartiles 1, 2 and 3 respectively. The x represents the mean.**

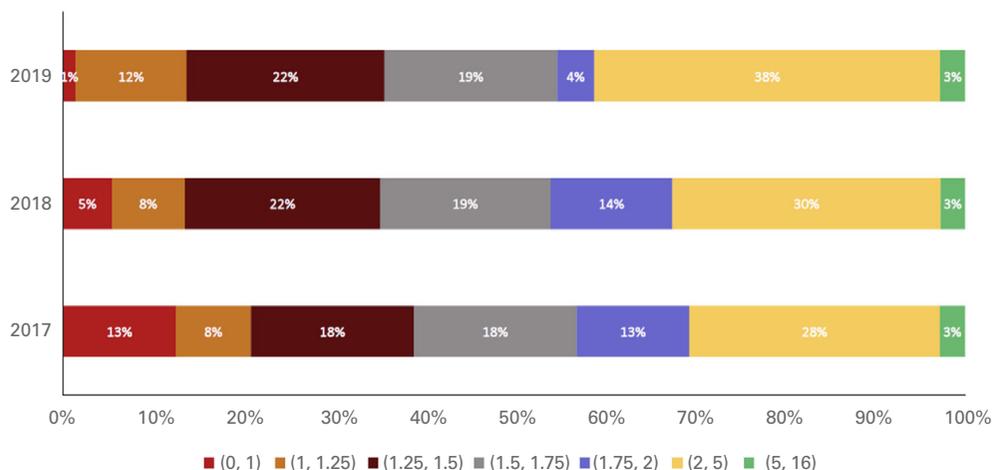


While not visible from Figure 7, it should be noted that 75% of RAG systems did not have an explicit upper limit for their green bands (these insurers define their green band to be an amount in excess of a defined threshold e.g. > 2 x SCR coverage), while 25% of statements set a fixed point of SCR coverage to be the maximum coverage allowed within risk appetite (these insurers effectively considered too much capital to also not be within appetite). All reports included limits above which dividends should be paid out.

It would be interesting to compare the actual capitalisation levels of insurers in the industry alongside the analysis performed above. In Figure 8 below and Figure 9 to the right we include the SCR coverage ratios for insurers in both the non-life and life insurance industries, as reported in the 2020 (in respect of the financial year ended 2019) non-life<sup>1</sup> and life<sup>2</sup> insurance industry experience presentations by ASSA and the Prudential Authority respectively.

**Figure 8: Stacked column chart showing average SCR coverage levels across South African non-life insurers**

**Non-life insurance industry SCR cover ratios:**

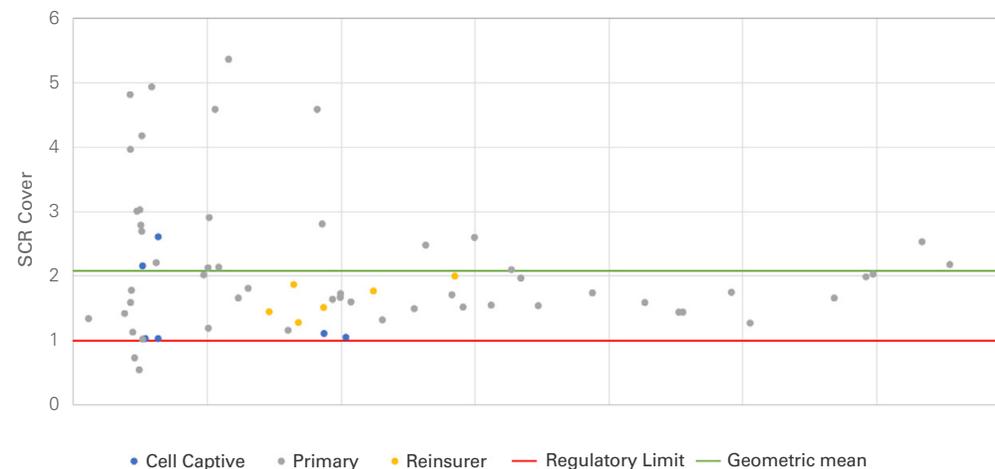


<sup>1</sup> <https://www.resbank.co.za/content/dam/sarb/publications/prudential-authority/pa-insurers/insurance-sector-data/special-reports/2020/8964/Non-Life%20Industry%20Experience%202020.pdf>

<sup>2</sup> <https://www.actuarialsociety.org.za/download/2019-life-industry-experience-brian-mapau-re-dikeledi-matsimela-2020/?wpdmdl=13965&refresh=62c7298ab1b3e1657219466>

**Figure 9: Scatter plot showing average SCR coverage levels across South African life insurers**

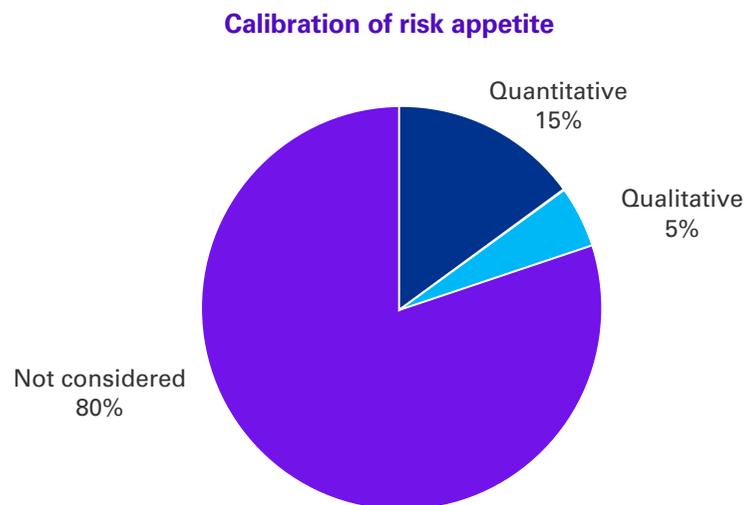
**Life insurance industry SCR cover ratios:**



From Figure 8 and 9 it can be seen that the average SCR cover ratio for the year ended 2019 was approximately 1.6 x SCR for the non-life insurance industry and 2 x SCR for the life insurance industry, as represented by the grey band in Figure 8 and the solid green line in Figure 9 respectively. For primary insurers with coverage between 1 x SCR and 2 x SCR, on average the capitalisation level appears to be at the 1.5 x SCR level. This seems to be consistent with the average SCR coverage within appetite which we observed set for point estimates (as depicted in Figure 5).

Ranges of SCR coverage ratio are calibrated to be consistent with insurers' risk appetites by estimating the probability of breaching the different appetite levels. For example, the standard formula is calibrated to provide sufficient capital for insurers to withstand 1-in-200-year events (i.e., a 99.5% probability). This can either be quantitative or qualitative in nature.

Figure 10: Pie chart showing different approaches taken to calibrating RAS

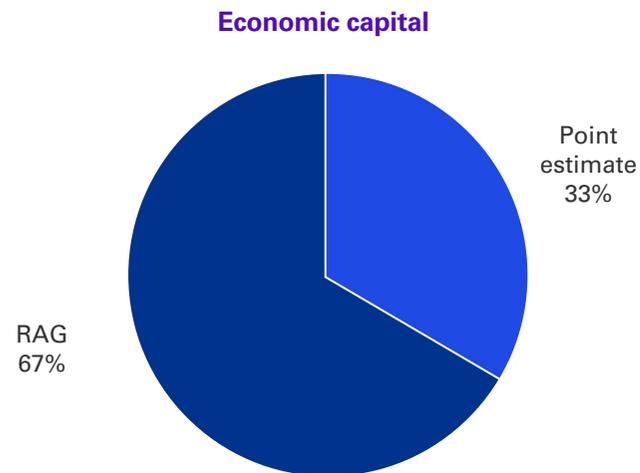


Where a quantitative approach was used, the ORSA reports specified the probability associated with the target level(s) using confidence intervals. Eighty percent of insurers reviewed did not provide evidence of calibration of their risk appetite statements. It is possible that such detail was included in a separate document. The calibration of the RAS assists stakeholders in understanding the inherent level of variability allowed for in an insurer’s risk appetite. Consequently, it would be of value for an insurer to include this information alongside their RAS. This is an area where increased transparency of the information presented in the ORSA report would possibly add value.

### Economic capital coverage

All risk appetite statements that included an economic capital view measured this by using a targeted economic coverage ratio (ECR). As was the case for SCR related risk appetite setting, the two approaches used were to set a single point estimate or acceptable bands, with RAG systems the more common approach used.

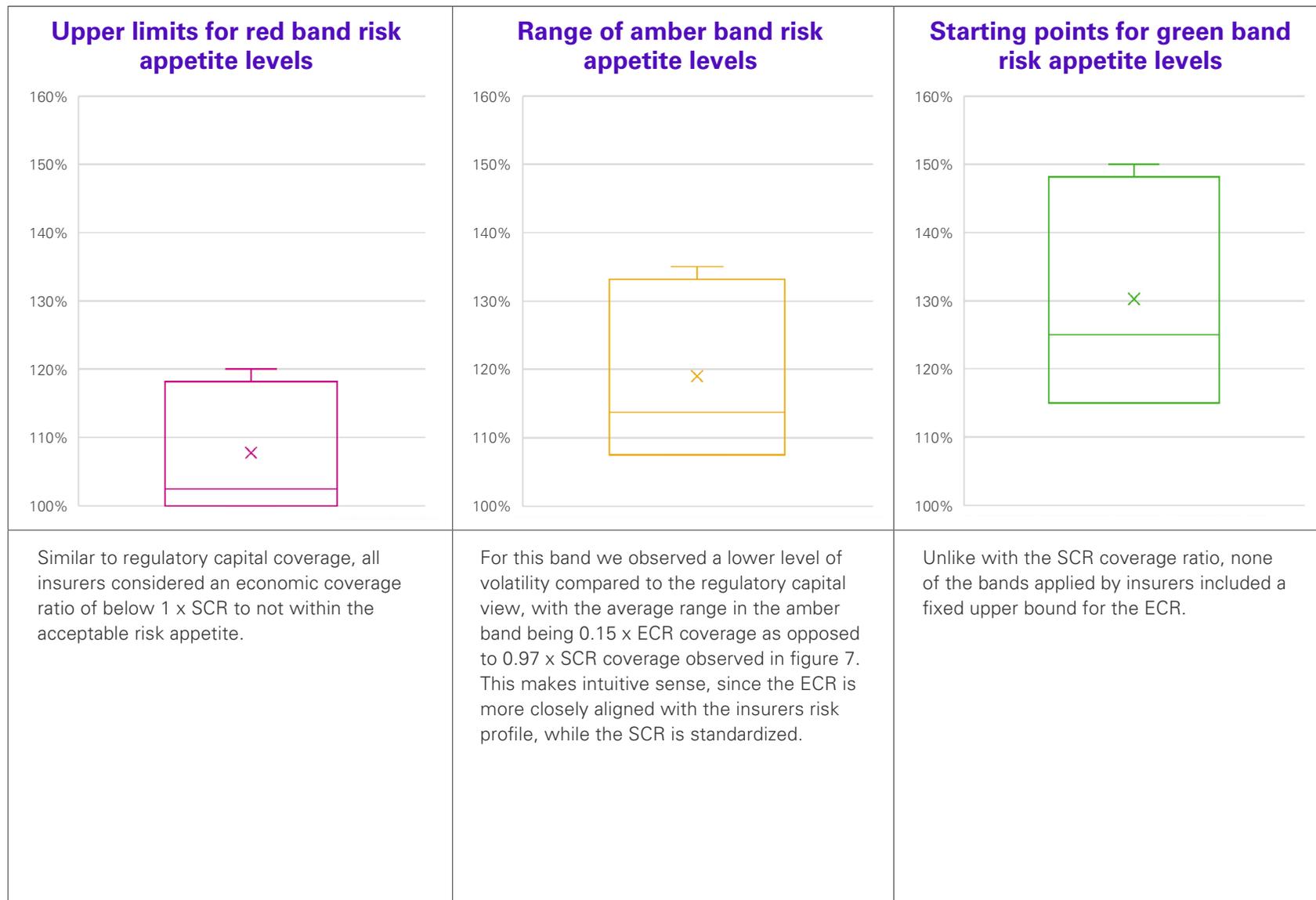
Figure 11: Pie chart showing split between RAG systems and point estimates for acceptable ECR coverage ratios



It is important to note that none of the ECR levels were derived through full capital modelling that is independent of the regulatory capital framework. Instead, the SCR model was adjusted to better fit the entity risk profile by either adding or modifying the way certain risks are modelled or by calibrating the model to a different probability than referenced by SCR (99.5% over a one-year time horizon). The most common type of risk modelled in an ECR was operational risk.

Unlike with SCR coverage, none of the ECR RAG systems applied a complex set of RAG bands. The box and whisker diagram below shows the level of variance seen in the RAG bands observed in our sample.

Figure 12: Box and whisker plots showing variation in RAG systems used for ECR coverage levels. The whiskers represent maximum and minimum levels, with the three lines representing quartiles 1, 2 and 3 respectively. The x represents the mean.



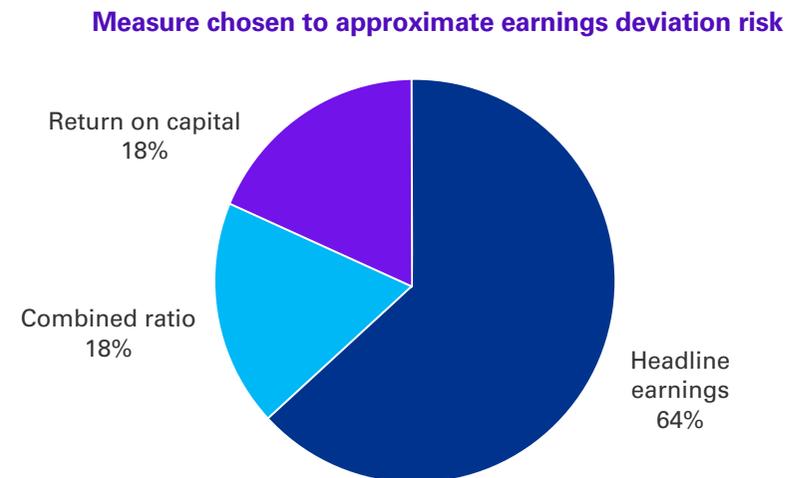


While there is no regulatory expectation of ECR coverage, the minimum level of acceptable ECR coverage was also set at 1 x ECR. It is interesting to note that the maximum level of acceptable ECR coverage was 1.5 x ECR coverage - this was lower than the observed maximum of SCR coverage within appetite of 2 x SCR. This may be reasoned by the fact that economic modelling should provide the Board with a more accurate picture of the true underlying risks faced by the insurer and so there is less need to hold multiples of surplus capital on an economic capital basis.

### Earnings deviation

Deviation from expected earnings was a relatively common measure used, with 44% of ORSA reports having defined an earnings related RAS. Three types of earnings related measures were used, namely headline earnings, combined ratio, and return on capital. Deviation from projected headline earnings was the most common measure used.

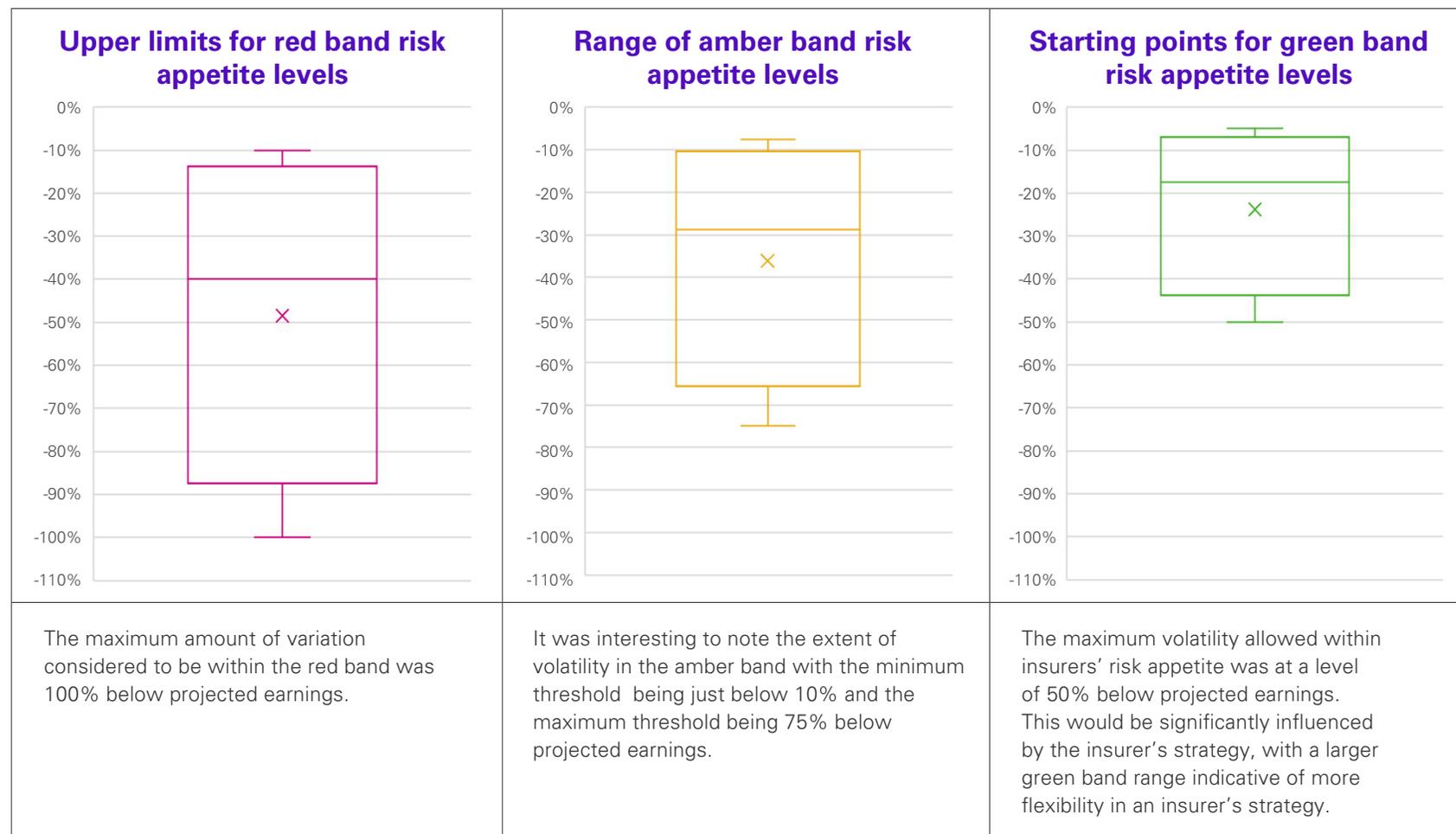
Figure 13: Pie chart showing split of different measures considered for earnings RAS



While all the above measures would be good approximations for earnings deviation risk, certain stakeholders would appreciate a view of specific measures over other measures. Shareholders for example, may appreciate a return on employed capital view while potential investors appreciate a view on headline earnings. As with the SCR and ECR coverage ratio levels, all risk appetite statements that used headline earnings made use of RAG statuses to define acceptable levels of deviation.

In this case, the measure was defined as the total deviation from a projected earnings metric (i.e., headline earnings). In Figure 14 below we include box and whisker plots showing the variation in the observed RAG bands.

**Figure 14: Box and whisker plots showing variation in RAG systems used for acceptable earnings deviation levels. The whiskers represent maximum and minimum levels, with the three lines representing quartiles 1, 2 and 3 respectively. The x represents the mean.**



A high level of variation was observed within the chosen RAG bands, specifically within the red and amber bands, reflective of the varying level of appetite acceptable to each insurer. For red bands, the minimum starting point was 10% less than projected earnings with the maximum starting point being 100% less than projected earnings. It is important to note that an insurer can have less than 100% of projected earnings. As an illustrative example, if an insurer had projected earnings of a profit of ZAR 50m, but instead achieved a loss of ZAR 50m for the same period, the insurer would have effectively achieved a 200% loss of projected earnings. This extreme level of variation was not considered in our sample size. For amber bands, the most common acceptable deviation from projected earnings observed was 45%.

Unlike SCR related RAG systems, none of the RAG systems set more than three bands here.

## Operational risk

The International Association of Insurance Supervisors (IAIS) defines operational risk as "the risk of adverse change in the value of capital resources resulting from operational events such as inadequacy or failure of internal systems, personnel, procedures, or controls, as well as external events." Operational risks are notoriously difficult to model due to the lack of relevant historical data. Adding to this complexity is the wide range of impacts of operational risks, as they can vary from insurer to insurer depending on the scenario and available management actions in each case.

It is therefore interesting to note that operational RAS was measured by quantifying the maximum financial loss tolerated due to operational risks over the business-as-usual projection period. While only 6% of insurers' ORSA reports defined an operational RAS explicitly, a further 22% of insurers included it implicitly in their economic risk coverage risk appetite statements by modelling it in a way that better aligns with their actual risk profile. The remainder of the insurers reviewed made minor allowances for it in the regulatory coverage RAS, which will likely not result in an accurate representation of operational risk profiles.

Given the importance of this risk, the fact that only 28% of insurers considered their own exposure to this risk may indicate that this is an area that requires improvement.

## Bringing it all together

While setting risk appetite statements is a relatively new prudential regulatory requirement, insurers should not view this as merely a tick box exercise. Insurers are in the business of accepting risk and a well-defined RAS will help guide an insurer's business strategy in line with varying stakeholder goals and ensure a consistent outlook on risk taking across the organisation.

What constitutes an effective RAS is subjective, as it will be heavily influenced by an insurer's specific risk profile and internal objectives. There are however certain features that will improve a RAS framework. Based on the analyses we conducted, our view of the best practice approaches applied in the South African insurance market and which we encourage insurers to consider applying in future periods include:

- defining risk appetite levels for multiple risk types – this would enable insurers to consider their risk exposure in a more dynamic manner and moving away from the traditional siloed view of risk exposure;
- presenting their RASs using capital and earnings metrics so as to consider both risk and return related measures;
- defining risk appetite using qualitative and quantitative measures – this would not only increase the clarity and comprehensibility of the RAS to be of benefit to technical and non-technical stakeholders, it will also encourage insurers to consider risks that cannot be easily quantified such as operational risks;
- providing a view on an insurer's own risk profile and related capital needs in order to provide a comparative view for the RAS;
- providing clearer and unambiguous statements to aid transparency; and
- document the insurer's approach to calibration for the set RAS which will contribute towards improved transparency.

### Sources used

- Title: Non-Life Industry Experience 2020: <https://www.resbank.co.za/content/dam/sarb/publications/prudential-authority/pa-insurers/insurance-sector-data/special-reports/2020/8964/Non-Life%20Industry%20Experience%202020.pdf>
  - Title: Life Industry Experience 2019: <https://www.actuarialsociety.org.za/download/2019-life-industry-experience-brian-mapaure-dikeledi-matsimela-2020/?wpdmdl=13965&refresh=62c7298ab1b3e1657219466>
- International Association of Insurance Supervisors (IAIS) website: <https://www.iaisweb.org/>

