

DECONSTRUCTING RISK

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Ratio analysis is a cornerstone of financial and strategic analysis - and for good reason.

Many useful ratios exist for analyzing and comparing P&C insurance company financials, and here we review our framework that deconstructs the profitability measure Return on Surplus (RoS) into 4 widely used subsidiary ratios. These 4 ratios provide insight into the specific sources of insurer profitability:

Underwriting profitability

Underwriting leverage

Investment yield

Investment leverage

In addition to demonstrating the basics of this analysis, we'll also review the distributions of these ratios among A.M. Best rated companies, and look for relationships between them and the resulting Financial Strength Rating assigned. Keep in mind that such ratings include many factors, not just those being reviewed here.

RETURN ON SURPLUS

Return on Surplus (calculated as Net Income divided by Surplus) is a primary measure of an insurer's profitability, and makes for useful comparison both across time and across companies.

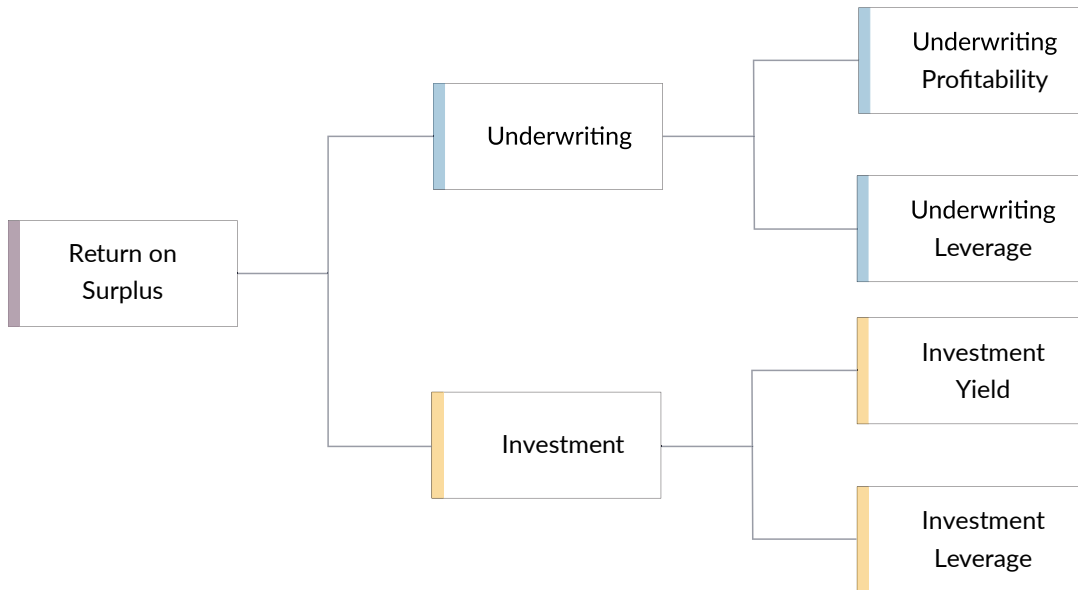
The problem?

On its own, Return on Surplus doesn't tell us much about where profits are coming from, how sustainable they are, or how risky the company is.

$$\text{Return on Surplus} = \frac{\text{Net Income}}{\text{Surplus}}$$

Our solution:

We need to separate this summary measure into its component parts: the two main sources of insurer returns, underwriting and investments, with each being further divided into a measure of profitability and a measure of leverage relative to surplus.



UNDERWRITING

Underwriting Profitability

Underwriting profitability is measured by the combined ratio, or ratio of underwriting expenses to revenues¹.

$$\text{Combined Ratio} = \frac{\text{Underwriting Expenses}}{\text{Underwriting Revenue}}$$

This ratio is typically scaled so that a value of 100 corresponds to breakeven, with a higher value indicating losses and a value less than 100 indicating profits.

$$100 - \text{Combined Ratio} = \text{Underwriting Margin} = \frac{\text{Underwriting Gain/(Loss)}}{\text{Net Premiums Earned}}$$

For our purposes, we subtract the combined ratio from 100 to arrive at a measure of underwriting gains divided by premiums earned, which is simply underwriting profit margin.

Underwriting Leverage

Next we must consider leverage, or the relative scale of underwriting operations compared to the surplus base supporting them.

$$\text{Underwriting Leverage} = \frac{\text{Net Premiums Earned}}{\text{Surplus}}$$

Although the standard measure of underwriting leverage is Net Premium Written (NPW)/surplus, for the sake of consistency across ratios we use the very similar measure Net Premiums Earned (NPE)/surplus. This acts as a multiplier on the underwriting profit margin in determining its effect on RoS.

Underwriting’s total impact on profit

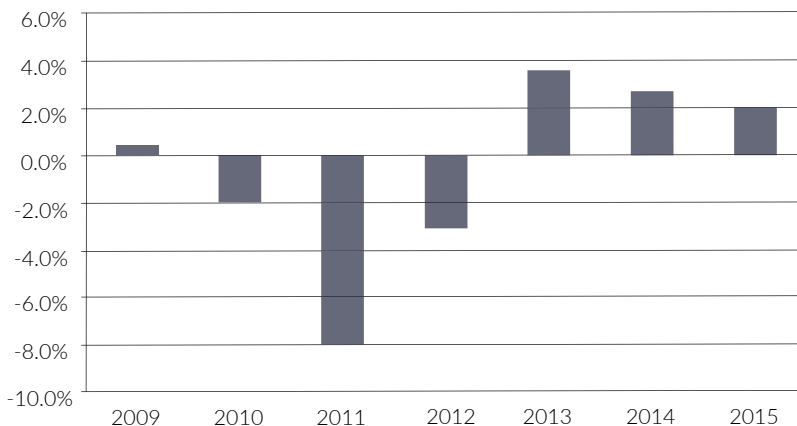
When underwriting profit margin and leverage are combined, the result is the total contribution of underwriting operations to total RoS.

$$\frac{\text{Underwriting Gain/(Loss)}}{\text{Net Premiums Earned}} \times \frac{\text{Net Premiums Earned}}{\text{Surplus}} = \frac{\text{Underwriting Gain/(Loss)}}{\text{Surplus}}$$

Underwriting Trends among Property and casualty Insurers

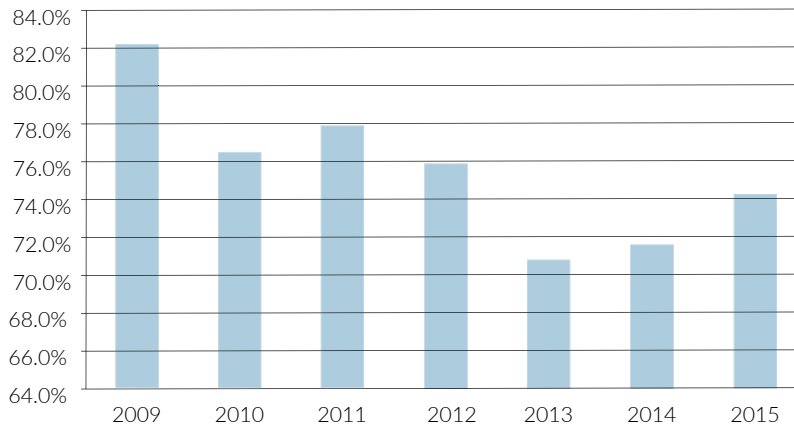
Underwriting Profitability

Underwriting margin varies significantly from year to year, with storm and catastrophe activity as a major source of volatility



Underwriting Investment

Underwriting leverage has drifted lower amidst consistent surplus growth in recent years. This is positive for financial stability, but poses a challenge for profitability going forward.



1. Combined ratio is sometimes calculated as $(\text{Losses} / \text{NPE}) + (\text{Expenses} / \text{NPW})$, but we use the alternate method as it is guaranteed to normalize a breakeven underwriting result to a value of 100.

INVESTMENT

Property & Casualty insurers hold significant investments in bonds, common stocks, and other asset classes. These provide significant interest and dividend income plus realized gains on sales.

Investment Yield

To find investment margin, we divide net investment income (including both interest and dividends from all sources) plus realized gain/loss plus the change in unrealized gain/loss marked through to surplus (primarily market value changes on common stock), by average invested assets.

$$\text{Investment Yield} = \frac{\text{Investment Income}}{\text{Invested Assets}}$$

Investment Leverage

Once again we complement profitability with leverage. For investments this is measured as average invested assets divided by average surplus.

$$\text{Investment Leverage} = \frac{\text{Investment Assets}}{\text{Surplus}}$$

Investment's total impact on profit

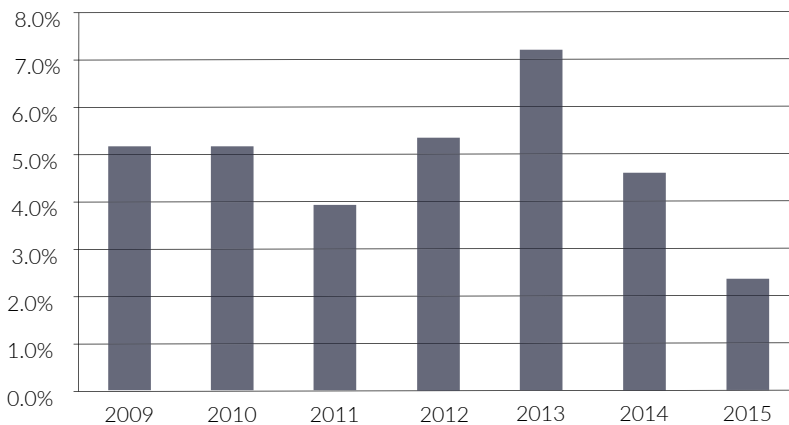
As before, we multiply profitability and leverage together, with the result being total investment returns over surplus, which is the investment contribution to the bottom line.

$$\frac{\text{Invested Income}}{\text{Invested Assets}} \times \frac{\text{Invested Assets}}{\text{Surplus}} = \frac{\text{Total Investment Income}}{\text{Surplus}}$$

Investment Trends among Property and casualty Insurers

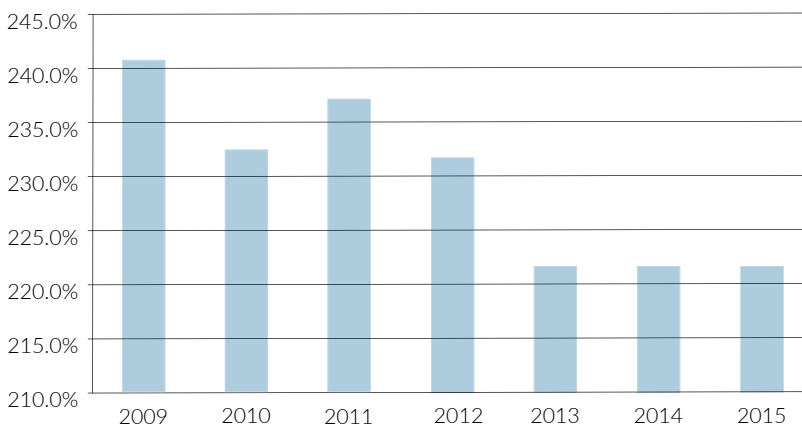
Investment Margin

Investment margin has trended lower in recent years due to low reinvestment rates on fixed income, though strong equity returns have partially offset this.



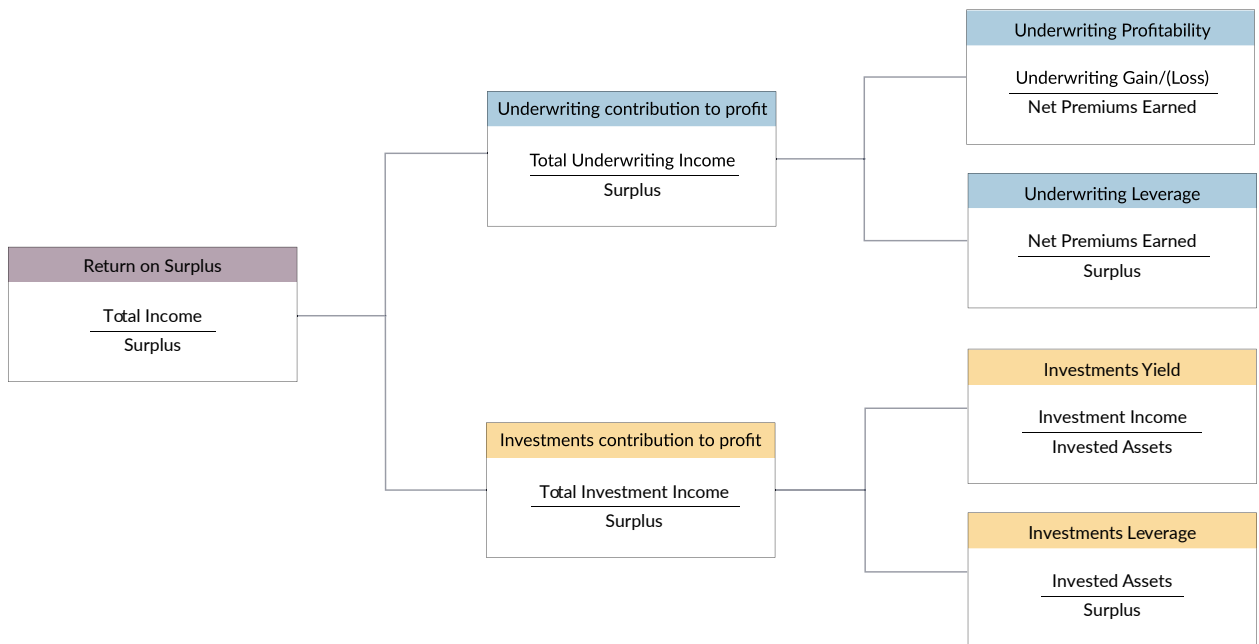
Investment Leverage

Investment leverage has declined, once again due to surplus growth. That said, equity exposure as a percent of surplus is currently elevated relative to historical levels.



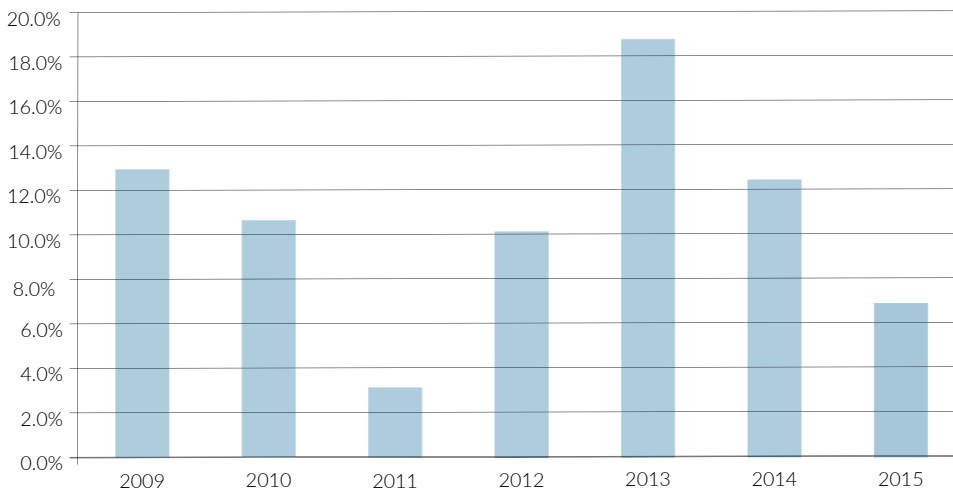
COMBINING UNDERWRITING & INVESTMENT FOR A NEW PERSPECTIVE OF RETURN ON SURPLUS

So how do these ratios all work together? Having calculated the total contributions from underwriting and investments, we simply add them together to arrive at total returns to surplus. Although this form of measurement ignores a few significant items (for example, taxes and policyholder dividends), it illustrates the sources of “core” operating returns for an insurer in a way that’s both intuitive and easy to compare across firms.



Return on Surplus Trends among Property and casualty Insurers

Returns on surplus have fluctuated with all the underlying factors we’ve listed, but have averaged around 10% per year since 2009.



APPLICATION & ANALYSIS

So how do these measures look in practice?

To illustrate their analytical value, we've collected statistics for a group of A.M. Best rated companies². Generically, we would expect the higher-rated companies to show higher profitability measures for both underwriting and investments, and most likely lower-to-flat leverage measures, since lower leverage implies a stronger balance sheet but also potentially lower profitability. Here are 4-year trailing averages for the companies we examined:

RATING	RETURN ON SURPLUS	UNDERWRITING MARGIN	UNDERWRITING LEVERAGE	INVESTMENT MARGIN ³	INVESTMENT LEVERAGE
A++	13.03%	8.02%	62.59%	4.40%	206.98%
A+	11.33%	6.05%	84.01%	3.40%	194.46%
A	8.66%	5.44%	79.33%	3.09%	198.50%
A-	6.89%	1.31%	81.20%	2.99%	194.67%

With minor exceptions, our hypotheses hold true. Stronger ratings correspond almost linearly with higher profitability measures. Leverage is a little more mixed, but generally shows lower underwriting leverage (i.e. more surplus per dollar of premiums) for higher-rated companies, and approximately flat financial leverage across all ratings.

It's worth noting that B++ rated companies actually produce underwriting losses on average over the four year period ending 2016, and relied on investment income to achieve profitability. This illustrates the intensity of underwriting competition in recent years, even among strong and well-run companies. It also illustrates the importance of using the proper analytical techniques if we are to understand the sources of risk and return in an insurer's operations.

2. Specifically, our data covers a total of 1,150 AM Best-rated P&C insurers rated at least B++ as of 12/31/16 and having at least \$1M in net premiums earned in calendar 2016. All data sourced from SNL.

3. We use the term "investment margin" as distinct from "investment yield" to reflect the fact that our measure also includes realized gains and unrealized gains on mark-to-market assets.

KEY TAKEAWAYS

By breaking Return on Surplus down into the two separate sources of return and leverage, we get a much clearer insight into the structure of the company's earnings.

The profitability measures (Underwriting Margin and Investment Margin) illustrate the degree to which the company is effectively managing its underwriting operations and investment portfolio to produce a competitive return, and the leverage measures (Underwriting Leverage and Investment Leverage) indicate how aggressive they are being in terms of taking on underwriting & investment risk relative to available surplus.

Observing the trends in these measures over time can give us insight into an insurer's strategic direction, and help managers evaluate how well they're executing on their intended strategic priorities.

At AAM, we make it a priority to understand our clients' unique needs and strategic goals. To gain a deeper perspective on how these ratios can help support your strategic planning, visit www.aamcompany.com/contact-us for a custom analysis.

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