

MILLIMAN RESEARCH REPORT

Shareholder Value Reporting in Europe – Solvency II Based Metrics

November 2020

Prepared by:

[Sam Burgess](#)

[David Burston](#), FIA

[Stuart Reynolds](#), FIA

[Lyndsay Wrobel](#), FIA



Table of Contents

1. EXECUTIVE SUMMARY	1
INTRODUCTION.....	1
SUPPLEMENTARY VALUE DISCLOSURES	1
OBSERVED TRANSACTION PRICES	3
ALTERNATIVE SOLVENCY II BASED VALUE METRICS	4
2. INTRODUCTION	6
3. SUPPLEMENTARY VALUE DISCLOSURES.....	8
BACKGROUND	8
WHAT SOLVENCY II RELATED METRICS COMPANIES DISCLOSED AT YEAR-END 2019.....	10
HOW COMPANIES PRESENT THE ANALYSIS OF CHANGE IN THE SOLVENCY II BASED METRICS.....	13
DISCLOSURE OF PROJECTIONS OF VALUE	16
4. OBSERVED TRANSACTION PRICES	19
RECENT TRANSACTIONS	19
ALTERNATIVE METRIC	20
5. ALTERNATIVE SOLVENCY II BASED VALUE METRICS.....	23
BACKGROUND TO THE ALTERNATIVE METRICS.....	23
COMPARISON TO MARKET CAPITALISATION.....	29

1. Executive summary

INTRODUCTION

Leading up to and since the implementation of Solvency II, there has been a decline in the number of companies that publicly disclose an embedded value with the focus shifting towards metrics relating to Solvency II. One of the key drivers for the move to using Solvency II Own Funds based metrics is the fact that the 'Value in force' or 'VIF' in the regulatory reserves/technical provisions is already accounted for in 'Net Asset Value' or Solvency II Own Funds due to the use of best estimate assumptions in the value of best estimate liabilities (**BEL**) rather than the prudent assumptions as previously used under Solvency I.

In this paper we provide a summary of the Solvency II based metrics that a sample of 20 companies are disclosing as at year-end 2019 and the associated explanatory information. We also look at the appropriateness of the use of Solvency II Own Funds as a benchmark for the prices agreed in recent transactions. Finally, we provide details of alternative Solvency II based value metrics, calculate approximate values of these metrics using publicly available information for the sample of companies, and compare these to the relevant market capitalisation.

This paper builds on the research carried out in a number of Milliman papers:

- 'Solvency II Own Funds Approach to Shareholder Value Reporting'¹
- 'S2AV: A valuation methodology for insurance companies under Solvency II'² and 'Measuring new business profitability under Solvency II (S2NBV)'³
- 'Shining new light on European insurance M&A'⁴
- 'Shareholder Value Reporting in Europe: Year-End 2018'⁵, and 'Shareholder Value Reporting in Europe: Year-End 2017'⁶.

At the time of writing this paper, the European Insurance and Occupational Pensions Authority (**EIOPA**) is conducting a review of Solvency II (the Solvency II 2020 Review) and the UK government has started its own review of Solvency II ahead of the end of the transition period for the UK's departure from the European Union. Both reviews may have an impact on the solvency regulations that apply to companies in Europe going forwards and hence the metrics those companies disclose. Given the uncertainty regarding any such changes to the solvency regulations, these are not considered in any more detail in this paper.

SUPPLEMENTARY VALUE DISCLOSURES

From our review of the public disclosures of 20 of the largest insurance groups in Europe, around half disclose a Solvency II earning metric (or Solvency II Capital Generation metric) as a key metric on a regular basis and there currently appears to be three main ones. These are all contained in Figure 1 along with a fourth for completeness termed 'Own Funds Generation' (simply the movement in Solvency II Own Funds over the analysis period). In this paper, we do not consider 'Own Funds Generation' in further detail as, based on our sample of companies, none disclosed this as a key Solvency II based earnings metric (potentially this is more of a solvency metric).

¹ Egoshina, T., Reynolds S. & Simpson, P. (June 2017). Solvency II Own Funds approach to shareholder value reporting. Milliman White Paper. Retrieved 30 October 2020 from <https://uk.milliman.com/en-gb/insight/Solvency-II-own-funds-approach-to-shareholder-value-reporting>.

² Kent, J. & Morgan, E. (October 2016). S2AV: A valuation methodology for insurance companies under Solvency II. Milliman Research Report. Retrieved 30 October 2020 from <https://www.milliman.com/en/insight/s2av-a-valuation-methodology-for-insurance-companies-under-solvency-ii>.

³ Morgan, E. & Kent, J. (September 2017). Measuring new business profitability under Solvency II (S2NBV). Milliman Research Report. Retrieved 30 October 2020 from <https://www.milliman.com/en/insight/measuring-new-business-profitability-under-solvency-ii-s2nbv>.

⁴ Morgan, E. & Kent, J. (March 2019). Shining new light on European insurance M&A. Milliman White Paper. Retrieved 30 October 2020 from <https://www.milliman.com/en/insight/shining-new-light-on-european-insurance-m-and-a>.

⁵ Burston, D., Reynolds, S., Simpson, P. & Wrobel, L. (January 2020). Shareholder Value Reporting in Europe: Year-End 2018. Milliman Research Report. Retrieved 30 October 2020 from <https://uk.milliman.com/en-GB/insight/shareholder-value-reporting-in-europe-year-end-2018>.

⁶ Wrobel, L., Reynolds, S. & Simpson, P. (December 2018). Shareholder Value Reporting in Europe: Year-End 2017. Milliman Research Report. Retrieved 30 October 2020 from <http://www.milliman.com/insight/2018/Shareholder-value-reporting-in-Europe-Year-end-2017/>.

FIGURE 1: POTENTIAL CAPITAL GENERATION METRICS

Capital Generation Metrics	Full Movement of Own Funds	Part Movement of Own Funds
No Allowance for SCR	Own Funds Generation	Normalised Capital Generation
Allowance for SCR	Free Capital Generation	Operating Capital Generation

- **Normalised Capital Generation:** The change in the level of Solvency II Own Funds that is related to 'business as usual' activities and factors which can be controlled or influenced by management actions, over the reporting period.
- **Free Capital Generation:** The change in the level of Solvency II Own Funds over and above the Solvency Capital Requirement (**SCR**), over the reporting period. The level of capital may or may not include a target buffer in line with the company's risk appetite/capital management policy. Where this buffer is included, this metric may indicate the increase in the amount of capital than could be paid out as a dividend.
- **Operating Capital Generation:** Combining parts of both 'Normalised Capital Generation' and 'Free Capital Generation' that is, the change in the level of Solvency II Own Funds over and above the SCR that is related to 'business as usual' activities and factors which can be controlled or influenced by management, over the reporting period.

Based on our research, Operating Capital Generation is currently the most popular Solvency II Capital Generation metric though the names used by each company to refer to the metrics differ and the exact calculation of each metric is far from standard. The use of Solvency II Capital Generation metrics also seems to vary by country with the use of these metrics being more popular in the Benelux region but with companies in the UK typically providing more detail on these metrics within their disclosures.

While understanding the different Solvency II Capital Generation metrics is important, analysts and industry participants are also keen to understand the sources of the capital generation. In our sample of companies, 14 disclose a clear breakdown of a Solvency II Capital Generation metric. Similar to the definition of the metrics themselves, there is also a great variety in the categories chosen and the presentation of the breakdown in the Solvency II Capital Generation metrics. Such variance in the disclosures limits the ability of analysts and industry participants to compare and contrast the results between companies. Several templates that could be used as a standardised format have been proposed – one as part of the Solvency II 2020 review and one by the Prudential Regulation Authority (**PRA**) in a 2018 speech. In addition, the templates used for the analysis of European Embedded Value (**EEV**) / Market Consistent Embedded Value (**MCEV**) under the relevant Embedded Value Principles may also still be relevant. Looking at these templates, and the formats currently being used by companies, we propose the template in Figure 2.

FIGURE 2: SUGGESTED IDEALISED TEMPLATE FOR THE BREAKDOWN IN CAPITAL GENERATION METRIC

1. Opening adjustments, split into:
 - a. Model changes
 - b. Methodology changes
2. Existing business contribution, split into:
 - a. The expected real-world return⁷ on assets in excess of the BEL
 - b. The expected real-world spread⁸ on assets backing the BEL (including the impact on the BEL)
 - c. The impact of the unwinding of the Ultimate Forward Rate (UFR) / UFR drag
 - d. The release of the Risk Margin (on existing business)
 - e. The impact of run-off of the Solvency II transitionals (on existing business)
3. New business contribution
4. Impact of management actions (typically relating to actions taken with respect to the SCR such as reinsurance, hedging, etc.)
5. Financing costs
6. Changes to operating / non-economic assumptions
7. Operating / non-economic experience variances (where the variances are with reference to the expected return/spread levels in 2)a) and 2)b))⁹
8. Changes to non-operating/economic assumptions, including:
 - a. The impact of any changes to Solvency II parameters provided by the EIOPA such as the UFR, volatility adjustment
9. Non-operating / economic experience variances
10. Other items, including tax, holding company expenses, pension scheme impacts, merger and acquisition activity, portfolio, and business transfers¹⁰
11. Capital Management, such as the issuance and repayment of debt, share buy-backs and dividends
12. Closing adjustments

This format, if split between the impact on required capital and on free surplus in excess of required capital, would enable each of the Solvency II Capital Generation metrics to be determined and hence be compared consistently between companies.

As well as understanding the historic drivers of Solvency II Capital Generation, analysts and industry participants may also be interested in splitting the various categories within the template between those that could be expected to happen again in the future ('Anticipated' drivers) and those that may be considered to be one-offs (or 'Unanticipated' drivers). This can help the users of the information to determine how the capital of the company may change in the future. Some companies within our sample already provide some detail on the projected growth in capital split by driver but these companies currently appear to be in the minority. Over time, other companies may enhance their disclosures to include similar information.

OBSERVED TRANSACTION PRICES

Since the implementation of Solvency II, it has become more common for the ratio of 'Price/Solvency II Own Funds' to be quoted in relation to transactions involving the sale of insurance companies or blocks of insurance business. As per our previous publications related to shareholder value, the use of unadjusted Solvency II Own Funds as a benchmark for transaction prices may not be appropriate given the inclusion of items such as subordinated liabilities. Some companies already remove such items from the value of 'Solvency II Own Funds' which is used when disclosing the 'Price/Solvency II Own Funds' ratio.

⁷ If possible, details of the expected real-world returns assumptions should be disclosed.

⁸ This expected real-world spread is the expected return over the risk-free rate used in the calculation of the BEL so would include the volatility adjustment and matching adjustment, if these are relevant for the company.

⁹ Some companies (and even the PRA) have suggested grouping the impact of changes in operating assumptions and operating variances into one source but we believe that splitting these out, where possible, provides useful additional information.

¹⁰ Shareholder transfers from with-profits funds may also be included for companies with participating business.

A simple alternative metric which may be more appropriate as a benchmark would be the ratio of price to unrestricted Tier 1 capital (**UT1**) plus the net deferred tax asset (**DTA**) (i.e. price / (UT1 + DTA)). This value also has the benefit of often being available from publicly available information such as Solvency and Financial Condition Reports (**SFCRs**).

Figure 3 shows the ratios (based on the adjustments detailed above) for a number of recent transactions grouped into 10% 'ranges'. Furthermore:

- The colour of the dot indicates whether the target block of business was open (green) or closed (orange) to new business.
- The size of the dot indicates the size of the transaction as measured by the size of the adjusted Solvency II Own Funds (either UT1 + DTA or the implied value calculated from the disclosed ratio).

FIGURE 3: COUNT OF TRANSACTIONS BY PRICE/ADJUSTED OWN FUNDS RATIO (SIZE OF DEAL IS SIZE OF DOT)



Notes:

1. The ratio calculated for one transaction was 2.17 (as shown in Figure 19). In Figure 3, this transaction has been placed in the 1.40-1.50 category.

Based on the information in Figure 3:

- Transaction prices in the range of 80% to 90% of Own Funds seem most common.
- Where the target block of business is closed to new business the ratio is more likely to be less than 1. The majority of those deals with a ratio in excess of 1 involved blocks that were open to new business.
- Smaller deals tend to result in lower ratios.

ALTERNATIVE SOLVENCY II BASED VALUE METRICS

In this paper we have considered four alternative valuation metrics based on Solvency II, based on publicly available information. These are:

- **UT1 + DTA** – a simple market consistent based UT methodology that can be calculated from public information and requires no further explicit assumptions.
- **Solvency II Adjusted Own Funds (S2AOF)** – a market consistent method which makes allowance for some items not captured on the Solvency II balance sheet. A value that can be calculated from public information but may require further assumptions.

- Solvency II Embedded Value (**S2EV^{*11}**) – a real-world based valuation methodology allowing for the assumed return on risky assets and the associated cost of capital including a target solvency ratio.
- Solvency II Appraisal Value (**S2AV^{*}**) – a similar real-world based valuation methodology to S2EV^{*} but with an allowance for the potential value of future new business sales.

Each of the S2EV^{*} and S2AV^{*} methods, in general, require more assumptions and approximations compared with the S2AOF methodology.

Each of these methodologies allow for various ‘Anticipated’ Solvency II Capital Generation drivers. The allowance for some of the drivers are more approximate than others, particularly for S2EV^{*} and S2AV^{*}, owing to the fact that the calculations are based solely on publicly available information (or in some cases assumptions based on expert judgement). It may be possible to refine these approaches further going forward, particularly if companies begin to disclose further information on the sources of their Solvency II Capital Generation.

We have compared calculated values for each of these metrics to the market capitalisation, where possible, for the companies within our sample. The results of these comparisons can be seen in Figure 4.

FIGURE 4: MARKET CAPITALISATION AS A PERCENTAGE OF SOLVENCY II BASED METRICS – AVERAGE, LOWER, AND UPPER QUANTILES

	YEAR-END 2019		YEAR-END 2018	
	Average	Lower and Upper Quartiles	Average	Lower and Upper Quartiles
UT1 + DTA	102%	71% - 134%	92%	70% - 115%
S2AOF	100%	72% - 126%	90%	66% - 107%
S2EV[*]	149%	104% - 178%	139%	98% - 152%
S2AV[*]	103%	79% - 114%	102%	77% - 118%

Overall, each methodology has its benefits and drawbacks, with the ‘best’ approach typically depending on the circumstances and the views of the user of the information. Each of these metrics has the benefit of permitting a systematic analysis of the potential future drivers of change in value of an insurance company. This would enable these drivers to be compared with the historic drivers (for which we hope further information will be provided in supplementary value disclosures in the future). For insurers themselves, as they would have access to more detailed information regarding their own businesses, some of the limitations/approximations present in the alternative metrics detailed in this paper can be reduced. As such these value metrics may be useful when determining transaction prices or valuations for other purposes (e.g. as a measure of performance).

¹¹ The use of this limited data set leads to some approximation in the resulting value calculation for both S2EV and S2AV methods. We have therefore termed the calculated metrics as S2EV^{*} and S2AV^{*}, respectively, to differentiate from ‘full’ calculations of S2EV and S2AV which would be based on a more complete set of information and hence would not suffer the same limitations.

2. Introduction

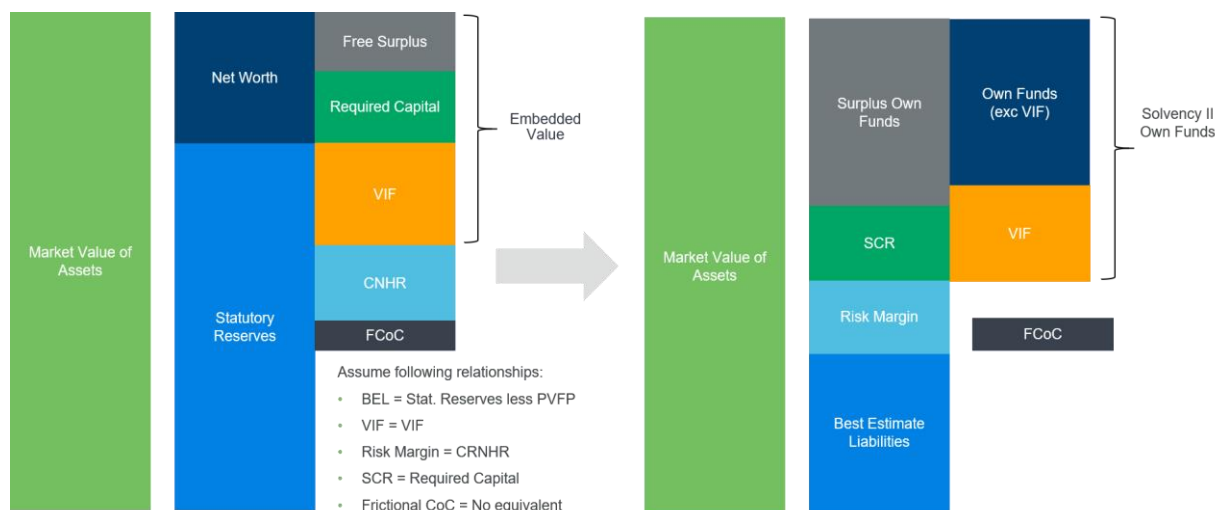
Company valuations are important for a number of reasons such as determining a price for the purposes of a merger or acquisition (a transaction price), reporting the growth of the business to external stakeholders, or monitoring the performance of the business, potentially as part of an employee/executive remuneration package.

Due to the long-term nature of the business sold and the associated upfront costs and capital requirements, the valuation of life insurance companies¹² can be somewhat different to the valuation of companies in other industries. Life insurance company embedded value techniques can trace their origins back to the 1980s and have then evolved over a number of years with the Association of British Insurers (**ABI**) attempting to codify the Achieved Profits Method in 2001 in the UK, the CFO Forum formally codifying the European Embedded Value Principles (**EEV Principles**) in 2004 and then the European Insurance CFO Forum Market Consistent Embedded Value Principles© (the **MCEV Principles**)¹³ in 2008. Since their publication, there have been a number of revisions to the EEV and MCEV Principles with the last significant change in 2016 when both the EEV and MCEV Principles were amended to reflect the implementation of Solvency II at the start of 2016.

The implementation of Solvency II has led to a decrease in the number of companies publicly disclosing embedded value in Europe with the level of Solvency II Own Funds (and its change over time) seemingly becoming a more widely disclosed metric. As can be expected, the implementation of Solvency II has also had an impact on the valuation of life insurance companies for the purposes of transaction pricing. This has not only been in the methodologies used to place a value on the business but also in the transaction metrics that are often quoted in the associated investor presentations and news articles, with Solvency II based metrics becoming more commonly used as pricing benchmarks.

We have previously explored why many companies or, more generally, the insurance industry believe that the level of Solvency II Own Funds is an adequate proxy for (market consistent) embedded value in the Milliman papers 'Solvency II Own Funds Approach to Shareholder Value Reporting'¹ and 'S2AV: A Valuation Methodology for Insurance Companies under Solvency II'². The graphic in Figure 5 has been reproduced from the Solvency II Own Funds Approach to Shareholder Value Reporting paper and provides a high-level reconciliation between MCEV and the level of Solvency II Own Funds. This shows that one of the key drivers for the move to using Solvency II Own Funds as a measure of value is the fact that the 'Value in force' or 'VIF' in the regulatory reserves/technical provisions is already accounted for in the 'Net Asset Value' or Solvency II Own Funds due to the use of best estimate assumptions in the value of best estimate liabilities (BEL) rather than prudent assumptions as previously used under Solvency I.

FIGURE 5: COMPARISON OF MCEV AND SOLVENCY II BALANCE SHEET¹⁴



¹² By 'life insurance companies', we mean companies for which life insurance business makes up a 'reasonable' proportion of their business.

¹³ Copyright© Stichting CFO Forum Foundation 2008.

¹⁴ In Figure 5, there is the use of the following abbreviations not otherwise defined in this report: Present value of future profits (**PVFP**) and Frictional Cost of Capital (**FCoC**).

This paper builds on the research carried out in a number of Milliman papers:

- 'Solvency II Own Funds Approach to Shareholder Value Reporting'¹
- 'S2AV: A valuation methodology for insurance companies under Solvency II'² and 'Measuring new business profitability under Solvency II (S2NBV)'³
- 'Shining new light on European insurance M&A'⁴
- 'Shareholder Value Reporting in Europe: Year-End 2018'⁵, and 'Shareholder Value Reporting in Europe: Year-End 2017'⁶.

In this paper we look at how Solvency II Own Funds is now being used in Europe for both supplementary disclosures (Section 3) and transaction pricing (Section 4) and how this may change going forward. In addition, we extend the recent research that we have carried out into alternative value metrics based on the Solvency II balance sheet to see how these compare with companies' market capitalisations (Section 5).

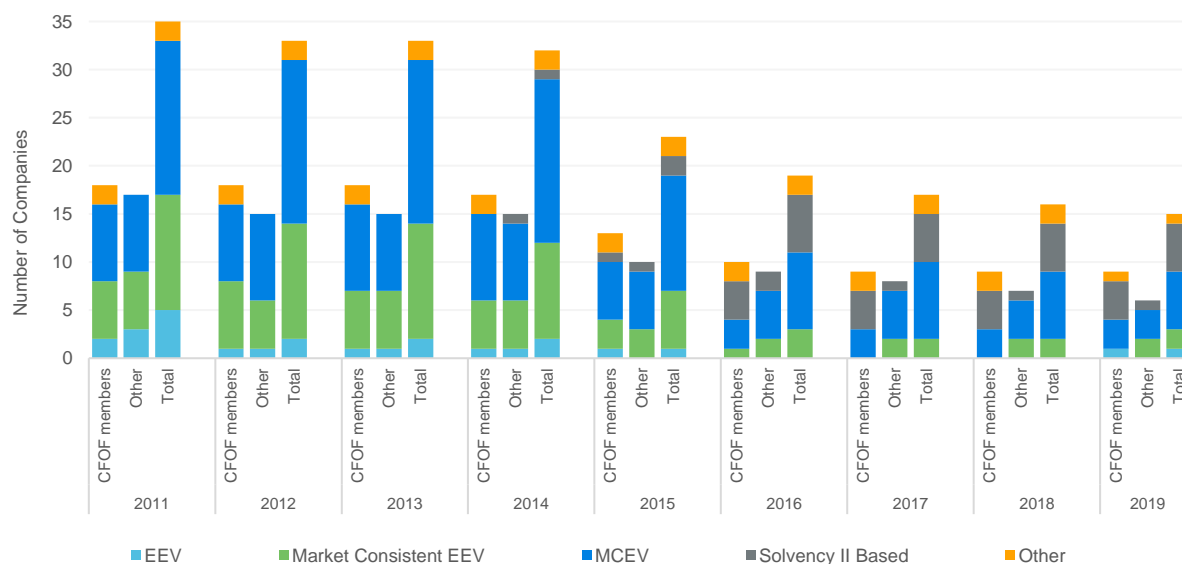
At the time of writing this paper, EIOPA is conducting a review of Solvency II (the Solvency II 2020 Review) and the UK government has started its own review of Solvency II ahead of the end of the transition period for the UK's departure from the European Union. Both reviews may have an impact on the solvency regulations that apply to companies in Europe going forwards and hence the metrics those companies disclose. Given the uncertainty regarding any such changes to the solvency regulations, these are not considered in any more detail in this paper.

3. Supplementary Value Disclosures

BACKGROUND

Since the implementation of Solvency II at the end of 2015/start of 2016, there has been a decline in companies in Europe publicly disclosing embedded value as can be seen in Figure 6, split between CFO Forum (CFOF) members and 'Other' companies.

FIGURE 6: EMBEDDED VALUE REPORTING PRINCIPLES AT YEAR-ENDS 2011–2019



Notes:

1. Swiss Re does not report explicitly under either EEV or MCEV Principles but under a framework called Economic Value Management (EVM).
2. Following the demerger of M&G from Prudential plc., Prudential reports under solely EEV Principles in 2019 (where previously it was classed as 'Other' due to adopting a market consistent approach for a specific tranche of UK business).

Figure 6 shows that the number of European companies disclosing an embedded value was broadly static between year-end 2011 and year-end 2014 at around 33 firms. Since year-end 2015 there has been a steady decline in the number of European companies disclosing and embedded value such that only around 15 companies continue to do so as at year-end 2018/year-end 2019.

In terms of the approach adopted by European companies, Figure 6 again shows a tale of two halves. Before the implementation of Solvency II at the start of 2016, companies were moving away from using a traditional EEV approach, with the majority either adopting a market consistent EEV or MCEV approach. Out of these two approaches, firms were gradually leaning more towards an MCEV approach during this period. By 2014 over 95% of firms surveyed used some form of market-consistent valuation in their embedded value reporting; an increase from over 80% in 2011. This move was welcomed by many analysts and investors and seen as a step in the right direction in achieving more consistent, objective, and transparent embedded value reporting.

Although there were a handful of early adopters, the adoption of a Solvency II based approach began in earnest in 2016. Since then, European companies have continued to refine their approaches, with a trend to align embedded value reporting and Solvency II reporting further (as detailed in our recent embedded value/shareholder value related publications¹⁵). This has been mirrored by a decline in the use of the market consistent EEV approach during the period 2016 to 2019. Most of the refinements to the methodologies adopted occurred in 2016 – 2017, so by 2018 and 2019 companies have tended to make only minor refinements to their formal embedded value reporting in respect of Solvency II.

¹⁵ Reynolds, S. & Simpson, P. (July 2017). 2016 Embedded Value Results: Europe. Milliman Research Report. Retrieved 30 October 2020 from <https://uk.milliman.com/en-GB/insight/2016-embedded-value-results-europe>.

Reynolds, S., Simpson, P., & Wrobel, L. (December 2018). Shareholder Value Reporting in Europe: Year-End 2017. Milliman Research Report. Retrieved 30 October 2020 from <https://uk.milliman.com/en-GB/insight/shareholder-value-reporting-in-europe-year-end-2017>.

Burston, D., Reynolds, S., Simpson, P., & Wrobel, L. (January 2020). Shareholder Value Reporting in Europe: Year-End 2018. Milliman Research Report. Retrieved 30 October 2020 from <https://uk.milliman.com/en-GB/insight/shareholder-value-reporting-in-europe-year-end-2018>.

As well as disclosing a calculated 'value' of a business at a point in time, a key item disclosed by many companies in their value reporting is the analysis of change in the calculated value over the reporting period (typically a year). Before the publication of the amendments to the EEV Principles and MCEV Principles in 2016, an analysis of the change in EEV/MCEV¹⁶ was a required disclosure and had to be done so in a prescribed format. The prescribed format under the MCEV Principles split the movement of MCEV over the reporting period into the following components (split further into the movement in 'Free Surplus', 'Required Capital', and 'VIF'):

FIGURE 7: ANALYSIS OF CHANGE IN MCEV UNDER MCEV PRINCIPLES

1. Opening adjustments
2. New business value
3. Expected existing business contribution (assuming returns equal to the reference rate)
4. Expected existing business contribution (assuming returns in excess of the reference rate)
5. Transfers from VIF and Required Capital to Free Surplus
6. Experience variances
7. Assumption changes
8. Other operating variances
9. Economic variances
10. Other non-operating variances
11. Closing adjustments

These prescribed breakdowns for the movements in EEV/MCEV were made somewhat optional under the amendments to the EEV Principles and MCEV Principles in 2016 as long as the level of disclosures remained "sufficient to enable users to understand the methodology and assumptions, key judgements and sensitivities of the MCEV results being presented to key assumptions".

While it is a requirement for firms to disclose details of the evolution of Solvency II Own Funds within their Solvency and Financial Condition Reports (SFCR), the level of detail provided between firms differs. As part of the Solvency II 2020 Review, EIOPA has identified in their 'Package on Supervisory Reporting and Public Disclosure: 4. Solvency and Financial Condition Report'¹⁷ that another "main gap identified is information on the evolution of the Own Funds over the reporting period. It is crucial for analysts to have more information on the triggers of changes in Own Funds". As such, one of the current proposals in the Solvency II 2020 Review is for the SFCR to disclose the information shown in Figure 8 on the triggers for changes in the amount of Own Funds during the period as a percentage of the Own Funds and in Euro millions (though one assumes the local reporting currency would also be appropriate).

FIGURE 8: SOLVENCY II 2020 SFCR PROPOSAL – DISCLOSURE OF CHANGE IN AMOUNT OF OWN FUNDS DURING THE PERIOD

1. Changes due to valuation of the assets
2. Changes due to new capital issued or redeemed
3. Changes due to valuation of technical provisions of existing business
4. Changes due to new business
5. Changes due to taxation
6. Changes due to dividends (foreseeable and paid)
7. Changes due to other items¹⁸

¹⁶ More formally an 'Analysis of Return on EV; Reconciliation of opening and closing values' (for the EEV Principles) and 'Analysis of MCEV earnings; Reconciliation of opening and closing values' (for MCEV Principles).

¹⁷ https://www.eiopa.europa.eu/sites/default/files/publications/consultations/eiopa-bos-19-309_sfc_r_disclosure.pdf.

¹⁸ When the 'Changes due to other items' represent more than 20% of the variation the undertaking needs to detail the trigger of the changes included in such item.

While having consistency in the disclosure of the movement in Solvency II Own Funds in SFCRs will be a benefit, the proposed categories for the breakdown differ greatly to those of the MCEV Principles which are perhaps more familiar to analysts and industry participants.

In this section of this paper, we have focused on the value disclosures of 20 companies in the European market which span the following countries (based on their headquarters): the Netherlands, Belgium, Germany, Italy, France, UK, and Spain. In selecting these companies, we have focused on group companies and on the inclusion of the bigger players which operate in the insurance industry in Europe. These firms are shown in Figure 9.

FIGURE 9: FIRMS CONSIDERED IN OUR SURVEY

▪ Achmea B.V.	▪ Gruppo Unipol
▪ Aegon N.V. Group	▪ Hannover Re Group
▪ Ageas SA/NV	▪ Legal & General Group plc
▪ Allianz Group	▪ Mapfre Group
▪ Assicurazioni Generali S.p.A.	▪ Munich Re Group
▪ Aviva plc	▪ NN Group N.V.
▪ AXA Group	▪ Phoenix Group Holdings
▪ BNP Paribas Cardif Group	▪ SCOR Group
▪ Groupe CNP Assurances	▪ VidaCaixa ¹⁹
▪ Groupe Groupama	▪ VIVAT N.V.

The disclosures used in this paper were those of these companies as at year-end 2018 and year-end 2019. As such these disclosures do not fully reflect the impact of the recent COVID-19 pandemic. The impact of the pandemic has led to significant falls in the market capitalisation of many of the companies in our sample since year-end 2019. As such, we would expect this to feature in more detail in companies' disclosures for year-end 2020, and therefore plan to report on this more fully next year when we review the year-end 2020 disclosures.

This section of the paper is split into three parts:

- Details on what Solvency II related metrics companies in our sample chose to disclose in their supplementary disclosures as at year-end 2019 (other than the level of Solvency II Own Funds or Solvency II Coverage Ratio).
- How the companies presented the analysis of change in this metric (if at all).
- Whether or not a projection of the potential future value of the metric was provided.

As part of this research the main sources of information for each company were the Annual Report, analyst presentations or other investor communications, and the SFCR.

WHAT SOLVENCY II RELATED METRICS COMPANIES DISCLOSED AT YEAR-END 2019

With the level of Solvency II Own Funds being a key metric for European firms it is unsurprising that companies have started to develop and disclose new related metrics which focus on Solvency II earning metrics such as 'Solvency II Capital Generation' over the reporting period. From our sample of companies, 11 disclosed a metric related to 'Solvency II Capital Generation', with the majority of these being headquartered in the Benelux region. A number of UK headquartered companies also quoted such metrics and the level of disclosures around these metrics is relatively high compared with other companies in the sample from other countries.

'Solvency II Capital Generation' is not yet a standardised term and therefore, as at year-end 2019, many of the companies in our sample disclosed similar metrics with various names and slightly varying definitions. Broadly speaking, there are three such metrics, which we have termed as below:

- Normalised Capital Generation
- Free Capital Generation
- Operating Capital Generation.

¹⁹ VidaCaixa, S.A.U. de Seguros y Reaseguros y Sociedades Dependientes (VidaCaixa).

Each of these metrics is considered in greater detail below with reference to Figure 10, along with a fourth ('Own Funds Generation'). In this paper, we do not consider 'Own Funds Generation' in further detail as, based on our sample of companies, none disclosed this as a key Solvency II based earnings metric.

FIGURE 10: POTENTIAL CAPITAL GENERATION METRICS

Capital Generation Metrics	Full Movement of Own Funds	Part Movement of Own Funds
No Allowance for SCR	Own Funds Generation	Normalised Capital Generation
Allowance for SCR	Free Capital Generation	Operating Capital Generation

Normalised Capital Generation

This amount relates to the change in the level of Solvency II Own Funds that is related to 'business as usual' activities and factors which can be controlled or influenced by management, over the reporting period. The associated impact on capital requirements (i.e. the SCR) is not considered.

Based on our sample of companies, five firms disclosed this metric as at year-end 2019.

FIGURE 11: FIRMS WHICH ADOPT NORMALISED CAPITAL GENERATION APPROACH

COMPANY	CHOSEN NAME FOR METRIC
Allianz	Operating SII Earnings
Aviva	Operating Own Funds Generation
Generali	Normalised Own Funds Generation
SCOR	Operating Capital Generation
VIVAT	(Organic) Capital Generation*

Notes:

* VIVAT appears to only disclose (Organic) Capital Generation as the impact on the Solvency II Solvency Coverage Ratio which may indicate this is more of a solvency metric rather than a Solvency II earnings metric.

There are broadly two ways firms arrive at the change in the level of Solvency II Own Funds that is related to 'business as usual' activities; by only selecting certain drivers or by taking the total movement in Own Funds and excluding certain drivers. When the first approach is used some of the drivers included are:

- Assumed/expected (real-world) returns
- The impact of new business
- The release of Risk Margin
- The unwinding of UFR ('UFR drag'²⁰)
- Operating variances

²⁰ UFR Drag arises due to the extrapolation of the Solvency II risk-free interest rate curve beyond the assumed last liquid point (LLP). It is therefore most relevant for currencies that have an LLP shorter than the duration of liabilities (such as the Euro where the LLP is assumed to be 20 years). The UFR is currently higher than the market implied swap rates, leading to the Solvency II risk-free interest rate curve being relatively high at longer durations. In the case of the Euro this is the case for durations in excess of 20 years. Each time the Solvency II risk-free interest rate curve is determined the market implied part of the curve is updated and the extrapolation process is reapplied. This means that the updated Solvency II risk-free interest typically ends up being lower at longer durations than would be the case if the previous interest rate curve was 'rolled-forward' in a market consistent fashion. Assuming liability outflows are being discounted, the use of the lower interest rate curve leads to a higher BEL with the increase being termed 'UFR drag'.

- Operating assumption changes
- Management actions (that, at the start of the year, could have been reasonably expected to have been implemented over the year)
- Debt costs.

However, it should be noted that the drivers included do vary from company to company. For example, some definitions exclude the impact of Operating variances and Operating assumption changes.

Under the second approach, some of the drivers that are excluded from the total movement in Own Funds are:

- Market impacts, i.e. changes to interest rates, credit spreads and equity returns
- Capital management items such as the payment of dividends, capital injections etc.
- Other one-off impacts.

While the name and exact definition of the metric may differ between companies, the aim is similar – to identify the amount of Own Funds that have been generated from the ‘normal’ activities of company (or from sources under the control of management) to give an indication of the underlying performance without the distortion of volatile markets and other one-off impacts.

Free Capital Generation

This amount relates to the change in the level of Solvency II Own Funds over and above the SCR, over the reporting period. The level of capital may or may not include a target buffer in line with the company’s risk appetite/capital management policy. Where this buffer is included, this metric may indicate the increase in the amount of capital over the period that could be paid out as a dividend.

Based on our sample of companies, two firms disclosed this metric as at year-end 2019.

FIGURE 12: FIRMS WHICH ADOPT FREE CAPITAL GENERATION APPROACH

COMPANY	CHOSEN NAME FOR METRIC	LEVEL OF CAPITAL USED
Achmea	Free Capital Generation	Based on 100% SCR
Ageas	Free Capital Generation	Based on 175% SCR

Operating Capital Generation

The ‘Operating Capital Generation’ metric combines parts of both ‘Normalised Capital Generation’ and ‘Free Capital Generation’, that is, the change in the level of Solvency II Own Funds over and above the SCR that is related to ‘business as usual’ activities and factors which can be controlled or influenced by management, over the reporting period. As with ‘Free Capital Generation’, the level of capital may or may not include a target buffer in line with the company’s risk appetite/capital management policy.

Based on our sample of companies, eight firms disclosed this metric as at year-end 2019.

FIGURE 13: FIRMS WHICH ADOPT OPERATING CAPITAL GENERATION APPROACH

COMPANY	CHOSEN NAME FOR METRIC	LEVEL OF CAPITAL USED
Aegon	Normalised Capital Generation	Based on 100% SCR
Ageas	Operational Free Capital Generation	Based on 175% SCR
Allianz	Pre-tax Operating Capital Generation/Organic Capital Generation*	Based on 100% SCR
Aviva	Operating Capital Generation	Based on 100% SCR
CNP	Operating Free Cashflow	Based on 100% SCR
Generali	Operating Capital Generation	Based on 100% SCR
Legal & General	Operational Surplus Generation**	Based on 100% SCR
NN Group	Operating Capital Generation	Based on 100% SCR

Notes:

* For Allianz 'Pre-tax Operating Capital Generation/Organic Capital Generation' is potentially more of a solvency metric rather than a Solvency II earnings metric. However, the impact on Solvency II Own Funds and SCR is also disclosed so the level of 'Capital Generation' can be determined.

** This is when the impact of new business is excluded. Metric is termed 'Net Surplus Generation' when the impact of new business is included.

Similar to 'Normalised Capital Generation', this metric aims to split out the impact of Own Funds generated in excess of the SCR from market variances and other one-off impacts from those sources under management's control. This approach was mentioned in 2018 in a PRA Speech given by David Rule, "A 'D to Z' of current issues in Insurance Supervision"²¹, though in the example template provided in the appendix to that speech the metric was termed 'organic' excess capital generation and included the impact of economic variances and did not include financing costs.

Other Solvency II Related Metrics

So far, we have considered Solvency II related metrics that look at the change in the capital position of a company in absolute terms. A number of companies also provide other earnings/growth metrics related to Solvency II Own Funds. For example:

- SCOR defines a metric 'Solvency II Return on Equity' (**S2RoE**), in percentage terms, as being equal to Operating Capital Generation divided by opening UT1 (after deduction of foreseeable dividend). As well measuring its own performance year to year, SCOR also compares its S2RoE metric with a number of its peers.
- Aviva defines a similar metric, also named 'Solvency II Return on Equity' which is calculated as:
 - Operating Own Funds Generation less preference dividends, direct capital instrument, and Tier 1 note coupons, divided by
 - Opening value of UT1 'shareholder own funds'²².
- Phoenix defines a metric of 'Shareholder Value per Share' which is calculated as a proxy for shareholder value divided by the number of shares, where the proxy for shareholder value is determined as:
 - The value of UT1 (calculated as 'shareholder own funds'²³ less the value restricted Tier 1, Tier 2 and Tier 3 debt), plus
 - Adjustments for the impact of contract boundaries and the shareholders' share of the with-profit estate.

HOW COMPANIES PRESENT THE ANALYSIS OF CHANGE IN THE SOLVENCY II BASED METRICS

While disclosure of the Solvency II Capital Generation metrics is useful for industry participants such as analysts and investors, the breakdown of what has driven these metrics is also important. Information on this will help to give an understanding of the business and may also help inform the potential for changes in value in the future if certain drivers can be assuming to be repeatable rather than 'one-offs'.

²¹ <https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/a-d-to-z-of-current-issues-in-insurance-supervision>.

²² With regards to Aviva, the value of shareholder own funds excludes Solvency II own funds for fully ring-fenced with-profit funds, staff pension schemes in surplus, notional reset of Transitional Measure on Technical Provisions and allowance for other pro-forma adjustments relating to the disposal of certain entities.

²³ With regards to Phoenix, the value of shareholder own funds excludes Solvency II Own Funds and Solvency Capital Requirements of unsupported with-profit funds and certain pension schemes.

The prescribed format for the analysis of change in MCEV was provided in Figure 7 at the start of the section along with the current proposal for the analysis of change in Solvency II Own Funds to be included in companies' SFCRs in the Solvency II 2020 Review (In Figure 8). In fact, it is a requirement of the Solvency II Directive to disclose the structure and amount of Solvency II Own Funds within the SFCR²⁴. In addition, the SFCR should also include an analysis of any significant changes in the structure and amount of Own Funds as compared to the previous reporting period and an explanation of any major differences²⁵. EIOPA reiterated this latter point (the need to cover more than just the structure and amount of Own Funds) in a Supervisory Statement²⁶ issued in December 2017 where it detailed its expectations and that when providing comparative information in the SFCRs:

"...the format of tables is used as much as possible in the narrative part of the SFCR. These tables could include amounts for both reporting years or focus on the material differences between both reporting years. Qualitative information on material differences between two reporting years are also expected to be included in the report. Publication of Quantitative Reporting Templates (QRT) for current and the previous reporting year as an Annex alone is not sufficient to be considered compliant with the comparison requirement."

There does not appear to be an agreed presentation for the analysis of change in disclosed Capital Generation metrics as:

- The prescribed formats of the analysis of change in MCEV (and EEV) are no longer mandatory
- Fewer firms are reporting embedded value
- The proposed template for the analysis of change in Solvency II Own Funds is yet to be agreed.

However, given the majority of the companies in our sample report under Solvency II, the analysis of change that is required to be included in the SFCR could be a good starting point to see what drivers companies typically include in their breakdowns.

From our sample, 10 companies out of 20 provided clear breakdowns of the movement in the Solvency II Own Funds over the year in the SFCR. Six of these 10 were companies that disclose Solvency II Capital Generation metrics in Supplementary Disclosures (other than SFCRs). Even among the 10 companies that provide clear breakdowns there is a great variety in the categories chosen within the breakdown. That being said, many of the categories used in the breakdowns were similar to those in the analysis of change of MCEV and the proposed analysis of change in Solvency II Own Funds. These can be broadly summarised in Figure 14.

FIGURE 14: CATEGORIES USED IN ANALYSIS OF CHANGE

Opening adjustments, such as model and methodology changes
Existing business contribution
New business contribution
Experience variances, potentially split into operating variance and economic variances
Changes to non-economic assumptions
Changes to economic assumptions
Impact of management actions
Capital management, such as the issuance and repayment of debt, share buy-backs, and dividends
Other items, including tax
Changes to eligibility restrictions

As well as there being variety in the categories used in the breakdowns, the drivers captured under each of the categories also differ. For example, the recent reductions in the UFR or changes to the volatility adjustment are sometimes captured under the 'opening adjustments/methodology changes' category and for other firms included under the 'changes to economic assumptions' category.

The six companies that disclose Solvency II Capital Generation metrics ensured these metrics were separately identifiable within the disclosed breakdown. Furthermore, many of the companies provided supporting

²⁴ Section 3 Public Disclosure, Article 51(1)(e)(i).

²⁵ Section 3 Public Disclosure, Article 51(2).

²⁶ https://www.eiopa.europa.eu/sites/default/files/publications/supervisory_statements/eiopa-bos-17-310-sfcr_supervisory_statement.pdf.

commentary alongside the breakdown shown in the tables, in some cases offering additional information to further explain key movements. Some of the companies that did not provide a clear table breaking down the movement in Own Funds over the period did include some commentary to highlight some of the drivers for key movements.

Outside of the disclosures made in the SFCRs, 14 companies out of the 20 in our sample provided breakdowns in Solvency II Capital Generation metrics over the reporting period in other reports/presentations, this includes:

- Two companies that do not appear to treat the Solvency II Capital Generation metric as a key earnings metric.
- Three companies that only disclose the breakdown in the solvency ratio over the reporting period.

For these five companies, it would seem that the Solvency II Capital Generation metric is treated more as a solvency metric rather than a key earnings metric.

Compared to the disclosures found in the SFCRs, the disclosures in analyst presentations etc. tended to include more visual presentations (such as waterfall analysis). The presentations also tend to cover both the movement in Own Funds and the movement in the SCR (along with the movement in the solvency ratio). Some analysis also split the movement between key business units/lines and countries of sale.

Overall, there is very little consistency in the presentation of the movement in Solvency II Capital Generation metrics between companies. This may be expected, particularly in the companies' own analyst presentations, as one of the aims of the disclosure will be to best explain the key drivers for the movement and these drivers are likely to vary company to company. However, the lack of consistency in presentation makes it difficult to compare and contrast the performance of companies which (as highlighted by EIOPA) is of crucial importance to analysts and investors.

It would therefore seem useful for companies to use the same template to present the components of Solvency II Capital Generation over the reporting period. The current proposal under the Solvency II 2020 Review includes many of the categories used by companies in their disclosures but groups a lot of key drivers into one category called 'Changes due to valuation of technical provisions of existing business'. We believe that this template can be improved upon by taking steer from the EEV/MCEV disclosure template and the formats currently being used by companies in their analyst and results presentations. A suggested template is shown in Figure 15.

FIGURE 15: SUGGESTED IDEALISED TEMPLATE FOR THE BREAKDOWN IN CAPITAL GENERATION METRIC

1. Opening adjustments, split into:
 - a. Model changes
 - b. Methodology changes
2. Existing business contribution, split into:
 - a. The expected real-world return²⁷ on assets in excess of the BEL
 - b. The expected real-world spread²⁸ on assets backing the BEL (including the impact on the BEL)
 - c. The impact of the unwinding of the UFR/UFR drag
 - d. The release of the Risk Margin (on existing business)
 - e. The impact of run-off of the Solvency II transitionals (on existing business)
3. New business contribution
4. Impact of management actions (typically relating to actions taken with respect to the SCR such as reinsurance, hedging, etc.)
5. Financing costs
6. Changes to operating/non-economic assumptions
7. Operating/non-economic experience variances (where the variances are with reference to the expected return/spread levels in 2)a) and 2)b))²⁹
8. Changes to non-operating/economic assumptions, including:
 - a. The impact of any changes to Solvency II parameters provided by EIOPA such as the UFR, volatility adjustment
9. Non-operating/economic experience variances
10. Other items, including tax, holding company expenses, pension scheme impacts, merger and acquisition activity, portfolio, and business transfers³⁰
11. Capital Management, such as the issuance and repayment of debt, share buy-backs and dividends
12. Closing adjustments

Much like the analysis of EEV/MCEV template, it would also be useful to have each of these items split between the impact on required capital and on free surplus in excess of required capital. Where possible, the required capital should include the company's own target Solvency II capital buffer, however this may not be possible as only 13 out of the 20 companies in our sample disclosed their own internal capital buffers. Therefore, for consistency it may be more appropriate to set required capital as 100% of the SCR within the analysis template.

Using the format of this suggested template, many of the Solvency II Capital Generation metrics used by the companies in our sample can be calculated:

- Normalised Capital Generation – Items 2 to 7, combining the impact on required capital and free surplus.
- Free Capital Generation – all the items in the template, focusing just on the impact on free surplus.
- Operating Capital Generation – Items 2 to 7, focusing just on the impact on free surplus.

While the suggested template may contain a very granular breakdown, as we have shown, some companies are already disclosing the results of similar analysis. Furthermore, most European insurers are required to produce similar breakdowns as part of the variation analysis templates required for the private QRTs under Solvency II reporting. We hope, therefore, that completing such a template would not be an undue burden on companies.

DISCLOSURE OF PROJECTIONS OF VALUE

As well as a granular breakdown of the drivers of historic changes in Solvency II Capital Generation metrics, industry participants such as analysts and investors would also be interested in the projected development in these metrics going forwards.

²⁷ If possible, details of the expected real-world returns assumptions should be disclosed.

²⁸ This expected real-world spread is the expected return over the risk-free rate used in the calculation of the BEL so would include the volatility adjustment and matching adjustment, if these are relevant for the company.

²⁹ Some companies (and even the PRA) have suggested grouping the impact of changes in operating assumptions and operating variances into one source but we believe that splitting these out, where possible, provides useful additional information.

³⁰ Shareholder transfers from with-profits funds may also be included for companies with participating business.

Many companies will already produce projections of the Solvency II balance sheet or other important value and earnings metrics as part of their business planning processes. However, based on the companies in our sample, most do not include these detailed projections within the disclosures to analysts and investors. This may be due to the inherent uncertainty in, and commercial sensitivity of, such projections. That being said, some companies in our sample do set targets based on Solvency II Capital Generation metrics and, within their disclosures, monitor performance over time against these.

We found that two companies in our sample did provide some sort of projection of the drivers of future value growth albeit at different levels of detail.

- Within its 2019 Capital Markets Day presentation, Aviva sets out its projected Operating Capital Generation over the period 2018 to 2028, assuming that new business volumes will be consistent with those experienced in 2019. The sources of the Operating Capital Generation beyond 2019 are split into the following high-level categories:
 - Pre-2019 existing business
 - 2019 onwards existing business
 - New business strain
 - Management actions and other.

As well as this, within its Full Year 2019 Analyst Pack, Aviva provides a table showing the expected Solvency II future surplus emergence for life business (excluding future new business) and states that the primary source of the surplus emergence is the release of Risk Margin (net of transitional measures) and Solvency Capital Requirement as the business runs off over time.

- Within its 2019 Capital Markets Day presentation, the NN Group includes a projected development of Operating Capital Generation from 2019 to 2030 split between its various operations as well as planned shift in investment strategy. However, this is clearly marked as illustrative and is based on the current regulatory framework and excludes merger and acquisition activity.

So, while the disclosure of projected Solvency II Capital Generation metrics does not yet seem commonplace, it is encouraging that a number of firms do provide such a projection. Over time, we may see other companies begin to enhance their disclosures to include similar information.

The proposed breakdown of the historic analysis of change in Solvency II Capital Generation metrics identified in Figure 15 contains a comprehensive list of the drivers of value changes so forms a solid foundation for the projection of the future change in this metric. In addition, using a consistent presentation between the explanation of past value growth and the future projection may enhance the understanding of the business by analysts and other stakeholders.

Many of the categories highlighted in Figure 15 are unlikely to be included in a projection and we can therefore split these categories into 'anticipated' and 'unanticipated' drivers of value growth. A suggested split into these two classifications is provided in Figures 16 and 17.

FIGURE 16: 'ANTICIPATED' CATEGORIES OF SOLVENCY II CAPITAL GENERATION

1. Existing business contribution, split into:
 - a. The expected real-world return on assets in excess of the BEL
 - b. The expected real-world spread on assets backing the BEL (including the impact on the BEL)
 - c. The impact of the unwinding of the UFR/UFR drag
 - d. The release of the Risk Margin (on existing business)
 - e. The impact of run-off of the Solvency II transitionals (on existing business)
2. New business contribution
3. Financing costs
4. Other Items (e.g. tax, holding company expenses, repayment of debt, as relevant)

FIGURE 17: 'UNANTICIPATED' CATEGORIES OF SOLVENCY II CAPITAL GENERATION

1. Opening adjustments, split into:
 - a. Model changes
 - b. Methodology changes
2. Impact of management actions (typically relating to actions taken with respect to the SCR such as reinsurance, hedging, etc.)
3. Changes to operating/non-economic assumptions
4. Operating/non-economic experience variances (where the variances are with reference to the expected return/spread levels in 2)a) and 2)b))
5. Changes to non-operating/economic assumptions:
 - a. The impact of any changes to Solvency II parameters provided by EIOPA such as the UFR, volatility adjustment
6. Non-operating/economic experience variances
7. Other items, including tax, holding company expenses, pension scheme impacts, merger and acquisition activity, portfolio and business transfers
8. Capital Management, such as the issuance and repayment of debt, share buy-backs and dividends
9. Closing adjustments

Many of the categories that could be considered 'Anticipated' are those included in the Normalised Capital Generation or Operating Capital Generation metrics currently used by companies. It should be noted that such a split between the 'Anticipated' and 'Unanticipated' categories is not always clear. For example, some level of experience variance and assumption changes would be expected each year, however the impact of these categories is not necessarily known ahead of time and the current 'best guess' is there would be none. In contrast, the impact of some of the 'Unanticipated' items may be able to be predicted and could therefore be included in a projection. Examples of these would be known changes to the UFR and management actions that have already been agreed/approved but have yet to be actioned.

Disclosing the breakdown of Solvency II Capital Generation metrics in the suggested format presented in Figure 15 and splitting the drivers into 'Anticipated' and 'Unanticipated' in this way will help analysts and industry stakeholders to carry out their own projections of Solvency II Capital Generation in the future and compare these between companies. This would be very valuable to prospective buyers in M&A processes.

4. Observed Transaction Prices

RECENT TRANSACTIONS

In the same way that disclosures of Solvency II Capital Generation metrics have begun to replace more traditional embedded value disclosures, the publication of the metric 'Price/Solvency II Own Funds' is becoming a more commonly quoted metric for European insurance deals either instead of, or alongside, the more typical 'Price/Embedded Value' ratio. This may be due, in part, to the high-level equivalency between an MCEV value and the level of Solvency II Own Funds as shown in Figure 5 in Section 1 of this paper.

Figure 18 shows the Price/Solvency II Own Funds for insurance deals in Europe since the implementation of Solvency II in 2016 where either the ratio was publicly disclosed, or we have been able to calculate it from publicly available information. In the absence of exact information, we have approximated Solvency II Own Funds using the amount disclosed on the date nearest to the transaction announcement date. This is a recognised limitation of our analysis.

FIGURE 18: PRICE TO OWN FUNDS RATIO FOR EUROPEAN DEALS 2016–2020

COUNTRY – TARGET FIRM	TARGET FIRM	BUYER	TARGET OPEN TO NEW BUSINESS?	ANNOUNCEMENT DATE	OBSERVED PRICE	PRICE / OWN FUNDS
RATIO CALCULATED						
UK	Rothesay Life plc (36% stake)	Investor group at GIC Pte. Ltd. and Massachusetts Mutual Life Insurance Company	Yes	Sep 2020	£2,100m	0.95
UK	Quilter UK Heritage book	ReAssure	No	Aug 2019	£425m	1.10
Ireland	AXA Life Europe	Cinven	No	Aug 2018*	€925m	0.81
UK	ReAssure (10% stake)	MS&AD	No	Jan 2018	£315m	0.85
Denmark	Nordea Liv & Pension, Livsforsikringselskab A/S (45% share)	Norliv	Yes	Dec 2017	DKK 3.52 bn	0.56
Ireland	Generali PanEurope DAC	Utmost Ltd	Yes	Dec 2017	€286m	1.01
Italy	Popolare Vita SpA (50% stake)	Banco BPM SpA	Yes	Nov 2017	€535.5m	2.17
Ireland	Friends First Life Assurance Company Ltd	Aviva Ireland Ltd	Yes	Nov 2017	€146m	0.58
Ireland	AEGON Ireland plc	AGER Bermuda Holding Ltd	No	Aug 2017	€195m	0.81
Ireland	Laguna Life DAC	Monument Assurance DAC	No	Aug 2017	€25.6m	0.67
France	Antarius S.A. (remaining 50% stake)	Sogecap SA	Yes	Feb 2017	€500m	1.15
Denmark	Nordea Liv & Pension, Livsforsikringselskab A/S (25% share)	Foreningen NLP	Yes	Nov 2016	DKK 2.16 bn	0.62
Ireland	Union Heritage Life	Harcourt Life Assurance	No	Aug 2016	€3m	0.58
Italy	Old Mutual Wealth Italy SpA	Phlavia Investimenti S.r.l.	Yes	Aug 2016	€278m	1.16
RATIO DISCLOSED						
UK	Reassure Group	Phoenix	No	Dec 2019	£3,200m	0.91
UK	Standard Life Assurance	Phoenix	Yes	Feb 2018	£2,930m	0.84
UK	L&G (Heritage business)	ReAssure	No	Dec 2017	£650m	0.99
UK	Abbey Life Assurance	Phoenix	No	Sep 2016	£935m	0.89
UK	AXA Wealth Pensions	Phoenix	Yes	May 2016	£375m	0.85

Notes:

* This transaction was terminated in H2 2020.

ALTERNATIVE METRIC

When some companies disclose the 'Price/Solvency II Own Funds' ratio, certain adjustments are made to the level of Solvency II Own Funds to make the comparison more meaningful. For example:

- In a Phoenix investor presentation, concerning the company's acquisition of ReAssure, it states that ReAssure's Solvency II Own Funds have been adjusted to:
 - Exclude company debt
 - Assume a dynamic recalculation of transitionals (subject to PRA approval)
 - Include the pro-forma impact of the Part VII of the mature savings business of the Legal & General Group Business and acquisition of Old Mutual Wealth Life Assurance Limited.
- In the case of the Phoenix's acquisition of Standard Life Assurance, it was disclosed that allowances were made for hybrid debt and regulatory approval of Internal Model treatment as well as the exclusion of amounts relating to unsupported with profits funds and, for Phoenix, the PGL Pension Scheme.
- In a press release concerning the transaction of Legal & General's mature saving business to ReAssure in 2017, it was stated that the shareholder interest in Solvency II Own Funds had been adjusted for amounts to be retained by Legal & General in respect of the 2017 financial year.

As per our previous publications relating to shareholder value reporting, the need for these adjustments indicates that using the unadjusted value of Solvency II Own Funds to compare to the purchase price is not always appropriate. The need for such adjustments also means that that the comparison between the 'Price/Solvency II Own Funds' in Figure 18 may not be entirely consistent between transactions.

As a result of this, where possible we have considered an alternative metric of the ratio of price to UT1 plus the net deferred tax asset³¹ (DTA) (i.e. price / (UT1 + DTA)). Compared to the level of Solvency II Own Funds:

- **Subordinated liabilities are removed:** Whilst subordinated liabilities rank below policyholder liabilities and hence, under Solvency II, are included as part of Eligible Own Funds, ultimately these liabilities remain payable and hence should be removed from the shareholder value measure.
- **Preference shares, and share premium account are removed:** Whilst preference shares, and the share premium account in relation to such shares, rank below policyholder liabilities and hence, under Solvency II, are included as part of Eligible Own Funds, ultimately we are considering the value to common shareholders hence these amounts should be removed from the shareholder value measure.

We understand that metrics based on UT1 rather than on Solvency II Own Funds are becoming more common benchmarks for prospective buyers in M&A processes due to its ease of calculation based on publicly available information. However, we believe that it is also appropriate to include the value of the DTA in the metric. The value of the DTA can depend on the circumstances of the prospective buyer as it is contingent on the projected size and timing of future profits. However, in the absence of any further information, the value of the DTA on the company's balance sheet can be considered a suitable initial estimate of the value.

It has only been possible to calculate this adjusted ratio where the Own Funds used in the original ratio has been sourced from year-end SFCRs. This alternative metric leads to a revised table as shown in Figure 19.

³¹ Net Deferred Assets means the value of deferred tax assets less the value of deferred tax liabilities.

FIGURE 19: PRICE TO ADJUSTED OWN FUNDS RATIO FOR EUROPEAN DEALS 2016–2020

TARGET FIRM	BUYER	TARGET OPEN TO NEW BUSINESS?	OBSERVED PRICE	CALCULATED PRICE / OWN FUNDS	PRICE / ADJUSTED OWN FUNDS
ADJUSTMENTS HAVE BEEN MADE TO OWN FUNDS					
Rothsay Life plc (36% stake)	Investor group at GIC Pte. Ltd. and Massachusetts Mutual Life Insurance Company	Yes	£2,100m	0.95	1.36
Quilter UK Heritage book	ReAssure	No	£425m	1.10	1.10
AXA Life Europe	Cinven	No	€925m	0.81	0.87
ReAssure (10% stake)	MS&AD	No	£315m	0.85	0.85
Nordea Liv & Pension, Livsforsikringselskab A/S (45% share)	Norliv	Yes	DKK 3.52 bn	0.56	0.74
Generali PanEurope DAC	Utmost Ltd	Yes	€286m	1.01	1.01
Popolare Vita SpA (50% stake)	Banco BPM SpA	Yes	€535.5m	2.17	2.17
Friends First Life Assurance Company Ltd	Aviva Ireland Ltd	Yes	€146m	0.58	0.58
AEGON Ireland plc	AGER Bermuda Holding Ltd	No	€195m	0.81	0.81
Laguna Life DAC	Monument Assurance DAC	No	€25.6m	0.67	0.67
Antarius S.A. (remaining 50% stake)	Sogecap SA	Yes	€500m	1.15	1.15
Nordea Liv & Pension, Livsforsikringselskab A/S (25% share)	Foreningen NLP	Yes	DKK 2.16 bn	0.62	0.81
Union Heritage Life	Harcourt Life Assurance	No	€3m	0.58	0.58
Old Mutual Wealth Italy SpA	Phlavia Investimenti S.r.l.	Yes	€278m	1.16	1.16
ADJUSTMENTS MADE TO OWN FUNDS BY FIRM					
Reassure Group	Phoenix	No	£3,200m	*	0.91
Standard Life Assurance	Phoenix	Yes	£2,930m	*	0.84
L&G (Heritage business)	ReAssure	No	£650m	*	0.99
Abbey Life Assurance	Phoenix	No	£935m	*	0.89
AXA Wealth Pensions	Phoenix	Yes	£375m	*	0.85

Notes:

* The firm has stated some adjustments have been made to the Own Funds quoted as part of disclosures around these transactions.

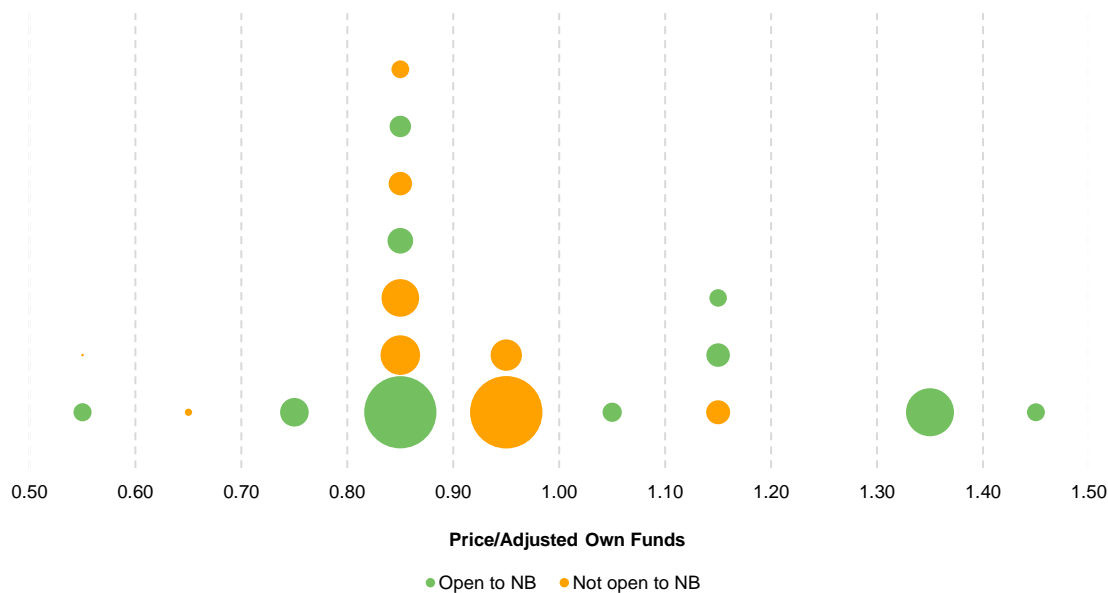
Although this adjustment does not materially change the quoted ratios, we still believe that this is a more meaningful metric than 'Price/Solvency II Own Funds'. To pick out one transaction that stands out from the others, the revised ratio for the recent Rothsay deal is well in excess of 1 which may suggest that certain value drivers are not recognised within the UT1 or DTA. This may be from:

- The existing book of business (perhaps from the release of the Risk Margin or the release of perceived prudence with the Solvency II matching adjustment rate assumed in the calculation of the BEL)
- The potential value from new business sales of which, in the case of Rothsay, mainly relate to the sale of Bulk Purchase Annuities (**BPAs**).

Figure 20 shows the ratios for the transactions in Figure 19 grouped into 10% 'ranges'. Furthermore:

- The colour of the dot indicates whether the target block of business was open (green) or closed (orange) to new business.
- The size of the dot indicates the size of the transaction as measured by the size of the adjusted Solvency II Own Funds.

FIGURE 20: COUNT OF TRANSACTIONS BY PRICE/ADJUSTED OWN FUNDS RATIO (SIZE OF DEAL IS SIZE OF DOT)



Notes:

1. The ratio calculated for one transaction was 2.17 (as shown in Figure 19). In Figure 20, this transaction has been placed in the 1.40-1.50 category.

Based on the information in Figure 20:

- Transaction prices in the range of 80% to 90% of Own Funds seem most common.
- Where the target block of business is closed to new business the ratio is more likely to be less than 1. The majority of those deals with a ratio in excess of 1 involved blocks that were open to new business.
- Smaller deals tend to result in lower ratios.

5. Alternative Solvency II based value metrics

BACKGROUND TO THE ALTERNATIVE METRICS

In Section 4, we detailed how it may be more appropriate to make adjustments to the level of Solvency II Own Funds for the purposes of benchmarking or determining a purchase price for an insurance company. The suggested adjustments are relatively straightforward, focusing on the value of UT1 and the value of any DTA on the Solvency II balance sheet. In this section, we present some more complex methodologies that allow for a standardised approach in assessing shareholder value based on Solvency II Own Funds using, in most cases, publicly available information available in the SFCR or QRTs of a company supplemented by assumptions based on expert judgement (where necessary). Such valuation methodologies can be used for transaction price benchmarking or in the early stages of an M&A process where only public information may be available.

The various valuation approaches covered in the section are listed below:

- UT1 + DTA (as described in Section 4) which can be sourced directly from the QRTs of a company and excludes certain types of capital repayable before ordinary shareholders (i.e. it removes subordinated liabilities, preference shares, the related share premium account, and other restricted Own Funds items).
- Solvency II Adjusted Own Funds (S2AOF), as covered in the Milliman paper ‘Solvency II Own Funds Approach to Shareholder Value Reporting’¹, which is a **market-consistent** shareholder value metric. For the calculation in this section, the majority of the information is sourced directly from the QRTs but some further assumptions are also required. This metric also makes no allowance for potential value of future new business sales.
- Approaches based on the Solvency II Appraisal Value (S2AV) a **real-world** shareholder value metric, as covered by a number of Milliman papers:
 - S2AV: A Valuation Methodology for Insurance Companies under Solvency II²
 - Measuring New Business Profitability under Solvency II (S2NBV)³.

The approaches can be split into:

- Solvency II Embedded Value (S2EV) which is a real-world shareholder value metric based on the S2AV methodology with no allowance for the potential value of future new business sales.
- S2AV which includes an allowance for the potential value of future new business sales.

Similar to the calculation of S2AOF in this section, for the calculation of S2EV and S2AV, the majority of the information is sourced directly from the QRTs (and other public sources such as analyst presentations) but some further assumptions are also required – more than in the calculation of S2AOF. The limitation of using public data only leads to some approximation in the resulting value calculation. We have therefore termed the metrics calculated in this section as S2EV* and S2AV*, respectively, to differentiate from ‘full’ calculations of S2EV and S2AV which would be based on a more complete set of information and hence would not suffer the same limitations.

The metrics listed above fall broadly into two groups as shown in Figure 21 – those based on a market consistent valuation methodology and those based on a real-world methodology. This tends to impact the calculation in two main areas:

- Whether any allowance is made for the expected risk premium earned from investing in risky assets
- The allowance for the cost of capital.

FIGURE 21: REAL-WORLD OR MARKET CONSISTENT METHODOLOGY

	Market Consistent	Real-World
UT1 + DTA	✓	
S2AOF	✓	
S2EV		✓
S2AV		✓

As detailed in Section 3, in the lead up to and after the release of the MCEV Principles, the majority of companies calculated an embedded value using a market consistent methodology. The use of market consistent methodologies seemed further cemented after the implementation of Solvency II (a market consistent solvency regime). However, as can be seen from the Solvency II Capital Generation metrics that are now being used by companies in their disclosures, many companies are allowing for 'expected real-world returns' in their Solvency II Capital Generation metrics to help to split the growth into drivers which are under the control of management and those that are not. Furthermore, it appears that industry participants may be favouring the use of real-world methodologies in certain circumstances as, in an informal survey conducted at a Milliman Conference in 2019, around 70% of respondents stated a preference for the use of a real-world valuation methodology when calculating a transaction price. We are also witnessing this in M&A transactions with many prospective buyers determining a bid using a discounted dividend model based on a real-world projection of the underlying Solvency II balance sheet.

Drivers of Solvency II Capital Generation captured under each approach

At the end of Section 3, we highlighted the drivers of Solvency II Capital Generation that could be considered 'anticipated' and hence would need to be captured in order to calculate a value of the insurance company. In Figure 22, we consider which of those drivers each metric considered in this section captures.

FIGURE 22: KEY DRIVERS OF SOLVENCY II CAPITAL GENERATION CAPTURED BY ALTERNATIVE SOLVENCY II VALUE METRICS

	UT1 + DTA	S2AOF	S2EV*	S2AV*
Existing business contribution, split into:				
The expected real-world return on assets in excess of the BEL	N/A	N/A	✓	✓
The expected real-world spread on assets backing the BEL (including the impact on the BEL)	N/A	N/A	✓	✓
UFR drag	-	-	-	-
The release of the Risk Margin (on existing business)	✓	✓	✓	✓
The impact of run-off of the Solvency II transitionals (on existing business)	-	✓	✓	✓
New Business contribution	-	-	-	✓
Financing costs	✓	✓	✓	✓

Each of these drivers could be individually calculated net of tax or each could be calculated gross of tax with an overall tax adjustment also included within the projection.

Taking each of the key drivers of Solvency II Capital Generation in turn:

- The expected real-world return on assets in excess of the BEL is only captured under S2EV* and S2AV* as these are real-world valuation methodologies. Under these approaches, however, these projected real-world returns are discounted using a risk discount rate so that assets can end up being valued at less than market price (which is not the case under a market consistent methodology).
- The expected real-world spread on assets backing the BEL (including the impact on the BEL) is also only captured under S2EV* and S2AV* as these are real-world valuation methodologies. As well as excess asset return, this category also covers items such as the impact of real-world returns on the time value of options and guarantees (**TVOG**) and the impact of real-world returns on the future charges that are received on unit-linked business. The impact the excess spread has on the BEL is one of the more complicated areas to calculate using only information available in the public domain. As such, within the application of the S2EV* and S2AV* methodologies covered in this section only an approximate allowance is made. This is discussed in more detail later in this section.
- UFR drag (as defined in Section 3) is not explicitly captured in any of the valuation methodologies.

- The release of the Risk Margin is captured under all methods. Under the UT1 + DTA approach, the Risk Margin is assumed to be released but it is replaced by a cost of non-hedgeable risks calculated using a cost of capital at 6%.
- The impact of run-off of the Solvency II transitionals (on existing business) is captured in all methods apart from the UT1 + DTA approach.
- The new business contribution is only captured on S2AV*. An allowance for new business could also be added to the S2AOF value, if required.
- Financing costs are allowed for in all the methods via the deduction of restricted Tier 1, Tier 2, and Tier 3 subordinated liabilities, which also includes the repayment of the principal of the debt at maturity.

As detailed above, there are two areas where the application of the S2EV* and S2AV* methodologies detailed in this paper could be refined further, particularly if companies begin to disclose additional information on the source of their Solvency II Capital Generation. These are:

- **The expected real-world spread on assets backing the BEL (including the impact on the BEL).** The impact the excess spread has on the BEL is difficult to approximate using only publicly available information. A full projection of the Solvency II balance sheet would require 'nested' runs that allow for expected real-world returns prior to the valuation date and stochastic, risk-neutral returns thereafter. In practice it is likely that approximations would be used to determine this impact, particularly when additional returns are shared between policyholders and shareholders in an asymmetric way. The impact on TVOG can be a particularly challenging area, and companies generally deal with this in a fairly simple way, as noted in the Milliman paper 'S2AV: A Valuation Methodology for Insurance Companies under Solvency II'.
- **UFR drag.** It may be possible to estimate the impact of UFR drag if a full profile of the cashflows underlying the BEL is available. In the absence of this detailed information, alternative ways to allow for UFR drag could be:
 - To adjust the assumed real-world expected return on investments to reflect this 'drag' effect on growth in Own Funds.
 - If the historical impact of UFR drag on Own Funds is disclosed in an analysis of change in Own Funds, then this historic impact over one year could be used as the basis for the impact on the valuation by suitably scaling for the change in the size of the BEL and allowing for an appropriate number of years over which the UFR drag will apply.

In fact, this latter approach to make an allowance for UFR drag could be used for other items that need to be factored into the valuation but for which sufficient information is not available. Another example of this would be the need to reflect any future planned reductions in the UFR in the valuation – the value disclosed for previous reductions can be used to inform the required adjustment. This further strengthens the need for a suitably granular analysis of change in Solvency II Capital Generation as detailed in Section 3.

Further detail of each of the alternative valuation metrics is provided below.

UT1 + DTA

This metric has been calculated as detailed in Section 4. Given the simplicity of the metric and the fact that it can be easily calculated from information in the public domain, the value of UT1 + DTA has also been used as the starting point for the other metrics in this section.

Solvency II Adjusted Own Funds (S2AOF)

The application of this approach to data disclosed in SFCRs was first covered in the ‘Shareholder Value Reporting in Europe: Year-End 2017’⁶. For the purposes of the analysis in this section, the definition of S2AOF has been revised to be:

S2AOF =

Unrestricted Tier 1 Own Funds

+ *Value of the net deferred tax asset (net of amount not available at Group level)*

+ *Foreseeable dividends, distributions, and charges*

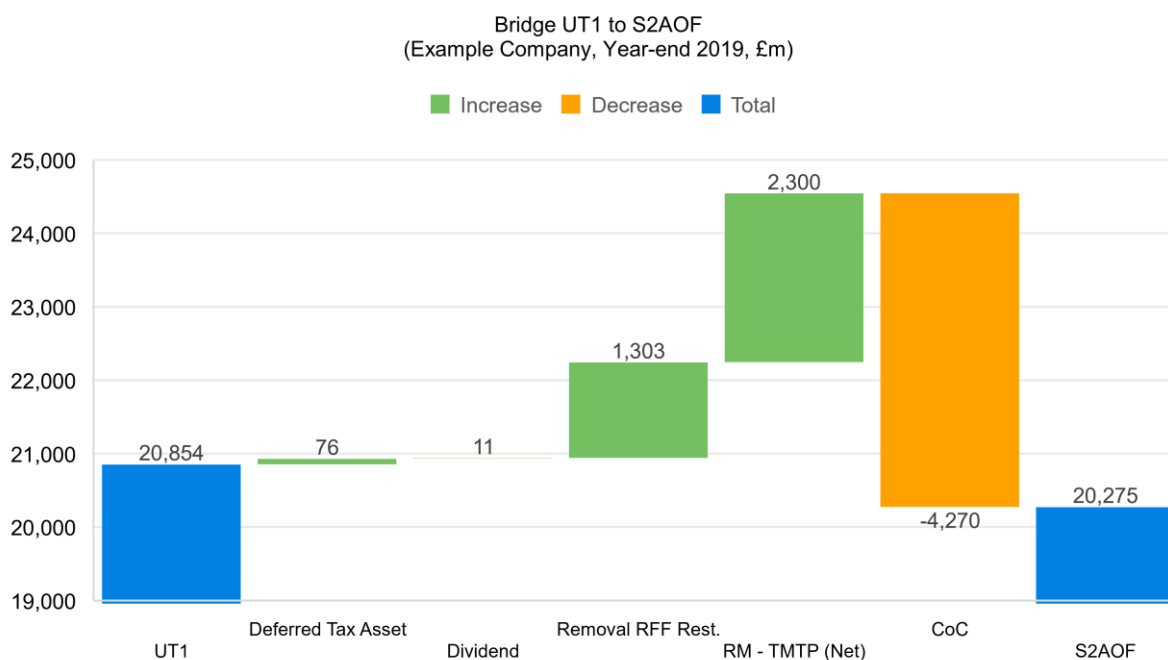
+ *Own Funds removed due to the restriction for ring-fenced funds and matching adjustment portfolios*

+ *Risk Margin less TMTP (net of tax)*

- *Ratioed (Gross) Risk Margin*

As an example, the movement from UT1 to S2AOF for an example company as at year-end 2019 is shown in Figure 23.

FIGURE 23: ILLUSTRATIVE BRIDGE FROM UNRESTRICTED TIER 1 TO S2AOF – YEAR END 2019



Compared to the value of UT1 + DTA the following adjustments are made to calculate S2AOF:

- **Foreseeable dividends, distributions and charges:** Dividends become foreseeable at the latest when they are declared or approved by the firm’s board of directors, regardless of any requirement for formal approval at the AGM. However, until the dividends have been paid out to shareholders, they still contribute value to a company, and would be reflected in other market metrics e.g. market capitalisation.
- **Own Funds removed due to the restriction for ring-fenced funds:** Restrictions apply, under Solvency II, to reflect the lack of transferability of those Own Funds items that can only be used to cover losses arising from a particular segment of liabilities or from particular risks. For the purposes of this analysis, this restriction has been removed.

- **Risk Margin less TMTP (net of tax)**³²: If future experience follows the current best estimate assumptions underlying the Solvency II balance sheet, the Risk Margin would be expected to be released over time and would flow straight to profit (and be subject to taxation). For this reason, the (net of tax) Risk Margin has been added in the formula. Similarly, the Transitional Measure on Technical Provisions (**TMTP**) will run off over time and hence would be a drag on future profits (and affect the level of taxation).
- **Ratioed (gross of tax) Risk Margin**: A 'ratioed' Risk Margin quantity has been deducted to reflect Cost of Residual Non-Hedgeable Risk (**CRNHR**) and Frictional Costs of Required Capital (**FCRC**). The total of these amounts is approximated by scaling the Risk Margin to allow for a Cost of Capital (**CoC**) rate applicable to the firm³³, adjusted for tax where necessary.

Solvency II Embedded Value (S2EV*)

For the purposes of the analysis in this section, the definition of S2EV* is:

S2EV* =

Unrestricted Tier 1 Own Funds

- + *Value of the net deferred tax asset (net of amount not available at Group level)*
- + *Foreseeable dividends, distributions, and charges*
- + *Own Funds removed due to the restriction for ring-fenced funds and matching adjustment portfolios*
- + *Risk Margin less TMTP (net of tax) reduced by the cost of holding capital to back this amount*
- *Cost of capital associated with holding the SCR (including the target solvency ratio)*
- + *The proportion of the assumed (net of tax) impact of return above risk-free on risky assets attributable to shareholders.*

This S2EV* formula shares some similarities with the formula used for S2AOF above with the main differences being:

- An allowance for assumed 'real-world' returns on risky assets
- An allowance for a higher cost of capital which includes the capital held to cover market risks along with the capital needed to support the target solvency ratio
- The cost of holding capital backing the risk margin (net of the TMTP) that does not arise under a market consistent valuation methodology³⁴.

As a result of these differences some further assumptions are required for S2EV* compared to S2AOF, including:

- Target solvency ratio – determined based on target coverage ratios found in recent public disclosures (ranging from 140% to 185% for the companies included in our sample). For companies that provide a target solvency range, we have used judgement and have used the lower end of the target range as the target solvency ratio. In the event that a ratio could not be found in supplementary disclosures, we have used a 150% target solvency ratio. This only applies to a minority of the companies in our sample.
- Tax rate – assumed to be the tax rate on profits in the country where the Group is headquartered.
- Spread earned on risky assets – assumed in this analysis to be 5% p.a.
- Shareholders' required rate of return (for cost of capital calculations) – assumed in this analysis to be (RFR + 10%) p.a.

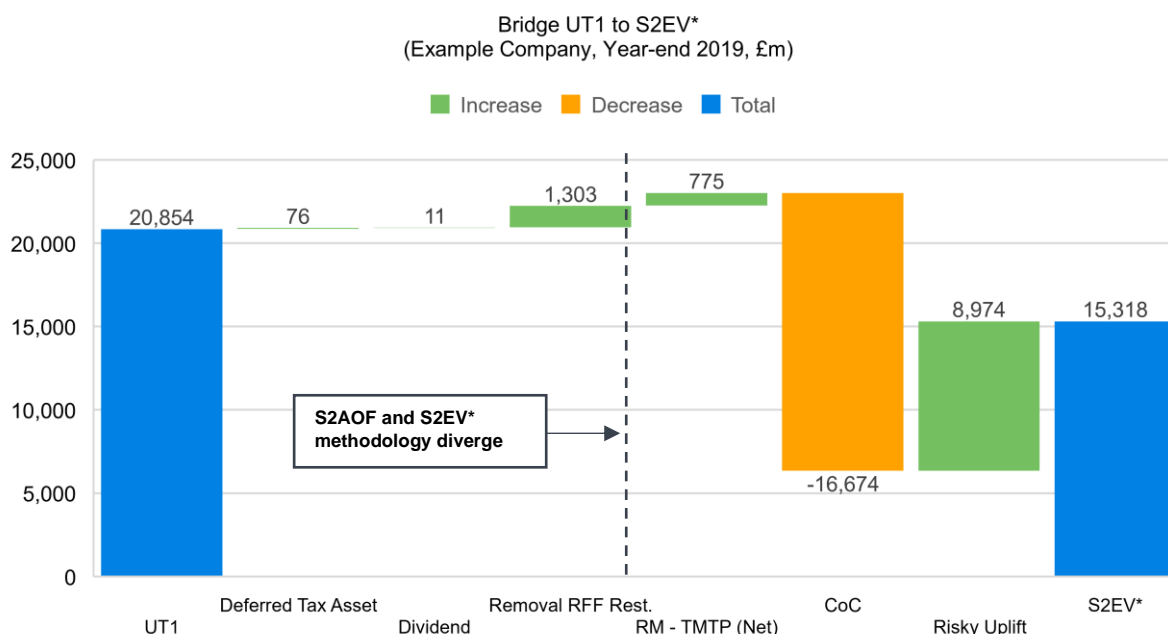
An example of the impact of the differences between the two approaches can be seen by comparing Figure 23 to Figure 24.

³² Although disclosure is not required under Solvency II, certain (re)insurers quote their gross of TMTP Risk Margin in the SFCR. For those firms that do not quote this figure, our methodology may overstate the value to accredit for the Risk Margin less TMTP (net of tax) by an amount equal to the TMTP that is used to reduce the best estimate liabilities. The impact is not considered to be material.

³³ In the 'Shareholder Value Reporting in Europe: Year-End 2018' the cost of capital rates for various firms were taken from their Embedded Value reports. Given the extended scope of firms covered in the 2020 Shareholder Value Report only a minority disclose EV. Consequently, we have used a 3.50% cost of capital rate for all firms, which is representative of rates observed in historical Embedded Value reports.

³⁴ Under a market consistent approach, we assume there is no cost of holding the capital backing the risk margin (net of TMTP) and so we accredit the full amount immediately. Under a real-world approach, we assume there is a cost of holding the capital backing the risk margin (net of TMTP).

FIGURE 24: ILLUSTRATIVE BRIDGE FROM UNRESTRICTED TIER 1 TO S2EV* – YEAR END 2019



Solvency II Appraisal Value (S2AV*)

An approximation to S2AV* can be calculated as follows:

S2AV* =

S2EV*

+ (1- year value of new business from public disclosures) x (Capitalisation factor)

This extra step is only required when the company is open to new business. For the purposes of our analysis, we have only been able to compute this metric where the company publicly discloses a value for new business.

Such a value may be sourced from:

- Embedded value reports, where available, as these typically quote a value for new business item
- Financial disclosures such as investor packs or the body of the SFCR text.

The value of existing business is uncertain itself, but the value of future new business to be included to arrive at an appraisal value is subject to a higher degree of uncertainty. This uncertainty arises from a number of sources such as:

- The number of years that new business is assumed to be sold
- The discount rate used to value new business cash flows
- The volume of new business
- The profitability of new business.

For the purpose of the analysis in this section we have taken a simplified approach for the value of future new business and:

- Taken the value of new business from the prior year as a basis for profitability³⁵
- Assumed a capitalisation factor of 10 for all firms.

³⁵ Where the value of new business that has been disclosed is on a market consistent basis, an approximate adjustment has been made to approximate the value of the new business on a real-world basis.

Due to Solvency II contract boundary rules, within the calculation of the Solvency II BEL, some existing business may be valued using a shorter duration than the company may assume in the absence of the Solvency II regulations. It is assumed that the methodology detailed above to determine the value of future new business makes an appropriate allowance (via the capitalisation factor) for the value of such business at durations beyond the Solvency II contract boundary.

COMPARISON TO MARKET CAPITALISATION

A recognisable measure of value of a quoted insurance company is market capitalisation. In fact, the acid test of any value metric has always been how much the market believes the result. One simplistic way of measuring this is to compare a company's market capitalisation with a value metric at a given point in time and look at how this evolves over time, potentially in response to changes in the market environment. It could be considered that a ratio of around 100% is preferable, indicating that the shareholder value metric is broadly consistent with the market's view on the value of a company at any given time³⁶.

Having detailed the various valuation metrics related to Solvency II Own Funds, in the remainder of the section we have compared each of them to the relevant market capitalisation. It was not possible to include some of the companies in our sample in this analysis since their shares are not publicly listed³⁷. Please note that the calculated value for each of the value metrics are necessarily approximate due to the reliance only on publicly available data. Furthermore, the agreed purchase price for a deal (or 'value' of a company) is determined by the parties involved, based on their respective evaluations of all relevant factors, including:

- The perspective of the buyer and the seller (or the 'valuer') and the level of confidence regarding the assumptions underlying projected earnings
- The desired rate of return and the associated cost of capital
- The degree of urgency associated with the sale or acquisition
- The scope of any expected new business
- Economies of scale and scope associated with the potential transaction
- Significant tax, capital, or other consequences/benefits, unique to a proposed transaction, which can have an effect on fair market value.

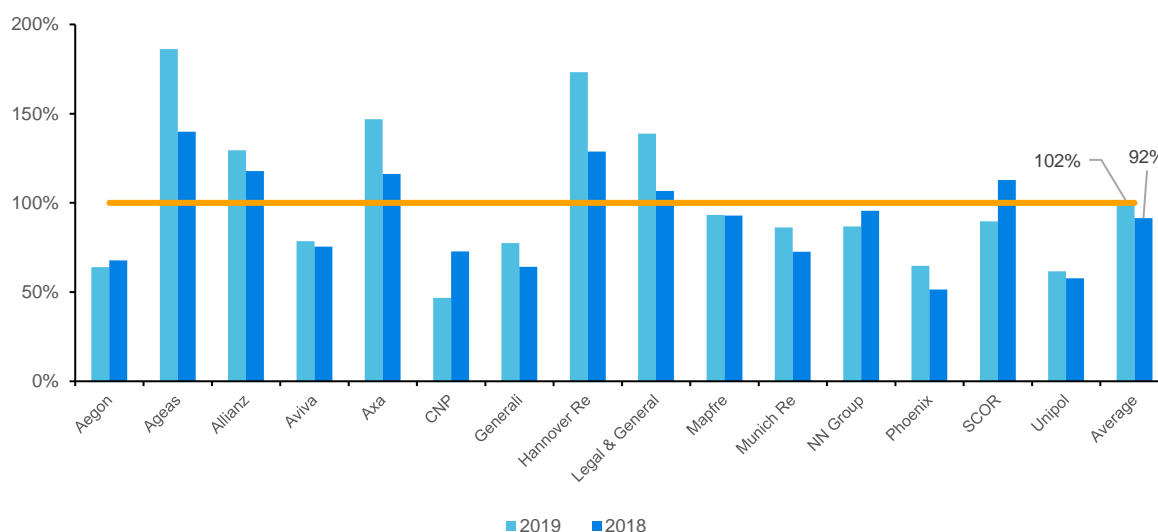
UT1 + DTA

Figure 25 shows the market capitalisation as a percentage of UT1 + DTA for a subgroup of the companies in the European market in our sample, as at year-end 2018 and year-end 2019.

³⁶ That said, there are a number of items that would be reflected in market capitalisation that we would not want to capture in a shareholder value metric (e.g. general market sentiment, the loyalty of a customer base) and so a target of 100% may not be appropriate at all times and for all firms.

³⁷ Achmea – owned by majority by its policyholders, but also by private groups such as Rabobank; BNP Paribas and VidaCaixa – wholly owned by a banking institute who is public, but it is not possible to discern a market capitalisation for the insurance subsidiary; Groupama – a mutual that is owned by its policyholders and so is not public; and VIVAT – is wholly owned by the private equity firm Athora Holding Ltd. and so is not public.

FIGURE 25: MARKET CAPITALISATION AS A PERCENTAGE OF UT1 + DTA AS AT 31 DECEMBER 2018 AND 2019

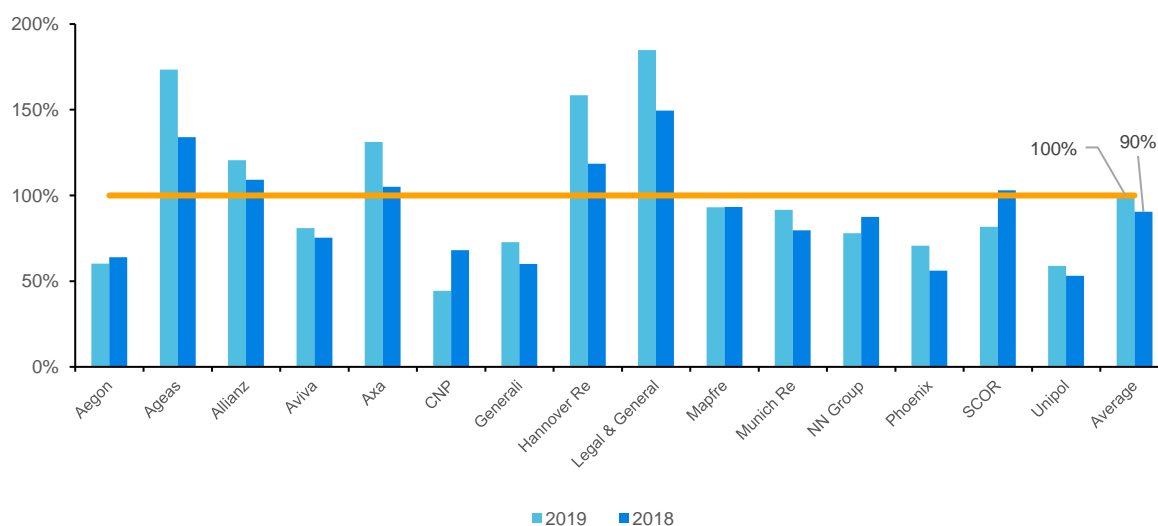


The average ratio³⁸ of market capitalisation to UT1 + DTA was 102% as at year-end 2019 (92% as at year-end 2018). Looking at individual ratios, seven out of the 15 firms were in the range of 70% to 130% (10 firms in this range as at year-end 2018). However, although there is a grouping around 100%, there is a reasonable level of variability between firms; Ageas, Allianz, AXA, Hannover Re, and Legal & General have a ratio consistently higher than 100% (some materially so), whereas Aegon, Aviva, CNP, Generali, Phoenix, and Unipol have a ratio consistently lower than 100%.

S2AOF

Figure 26 shows the market capitalisation as a percentage of S2AOF for a subgroup of the companies in the European market in our sample, as at year-end 2018 and year-end 2019.

FIGURE 26: MARKET CAPITALISATION AS A PERCENTAGE OF S2AOF AS AT 31 DECEMBER 2018 AND 2019



The average ratio³⁹ of market capitalisation to S2AOF was 100% as at year-end 2019 (90% as at year-end 2018). Broadly consistent with UT1 + DTA, eight out of the 15 firms were in the range of 70% to 130% (eight firms in this range as at year-end 2018).

³⁸ This is an arithmetic average, with no weighting by company size applied.

³⁹ This is an arithmetic average, with no weighting by company size applied.

In general, we see lower ratios of market capitalisation over S2AOF than for UT1 + DTA (11 out of 15 firms) as the calculated S2AOF is higher than UT1 + DTA. This is due to the additional value items that are considered under this methodology. However, for four out of the 15 firms, there is an increase in the ratios (i.e. Aviva, Legal & General, Munich Re, and Phoenix) as the calculated S2AOF is lower than UT1 + DTA; this arises due to the materiality of the TMTP for these firms. For each of these firms, the run-off of TMTP (net of tax) is greater than the combined value of the additional value items captured under this method.

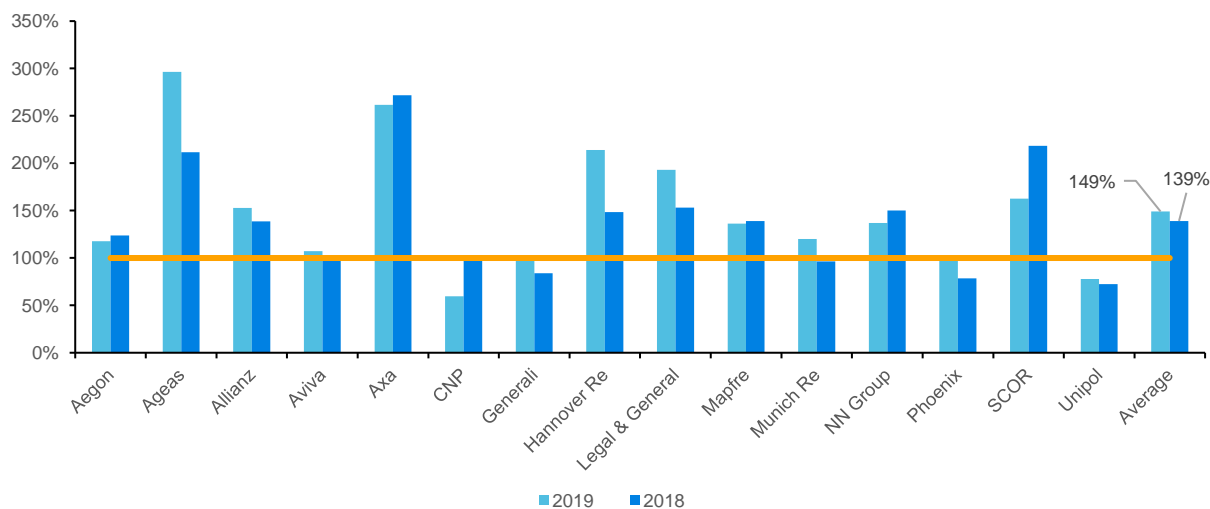
S2EV*

Similar to S2AOF, S2EV* attempts to address some of the shortcomings of using UT1 + DTA as a value metric but does so in a slightly different way owing to the fact it is a real-world shareholder value methodology. The calculated S2EV* differs from S2AOF primarily due to the following:

- The Cost of Capital will be higher for non-hedgeable risks:
 - A target solvency ratio is assumed based on ratios found in public disclosures (ranging from 140% to 185%)⁴⁰; all else being equal this would result in a cost of capital that is between 1.4 and 1.85 times higher than under S2AOF for non-hedgeable risks.
 - The Cost of Capital factor differs: the calculated S2AOF assumes all firms have a cost of capital rate of 3.5%, whereas the S2EV* calculates a cost of capital rate dependent on the difference between the assumed real world premium on risky assets and the shareholder required rate of return.
- The Cost of Capital is included for market risks.
- The value arising from the run-off of the Risk Margin less TMTP (net of tax) is reduced due to the related cost of capital (which is effectively not considered in a market consistent approach).
- The S2EV* methodology includes the proportion of the assumed (net of tax) impact of return above risk-free on risky assets attributable to shareholders.

Figure 27 shows the market capitalisation as a percentage of S2EV* for a subgroup of the companies in the European market in our sample, as at year-end 2018 and year-end 2019.

FIGURE 27: MARKET CAPITALISATION AS A PERCENTAGE OF S2EV* AS AT 31 DECEMBER 2018 AND 2019



As expected, the higher cost of capital amounts under this methodology (compared to S2AOF) has resulted in a lower value metric; all firms within our sample had a lower value under the S2EV* approach than the S2AOF approach which leads to a higher overall market capitalisation ratio. The average ratio⁴¹ of market capitalisation to S2EV* was 149% as at year-end 2019 (139% as at year-end 2018). Six out of the 15 firms were in the range of 70% to 130% (seven firms in this range as at year-end 2018).

Those firms that have the greatest change in ratio between S2AOF and S2EV are Aegon, Ageas, AXA, NN Group, and SCOR; based on our approximations, many of these firms have a significant capital requirement

⁴⁰ In the event that a ratio could not be found in supplementary disclosures, we have used a 150% target solvency ratio. This only applies to a minority of the firms that we reviewed in our study.

⁴¹ This is an arithmetic average, with no weighting by company size applied.

relating to non-market risk, the cost of which is exacerbated under the S2EV* methodology due to the introduction of the target solvency ratio compared to the S2AOF approach.

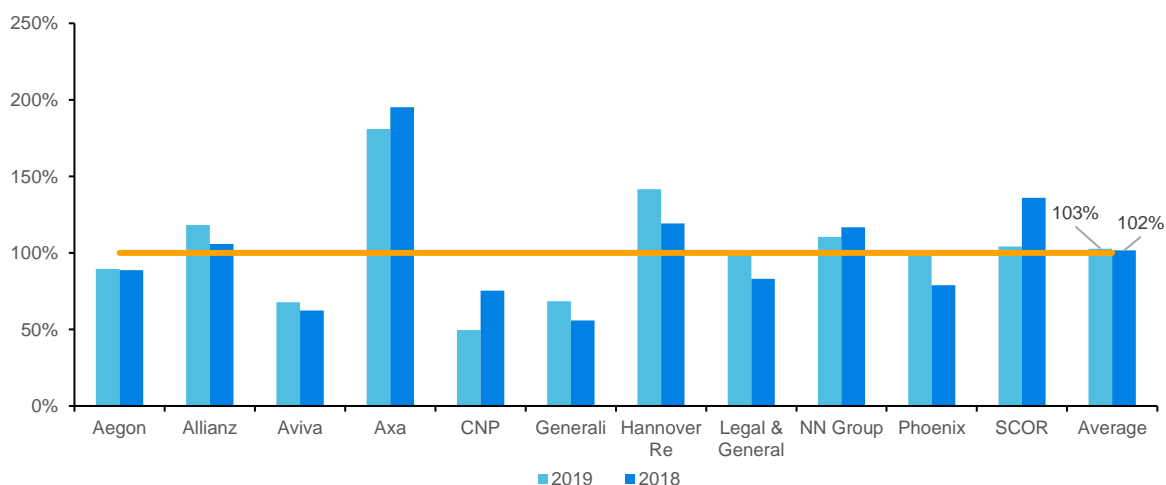
The inclusion of an allowance for the expected impact of investing in risky assets (above the risk-free rate) is partially offset by the cost of capital arising from the market risk in relation to investing in such assets. This is therefore less of a driving factor in the differences in value between S2AOF and S2EV*.

S2AV*

The S2EV* approach makes no allowance for the value that may arise from the sale of future new business or from any existing business that is subject to a shorter contract boundary under Solvency II than would otherwise be the case in an economic valuation.

Figure 28 shows the market capitalisation as a percentage of S2AV* for a subgroup of the companies in the European market in our sample, as at year-end 2018 and as at year-end 2019. We only have included companies for which an estimate of the value for new business could be found in publicly available information.

FIGURE 28: MARKET CAPITALISATION AS A PERCENTAGE OF S2AV* AS AT 31 DECEMBER 2018 AND 2019



The average ratio⁴² of market capitalisation to S2AV* for this group is 103% as at year-end 2019 (102% at year-end 2018) compared to 146% if no allowance is made for new business (142% as at year-end 2018)⁴³.

Whilst the introduction of the value of future new business brings most firms closer to 100% compared to S2EV*, this is not the case for all companies analysed. Furthermore, for some companies the calculated value of S2AV* deviates greatly from market capitalisation.

Overall comparison of metrics

Figure 29 provides an overall summary of the comparison between the metrics and market capitalisation based on the companies in our sample.

⁴² This is an arithmetic average, with no weighting by company size applied.

⁴³ This differs from the 149% and 139% shown in Figure 27 for S2EV* as we are looking at a subset of 11 of the 15 firms looked at in that earlier chart.

FIGURE 29: MARKET CAPITALISATION AS A PERCENTAGE OF SOLVENCY II BASED METRICS – AVERAGE, LOWER, AND UPPER QUANTILES

	YEAR-END 2019		YEAR-END 2018	
	Average	Lower and Upper Quartiles	Average	Lower and Upper Quartiles
UT1 + DTA	102%	71% - 134%	92%	70% - 115%
S2AOF	100%	72% - 126%	90%	66% - 107%
S2EV*	149%	104% - 178%	139%	98% - 152%
S2AV ⁴⁴	103%	79% - 114%	102%	77% - 118%

Finally, the 'best' methodology to use to value a company will often be context dependent and depend on the user of the information; for example:

- At one end of the spectrum we have the UT1 + DTA approach. An attraction of using this approach is that it is simple and completely objective (in the sense that it is based purely on disclosed information). For this reason, UT1 + DTA has often served as a useful starting place on buy-side transactions that we have supported.
- At the other end of the spectrum we have the S2AV* methodology. This approach may be favoured for analysts/investors who believe a real-world approach is more appropriate compared with a market consistent approach for calculating shareholder value. The additional drivers of potential value that can be captured using this methodology do require more assumptions to be made and approximations may be necessary given the lack of information in the public domain. However, should additional non-public information be made available, some of these approximations could be improved upon or eliminated.

Overall, each of these metrics has the benefit of permitting a systematic analysis of the potential future drivers of change in value of an insurance company and enable these to be compared with the historic drivers (for which we hope further information will be provided in supplementary value disclosures in the future). For insurers themselves, as they would have access to more detailed information regarding their own businesses, some of the limitations/approximations present in the alternative metrics detailed in this section can be reduced. As such these value metrics may be useful when determining transaction prices or valuations for other purposes (e.g. as a measure of performance).

⁴⁴ The S2AV* figures are based on a subset of 11 of the 15 firms that are used to calculate the figures presented for UT1 + DTA, S2AOF, and S2EV*. However, direct comparisons between S2AV* and S2EV* in this table are reasonable given that for the subset of 11 firms the S2EV* average and interquartile statistics are similar to those for the full 15: The average S2EV* for the 11 firms is 146% for year-end 2019 (142% as at year-end 2018), and the lower and upper quartiles are 104% and 178%, respectively, for year-end 2019 (100% and 152% as at year-end 2018).



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[milliman.com](https://www.milliman.com)

CONTACT

Sam Burgess
samuel.burgess@milliman.com

David Burston
david.burston@milliman.com

Stuart Reynolds
stuart.reynolds@milliman.com

Lyndsay Wrobel
lyndsay.wrobel@milliman.com

This analysis has been commissioned by Milliman LLP. Whilst every effort has been made to ensure the accuracy of the material in this document, neither Milliman LLP nor the report's authors will be liable for any loss or damages incurred through the use of the analysis.

While care has been taken in gathering the data and preparing the analysis, Milliman does not make any representations or warranties as to its accuracy or completeness and expressly excludes to the maximum extent permitted by law all those that might otherwise be implied. Milliman accepts no responsibility or liability for any loss or damage of any nature occasioned to any person as a result of acting or refraining from acting as a result of, or in reliance on, any statement, fact, figure or expression of opinion or belief contained in this analysis.

Use of such information is voluntary and should not be relied upon unless an independent review of its accuracy and completeness has been performed. Neither Milliman nor the authors of the analysis owe any duty of care to any reader of this analysis and each expressly disclaims any responsibility for any judgements or conclusions which may result therefrom. This analysis and any information contained herein is protected by Milliman's and the author's copyrights and must not be modified or reproduced without express consent.

This report is for informational purposes only and does not constitute advice of any kind.

© 2020 Milliman, Inc. All Rights Reserved.