DAV
Deutsche
Aktuarvereinigung e.V.

Ergebnisbericht des Ausschusses Rechnungslegung und Regulierung
(Report on findings of the Accounting and Regulation Committee)

Ein RORAC Rahmenkonzept unter IFRS 17 für Versicherungsgruppen (Report on a RORAC framework for insurance groups reporting under IFRS 17)

Köln, 30. April 2024

Präambel

Die Arbeitsgruppe *IFRS* des Ausschusses Rechnungslegung und Regulierung der Deutschen Aktuarvereinigung e. V. (DAV) hat den vorliegenden Ergebnisbericht erstellt.[1]

Zusammenfassung

Nach der Einführung und erstmaligen Veröffentlichung von IFRS-Abschlüssen unter Anwendung des IFRS 17 „Versicherungsverträge“ stellt sich spätestens jetzt die Frage, wie Versicherungsgruppen ihr Geschäft steuern. Neben einer Steuerung nach Return-on-equity (RoE) mit IFRS-Werten ist auch eine Steuerung nach Return-on-risk-adjusted-capital (RORAC) oder kürzer Return-on-capital (RoC) denkbar, bei dem der erzielte Gewinn der Periode ins Verhältnis zum benötigten Risikokapital gesetzt wird.

Dieser Bericht stellt die konzeptionellen Grundlagen für einen RoC-Steuerungsrahmen für Versicherungsgruppen dar, die IFRS anwenden und unter die Solvency II Regulierung fallen. Mit den erforderlichen Anpassungen und der nötigen Sorgfalt könnte er auch auf Aufsichtsregimes wie z. B. den SST in der Schweiz mit einer Bewertung von Versicherungsverbindlichkeiten mit aktuellen Rechnungsgrundlagen ähnlich wie bei IFRS 17 anwendbar sein.

Nach einer Motivation des RoC-Konzepts an sich werden mögliche Kombinationen von Gewinn und benötigtem Risikokapital aus unterschiedlichen Bilanzierungsmetriken wie z. B. IFRS und Solvency II/MVBS (Marktwertbilanz) samt deren Vor- und Nachteilen diskutiert. Für die Kombination Gewinn aus IFRS und benötigtes Risikokapital aus Solvency II werden dann Gemeinsamkeiten und mögliche Unterschiede in der Bewertung analysiert. Danach werden verschiedene Varianten für die Gewinngröße aus IFRS untersucht, die sich insbesondere bei der Berücksichtigung zukünftiger Gewinne unterscheiden.

Für komplexe Versicherungsgruppen ist es für die praktische Relevanz eines Steuerungskonzepts von zentraler Bedeutung, wie gut sich die Steuerungsziele in die Segmente, Gruppengesellschaften und Geschäftsbereiche herunter kaskadieren lassen. Vor diesem Hintergrund wird im Bericht untersucht, wie granular die Gewinngröße aus IFRS und die Risikokapitalgröße aus Solvency II zur Verfügung stehen und von welchen wesentlichen Bedingungen wie den verwendeten IFRS-Bewertungsmodellen und der Struktur der Kapitalanlagen und der passiven Rückversicherung dies beeinflusst wird.

Zum Abschluss wird kurz auf das Anreizsystem und mögliche Hurdle Rates eines RoC-Konzepts in einer Versicherungsgruppe sowie für die praktische Umsetzung wichtige Fragen wie die Mindesthöhe der SII-Quote, Unterscheidung in Aktionärsmittel und Versicherungsnehmermittel und deren Verfügbarkeit auf Gruppenebene eingegangen.

Der Ergebnisbericht ist an die Mitglieder und Gremien der DAV zur Information über den Stand der Diskussion und die erzielten Erkenntnisse gerichtet und stellt keine berufsständisch legitimierte Position der DAV dar.[2]

[1] Der Ausschuss dankt der Unterarbeitsgruppe *KPI* der Arbeitsgruppe *IFRS* ausdrücklich für die geleistete Arbeit, namentlich Thorsten Ante, Dr. Robert Bahnsen (Leitung), Jan-Christopher Köhler, Reinhard Lenz, Katrin Ruess, Dr. Claudio Schmidt-Wegenast, Ulrike Schwarz, Dr. Thorsten Wagner. Die Inhalte dieses Ergebnisberichts stellen deren persönliche Meinung dar, nicht die ihres jeweiligen Arbeitgebers.

[2] Die sachgemäße Anwendung des Ergebnisberichts erfordert aktuarielle Fachkenntnisse. Dieser Ergebnisbericht stellt deshalb keinen Ersatz für entsprechende professionelle aktuarielle Dienstleistungen dar. Aktuarielle Entscheidungen mit Auswirkungen auf persönliche Vorsorge und Absicherung, Kapitalanlage oder geschäftliche Aktivitäten sollten ausschließlich auf Basis der Beurteilung durch eine(n) qualifizierte(n) Aktuar DAV/Aktuarin DAV getroffen werden.

Verabschiedung

Dieser Ergebnisbericht ist durch den Ausschuss Rechnungslegung und Regulierung am 30. April 2024 verabschiedet worden.

Preamble

The Working Group *IFRS* of the Accounting and Regulation Committee of the German Association of Actuaries (Deutsche Aktuarvereinigung (DAV) e. V.) has issued the following report.[3]

Issue

Following the introduction and first-time publication of IFRS financial statements in accordance with IFRS 17 "Insurance Contracts", the question arises as to how insurance groups will manage their business in future. In addition to management according to return on equity (RoE) with IFRS values, management according to return-on-risk-adjusted-capital (RORAC) or, for short, return-on-capital (RoC) is also conceivable. In RoC the return or profit generated in the period is set in relation to the risk capital required.

This report presents the conceptual basis for a RoC management framework for insurance groups that apply IFRS and are subject to Solvency 2 regulation. With the necessary adjustments and due care, it could also be applicable to supervisory regulations with a measurement of insurance liabilities using current measurement assumptions similar to IFRS 17.

Following a motivation of the RoC concept itself, possible combinations of profit and required risk capital from different accounting and valuation regimes such as IFRS and Solvency 2 / MVBS (Market Value Balance Sheet), including their advantages and disadvantages are discussed. For the combination of profit from IFRS as return and required risk capital from Solvency 2, similarities and possible differences are outlined. Various variants are then analyzed for the IFRS profit figure, which differ in particular in the consideration of future profits.

For complex insurance groups, the practical relevance of a management steering framework depends to a large extent on how well the management objectives can be cascaded down to the segments, group companies and business divisions. Against this background, the report examines how granularly the profit figure from IFRS and the risk capital figure from Solvency 2 are available and which key conditions, such as the IFRS measurement models used and the structure of financial assets and outwards reinsurance, influence this.

Finally, the incentive system and possible hurdle rates of a RoC concept in an insurance group as well as important issues for practical implementation such as minimum target Solvency Ratio, differentiation between shareholder funds and policyholder funds and their availability at group level are briefly discussed.

The report is addressed to actuaries and is focused on providing an overview of the current state of discussions and the insights gained in the sub-working group. It is not a professional position of the DAV and is meant to support actuaries in actuarial teams.

Adoption

The report on findings was adopted by the DAV's Accounting and Regulation Committee on 30th April 2024.

[3] The Committee would like to explicitly thank the sub-working group KPI/steering of the working group IFRS for their work, by name Thorsten Ante, Dr Robert Bahnsen (lead), Jan-Christopher Köhler, Reinhard Lenz, Katrin Ruess, Dr Claudio Schmidt-Wegenast, Ulrike Schwarz, Dr Thorsten Wagner. The content of this report represents their personal opinion, not that of their respective employer.

Inhaltsverzeichnis

1. Context and objective

The overall objective here is suggest a new performance driven KPI in addition to the already well-established RoE (Return on Equity). In general, RoE and Return on Risk-adjusted-capital (RORAC) – or even shorter and used in this paper – Return on Capital (RoC) measure similar concepts, but with a slight difference in the underlying formulas. Both measures are used to decipher the profitability of a company based on the money it had to work with.

RoC and RoE are well-known and trusted metrics used by analysts, investors and institutions to decide between competing investment options: RoE measures a corporation's profitability in relation to shareholders' equity while RoC measures the same but also includes debt financing in addition to equity.

In the context of the insurance industry, we would define the Capital a bit different, as Risk Capital which includes also future profits under risk. This can be seen as financial capital allocated or assigned to absorb specific risks, and / or to guarantee performance on specific portfolios. Under Solvency 2, capital requirements are determined on the basis of a 99.5% value-at-risk measure over one year, meaning that enough capital must be held to cover the market-consistent losses that may occur over the next year with a confidence level of 99.5%, resulting from changes in (mark-to-) market values of assets or liabilities held by insurers. The aim of this report is to combine the reporting frameworks of Solvency 2 with the new IFRS 17 and IFRS 9 standards to compute the new KPI.

Overall, the key feature of the RoC as KPI is to allocate Risk Capital to those business activities which offer the highest return on the required risk capital. As return is measured for a certain period, we arrive at a combination of return divided by (average) risk capital similar to RoE.

So, if two group entities are compared with identical return potential then the allocation to the entity with the lower Risk Capital requirement is more favourable for the group from an RoC perspective (yielding a higher RoC rate). Vice versa, if the capital allocation of a certain amount of risk capital is possible, the allocation to the entity with the higher return potential is favourable to the group from an RoC perspective (yielding a higher RoC rate).

RoC steering may then in the future be used for different purposes of capital management like for share-buy-back programs or issuance of sub-ordinated debts. As well entities could decide to accelerate their growth in those portfolios / segments with the highest RoC.

Up to now no large insurance group is publicly reporting a RoC KPI but we would expect to change that once the new IFRS standards have settled in a few quarters / years. For internal steering and management reporting this already could be a well-established KPI. So for the time being, the RoC can be regarded mainly as an internal KPI. Still, we want to point out that the use of internal KPIs might lead to additional external reporting requirements according to DRS 20[4].

Producing a new KPI on audited[5] numbers has advantages over non-audited value as the updated methodology of S&P on its Insurer Risk-Based Capital Model has just proven: While under the old methodology the non-audited life Value of In-Force was only considered after a 50 % haircut as available capital, the model now considers the full CSM and Risk Adjustment as part of the available capital as these are now audited numbers.

[4] DRS 20 Konzernlagebericht, resp. GAS 20 GROUP MANAGEMENT REPORT, was adopted by the Accounting Standards Committee of Germany (ASCG) and governs management reporting for all parent entities that are required by German law to prepare a group management report in accordance with section 315 of the HGB or that do so voluntarily.

[5] We acknowledge that the scope of audit in other countries might differ from Germany where annual IFRS group reports and the annual MVBS (including Risk Margin) must be audited.

2. Discussion of consistency of numerator (return variable) and denominator (risk capital) of RoC

At latest with the introduction of the Solvency 2 framework, insurance groups need to apply an adequate risk model to determine the required capital. For pillar 1, the usual risk model is the standard formula of Solvency 2 to determine the solvency capital requirement (SCR). Some insurance groups have successfully received regulatory approval to apply an own internal model to determine the SCR of pillar 1. In addition, in pillar 2 all insurance groups are required to determine their specific overall solvency needs (OSN) which needs to include the necessary adjustments of the standard formula to determine the level of required capital from the perspective of the insurer. One classic example is that usually government bonds nominated in Euro currency are not regarded as risk-less in respect to spread risk in the OSN of pillar 2 in contrast to the SCR in pillar 1. For the following we assume that the insurer has an adequate risk model in place to determine the required capital and for the sake of easier notation we will call this required capital SCR, regardless whether it is the SCR from a certified internal model in pillar 1 or whether it is the OSN from pillar 2.

In a general sense, the SCR is the difference of the excess of assets over liabilities measured in mark-to-market values between the best estimate scenario and the aggregated impact from corresponding (SCR) risk stress scenarios. So, in short, the SCR is the difference of market values and there are no book values in the Solvency 2 balance sheet (MVBS). In contrast, in IFRS there are both book values (carrying amounts) and market values / fair values which might be identical or not, depending on the applicable IFRS standard.

The most important return variable in an IFRS financial statement usually is the net income or related quantities like EBIT, operating profit. Less in focus so far is the comprehensive income which in addition to the net income also includes the other comprehensive income as change of equity. In summary, the IFRS net income is not just the change of market values / fair values.

In light of this background the fundamental question arises which quantities as return variable and as required capital should be best combined for an adequate RoC framework which is feasible and potentially decision-useful for users. First, we will discuss several potential options which we will all disregard for specific reasons and then we will suggest a combination of a return variable and a required capital variable with the best cost-benefit ratio.

If one wants to keep the SCR for the required capital in the RoC framework, a return variable with very high consistency is to define the return variable as change of market values / fair values or more general change of MVBS values less income-neutral inflows/outflows, or in short MVBS-P&L. The disadvantages of this MVBS-P&L would be that this would need to be produced in addition to the existing mandatory financial and risk reporting, that it would be a company-specific non-GAAP measure and that management would need to steer both the IFRS net income and the MVBS-P&L in parallel.

Another option would be to keep the IFRS net income as return variable and define a required capital based on IFRS (IFRS-SCR). The Best Estimate reference for the SCR determination would be the IFRS balance sheet instead of the MVBS. The SCR stresses would need to be transformed to the IFRS requirements in respect to all relevant aspects like scope, contract boundaries, recognition and measurement. While such an approach seems feasible in principle, in practice it would require performing a parallel risk model process. In addition, when it comes to material management decisions and the requirement for a use test, the management needs to decide whether to stick to the SCR or to the IFRS-SCR and might be challenged by the regulator when it does not stick to the SCR framework. So again, both for cost reasons as well as for governance reasons this option has serious drawbacks.

A hypothetical option would be to define the return variable and the required capital variable independently from Solvency 2 and from IFRS. Also, here the many drawbacks (e.g. additional

closing processes, potential steering conflicts) might easily outweigh the advantage of maximum consistency.

Finally, an obvious choice for a RoC framework with a good cost-benefit-ratio would be to use the net income (or a closely related quantity like operating profit) from IFRS as return variable and the SCR from Solvency 2 as required capital variable. The main similarities and differences of these two quantities will be analyzed in the following passages.

The cashflow projection under IFRS17 differs from Solvency 2 regarding the methodology of discounting, business included in the cashflow projection as well as the consideration of reinsurance.

For discounting under Solvency 2, EU KOM / EIOPA provides a risk-free discounting curve which can be adjusted by either adding a volatility adjustment or a matching adjustment.

Under IFRS17 a bottom-up approach or a top-down approach can be applied to determine the discount rates. With the bottom-up approach an illiquidity premium is added to the risk-free rate. Using the top-down approach the asset portfolio's total return is adjusted by the expected credit loss, the credit risk premium for unexpected losses as well as a duration mismatch adjustment.

Moreover, the last liquid point as well as the ultimate forward rate is not specifically defined in the IFRS17 methodology.

Reinsurance contracts ceded are explicitly measured under IFRS17 while under Solvency 2 often approximation models for reinsurance are adopted. Thus, reinsurance contracts held by the insurance company are considered within the best estimate projection and are valued in separate portfolios comparable to insurance contracts.

Both standards require the projection of the insurance contracts split by homogeneous risk groups, and portfolios and annual cohorts resp., which are further split into portfolios and annual cohorts of different profitability under IFRS17.

Further similarities between the two standards include the best estimate assumption as well as analogous projection times.

The scope between Solvency 2 and IFRS17 is not entirely aligned. First of all, the consolidation perimeter for consolidated financial statements in IFRS and for Groups in Solvency 2 might be different, although not for major insurance activities like fully controlled insurance subsidiaries. Solvency 2 applies to all contracts written by an insurance company whereas IFRS17 applies only to insurance contracts. This includes insurance and reinsurance contracts issued by the company as well as reinsurance contracts held. Moreover, investment contracts with discretionary participation features are considered under IFRS17 however exclusively if the issuer offers insurance contracts. The results paper "Reconciliation from IFRS Equity to Solvency 2 Own Funds in the new IFRS 17 regime" published in October 2022 by the German Association of Actuaries emphasizes the difference in a higher level of detail.

The contract boundaries under IFRS17 are almost similar compared to Solvency 2 including all cashflows up to the point in time the insurance company is able to reassess the risk, terminate or change the terms of the insurance contract. Yet changes of an insurance contract through policyholder options are only valued as new business if a complete repricing of the whole contract is possible, whereas under Solvency 2 options for existing business are considered as new business as long as the option can be rejected or completely repriced on their own.

For certain health not-similar-to-life-techniques (NSLT) business with premium adjustment clause, in Solvency 2 the contract boundaries go beyond the next premium adjustment clause, while in IFRS 17 the contract boundaries could end at the next premium adjustment clause if certain conditions are met. (See DAV-Ergebnisbericht_IFRS_17_Health_final, Chapter 4.2.1 and Appendix A)

Another difference between Solvency 2 and IFRS 17 is the requirement for initial recognition in the balance sheet: In Solvency 2 the initial recognition of an insurance contract is required when the

insurer has become a party of the contract, so when the contract has been written. In IFRS 17, this holds true only when the contract is onerous, while profitable contracts are to be recognized (firstly) at the earliest date of when the coverage period begins, the first premium is due or the first premium is paid when no due date exists.

The consideration of reinsurance business held is different in a way that IFRS17 requires an explicit modelling of reinsurance contracts. Thus, an accounting mismatch between direct and ceded business arises as reinsurance contracts held may include reinsurance held cash flows for underlying direct business contracts not yet sold and not yet considered in the direct business portfolios. In contrast Solvency 2 only takes into account reinsurance contracts directly corresponding to recognized direct business.

For P&C business the scope between IFRS17 and Solvency 2 is generally aligned implying that both Standards apply to the same insurance contracts. Under IFRS17 the Liability for Remaining Coverage (LRC) and the Liability for Incurred Claims (LIC) are considered. The corresponding counterpart under Solvency 2 is defined as best estimate premium reserve and best estimate claims reserve (plus one amount of risk margin). Only a few service components constitute an uncommon exceptional case as these contracts are in the scope of IFRS 15. Moreover, the contract boundaries for P&C business are the same for both approaches besides initial recognition (see above).

The return under IFRS 17 is influenced to a small extent by the release of the risk adjustment. The potential differences in the metrics with regard to the risk adjustment are therefore discussed below, even if they do not have a substantial effect on the return figures.

In general, both metrics require the explicit consideration of risks (risk adjustment under IFRS17, risk margin under S2).

Under Solvency 2, one methodology is specified, whereas IFRS 17 allows different valuation approaches. At a high level, the approaches should lead to a similar result; in detail, this might not the case.

In principle, the aim is to consider underwriting risks in the same way in both metrics. However, IFRS 17 requires risks to be considered only if they are contract dependent. Therefore, there are differences in the consideration of operational risks, as the risk margin under Solvency 2 reflects all operational risks.

Also, when aggregating the risk adjustment, depending on the method chosen, the offsetting effects between the segments or the different measurement levels can lead to different results in the metrics.

Under IFRS 17, however, it is possible to dispense with an explicit calculation of the risk adjustment for reasons of materiality or also due to the choice of valuation model, with the result that there is already a different basic set considered between the metrics.

Consequently, when comparing the return figure and the risk capital figure, it is necessary to assess the extent to which the differences listed lead to material differences between the metrics and the extent to which this then restricts the comparability of the return figures.

Reconciliation between IFRS equity and Solvency own funds

An analysis of the discrepancy between IFRS equity and Solvency 2 own funds is done in order to be able to compare key performance indicators (KPIs) using both reference values.

The results paper “Reconciliation from IFRS Equity to Solvency 2 Own Funds in the new IFRS 17 regime” published by the German Association of Actuaries illustrates an exemplary reconciliation calculation of the equity under the two regimes.

Discrepancies are based on not considering the surplus fund as well as the going concern reserve in the IFRS 17 equity and, if applicable, from subordinated loans eligible as own funds in Solvency

2. This effect is partially offset by lower costs considered in the IFRS 17 fulfillment Cash Flows due to non-attributable costs.

Further differences in the IFRS 17 equity and Solvency 2 Own Funds assessment can result from different interest rate curves, contract boundaries or reinsurance valuations.

These valuation differences have an effect on the scenarios and thus the Own Funds calculation in the stress scenarios which impacts the calculation of the Risk Capital.

However, one of the central differences is in the definition of the two key figures. Under Solvency 2, the expected future profits are also taken into account in own funds and hence, the change of future profits under risk in the SCR Risk Capital.

3. Link to KPI RoE and analysis of possible return variables

We have already discussed the current status of the KPI RoE in the IFRS 17 regime in another publication (DAV-Ergebnisbericht_IFRS_17_Selected_KPI-market-overview-update). The straightforward numerator in the RoE is the IFRS net income after tax after minorities. We have observed also some variations of the net income as numerator. But in contrast the comprehensive income which also includes the OCI changes in equity in addition to the increase of the retained earnings in equity by the net income of the period is not used in the RoE definitions analyzed by us. As the equity (for RoE) and the SCR (for RoC) are quantities after tax it is useful to take the return quantity also after tax, so any kind of operating profit which usually is defined before tax is not useful in this context.

The denominators of RoE and RoC treat future profits differently. The IFRS equity does not include future IFRS profits, while the SCR includes the adverse change of own funds which also include the present values of future profits. As the denominator of the RoC includes (changes of) future profits it should be considered whether also the numerator of the RoC includes future profits. In the context of insurance business, both the OCI in equity (stemming from financial assets esp. under IFRS 9 and from insurance contracts under IFRS 17) and the contractual service margin (CSM) include information about the volume of future profits from insurance contracts. But it is important to note that both the OCI equity (e.g. from pensions under IAS 19) and the CSM (e.g. income to cover general overhead expenses not included in the contract boundaries of IFRS 17, ceded CSM from reinsurance held with different recognition requirements in respect to future gross new business) include components beyond pure shareholder profits. In total we see four possible candidates for the numerator of the RoC (all after tax):

- IFRS net income
- IFRS comprehensive income (IFRS net income plus change in OCI)
- IFRS comprehensive income plus change of gross CSM less change of ceded CSM
- IFRS comprehensive income plus change of gross CSM less change of ceded CSM after adjustments (e. g. deduction for future general overhead expenses, different contract boundaries in ceded CSM)

Depending on preferences between simplicity, stability, consistency between life and non-life business and accuracy, the CFO and the CRO should decide which of the four quantities is best suited to be used as numerator in the RoC.

Under IFRS 9 and IFRS 17, options can generally be exercised for the presentation of assets and liabilities in P&L, which must be considered when analyzing the RoC. Regarding the assets, a direct realization of income and expenses that directly influence P&L or an income or expense collection via OCI can be made for a part of the investment by selecting the classification. There are also relevant options on the liabilities side, in particular by exercising the OCI option or by determining the PAA vs. GMM measurement model. An existing accounting mismatch between assets

and liabilities can also have a significant impact on return and equity. Further information can be found in the document currently being prepared on ALM under IFRS.

4. Governance and operationalization

One of the objectives of a good KPI system is that it should incentivize the decision makers of the company to make decisions in the best interest of the company with an optimal RoC ratio. As some events like strong changes in market values of financial assets (esp. if measured as FVTPL in IFRS 9) or large losses (e.g. from NatCat) can hardly be influenced by the (top) management of an insurance company, one might argue that a certain normalization of the return quantity in the RoC should be performed to improve the achievability of RoC objectives. We understand the subjective rationale in this argument, but we are quite hesitant to promote such normalization as we regard a potential disconnect between the company success in reality and the success of top management in the KPI framework as potentially dangerous to jeopardize the stewardship role of the top management. On the long term, the scrutiny to identify and purchase financial assets with best RoC characteristics for the given liability structure and to design and purchase reinsurance programs with optimal impact on RoC will have a positive and sustainable impact to also reach RoC objectives.

The starting point for a RoC framework of an insurance group obviously is the Group level with Group CFO and Group CEO as main stakeholders. To role-out and operationalize the implementation of RoC objectives from the Group top level to the whole group, a clear delegation of responsibilities is preferrable. So a break-down of the Group RoC framework to IFRS reporting segments with Segment-CFOs and Segment-CEOs as main stakeholders is the next step. From there, further breakdowns to legal entities within segments and to business divisions with legal entities can take place depending on the size and complexity of the segments.

So far insurance companies often have further split the management responsibility between financial assets and actuarial / insurance contracts (“Versicherungstechnik”). In the IFRS 17 regime the feasibility of this traditional split of management scope and responsibility depends on which IFRS 17 measurement model is used. Three measurement models exist in IFRS 17:

- General measurement model (GMM, formerly known as BBA for building block approach)
- Premium Allocation Model (PAA, a simplified model esp. for short-term P&C contracts)
- Variable Fee Approach (VFA, for direct participating business)

For VFA business, the influence from changes of financial assets is directly included in the CSM. Also, the net income contribution from financial assets backing insurance contracts measured under the VFA is recognized in profit or loss via the release of the CSM. What is even more, for VFA business with current period book yield approach (applying IFRS 17.89(b)) which is the common scheme at least for direct participating business in Germany, the dominant P&L part is the insurance service result (ISR) while the insurance finance income or expense (IFIE) is usually very small. So, for VFA a straightforward business split into independent management responsibilities for financial assets and for actuarial / insurance contracts is not possible.

For insurance contracts measured under the GMM or the PAA, the two major P&L blocks ISR and IFIE can be managed more independently from each other, although also here certain dependencies exist (e.g. discounting of incurred claims). If the change of OCI is included in the return numerator of the RoC, again only a holistic approach for financial assets and insurance contracts is possible, as the changes of OCI depend mainly of the duration and FX mismatch between insurance contracts and financial assets backing those insurance liabilities.

As described in the introduction, risk capital is regarded as required capital in the context of RoC, which quantifies the amount required to compensate for a negative business result that is unlikely to occur for a given risk quantile (e.g. 0,5% within one year). This therefore represents a significant steering option. The special features of risk capital are therefore discussed below.

As described in the introduction, risk capital is regarded as a management parameter relevant to the company.

In the course of determining the risk capital for an insurance group, diversification of risk (i.e. the total risk is lower than the sum of the standalone risks) is taken into account. In principle, diversification in the business portfolio is a relevant aspect for determining risk capital. First of all, various risks (e.g. market risks, interest rate risks, insurance risks) are defined and evaluated. Their balancing effects need to be taken into account. There are various ways of putting the different risk classes in relation to each other. Specific risk trees and correlation matrices are defined as part of the Solvency 2 framework. In insurance groups with certified internal models to determine risk capital, also more sophisticated approaches for risk aggregation might be adopted.

In view of the rather small effect of the change in the risk margin mentioned above, the connection with regard to diversification effects will not be discussed further.

RoC on new business would become a main related feature of RoC as new KPI. This should be computed at different levels of granularity and would support management in making (informed) decisions which new business to underwrite and where to allocate its capital resources in an optimal way.

5. Granularity

There are several reasons why a discussion on granularity and allocation may be necessary or beneficial. Granularity can influence decision-making processes and performance optimization.

Firstly, an overview of the granularity of the IFRS17 return, especially the “Insurance Finance Income and Expenses” (IFIE) is given.

The available granularity of the IFIE mainly depends on the structure of the financial assets backing the insurance liabilities. The most common structure is just one pool of assets backing all insurance (and also other) liabilities and even equity. Hence, an allocation of the investment income to insurance portfolios is necessary for a IFIE below the total level of the insurance company. Especially for insurance companies with an inhomogeneous structure of insurance liabilities where several (IFRS 17) measurement models are adopted, a more sophisticated approach with dedicated financial assets for all insurance liabilities with the same measurement model might be in place, hence no further allocation of the investment income is necessary.

Up to now there is no consistency between groups on the financial reporting, especially not on the IFIE. While some entities do report that granular, by segment, by LOB and by geography, others do not report that at all publicly.

External reinsurance / retrocession in form of e.g., CAT Covers or Surplus Pools should for the internal management reporting as far as possible be allocated to the different segments, lines of business and entities to have a correct RoC capturing the full flow of business. This could be challenging if the external protection is only purchased at Group level for diversification benefits. Then appropriate allocation keys have to be developed and applied.

Secondly, an overview of the granularity and allocation of the risk capital is given.

The allocation of risk capital is a relevant steering mechanism for insurance companies in order to be able to deploy capital in a targeted and efficient manner to profitable business areas. To determine to which extent a certain part of the group has contributed to the diversified risk capital of an insurance group is also important and needs to be solved in practice. Depending on the company's business management approach, allocations by business segment, country, legal entity, business unit or LOB are conceivable, right down to individual products.

The more granular an allocation is based on estimation algorithms, the more uncertain the associated statements and steering impulses are, so that a trade-off between granularity and accuracy must also be provided for in the allocation process. In addition, some of these still require quite a high computational effort, which is not always considered justified in view of the sometimes-limited informative value.

This topic of capital allocation in insurance has gained significant attention in the actuarial literature, e.g. see a recent survey article[6]. The are many different approaches from game-theoretic approaches like Aumann-Shapley via axiomatic approaches like the Euler allocation to more recent approaches like profit-maximization with respect to risk aversion or distance-minimization are discussed both theoretically as well as in respect to applicability for two practical examples. It is beyond the scope of the current report to repeat this comprehensive analysis. We regard the following items as key take aways from this paper in respect to RoC:

- There is not the one perfect allocation concept, so judgement is needed.
- One important decision to be made is whether the allocation of risk capital should depend only on the tail or on the whole risk distribution.
- We assume that insurance groups with a (certified) internal model have already gone through such a thought process and now can leverage the use test to derive capital allocation among group segments and entities.
- For other insurance groups without a certified internal model, the simple proportional allocation from the Solvency 2 formula for groups – an entity's portion of the diversified group SCR is equal to the solo SCR of the entity divided by the sum of all solo SCRs among the group) may be a good starting point.

Also related, more modern concepts from machine learning like SHAP (Shapley Additive exPlanations) as a game theoretic approach might be explored in this context in the future.

For companies without internal models, a proportional allocation of risk capital based on the risk of the selected granularity level is possible as part of the allocation.

By the way, in addition to numerical and methodological reliability, communicability und acceptance within the company is also a relevant decision criterion when selecting the allocation method.

In some insurance companies, new business in the segments is managed at product level. The allocation of risk capital to individual products would be a desirable steering parameter. In particular, the required allocation of the effects of investment risks or underwriting risks at product level in the life insurance segment leads to sometimes arbitrary allocations that are not very conclusive and cannot be used in management. For non-life, this can be better achieved for underwriting risks and

[6] Guo, Qiheng, Daniel Bauer, and George H. Zanjani. 2021. "Capital Allocation Techniques: Review and Comparison." Variance 14 (2).

cost aspects; however, the allocation of capital investments also represents a relevant challenge here, but usually is less material.

6. Steering conflicts, incentive scheme and Hurdle rates

Steering conflicts

Regarding the possible steering options, several conflicts of objectives can occur. For example, in case of life insurers in particular, in the projection models different approaches can be implemented to determine the distribution between the policyholder and shareholder. If only the fulfillment of the so-called “MindZV” is the minimum goal and the remaining amounts are allocated to the shareholder, this has a different effect under IFRS and S2.

Incentive scheme and Hurdle rates

In order to set a hurdle-rate for the RoC, one most primarily consider the definition of the numerator and denominator of the KPI. A target level can be defined depending on the RoE. First publications of the already established RoE under IFRS17 indicate a level of approximately 13%-20% for the RoE. Some insurance companies relate this to the (usually varying) level of the interest rate level, some not.

By considering the numerator of the RoC multiple definitions were given in the text before. However, each company may align the numerator with the definition of the RoE. Thus, the denominator is mainly important for the target rate of the RoC.

Depending on the class of insurance, different hurdle rates may apply. There are several aspects to consider when evaluating the performance of insurance companies, e.g., the duration and characteristics of insurance contracts play a significant role in determining the risk capital requirements for insurance companies. For short-term contracts, such as annual policies, the risk capital requirements may be lower. On the other hand, long-term contracts, such as life insurance policies or annuities, typically have higher risk capital requirements.

Moreover, the diversification of risk and investment portfolios as well as cross-selling opportunities and the economy of scale lead to more stable and potentially higher returns.

Additionally, not only the SCR is relevant for internal management, but also the consideration of the capital required for an internally defined minimum target of the SCR. For internal management purposes, companies often set minimum or comfort levels above the 100% SCR, which result in additional capital requirements (required capital).

In the case of insurance groups, sometimes analyses are undertaken to enable internal financing by distributing the surplus / excess capital. However, restrictive aspects such as the transferability and fungibility of own funds components (e.g., surplus funds) must be taken into account when considering this at Group level. Also, additional considerations according to the source of capital from policyholders or from shareholders might be useful.

Even without an absolute lower threshold amount (hurdle rate) for the RoC, the RoC KPI already generates an internal marketplace between group entities for the competition about risk capital – just by comparing the different RoC levels of group entities.